ISBNPA

Advancing Behavior Change Science

PHOENIX ARIZONA, USA
MAY 18–21, 2022

Program
and
Abstract
Book

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Note about the content of the abstract book:
The organizing and abstract review committees have not made any edits to the content of the abstract. The abstracts are, therefore, presented as they were submitted by the authors.

NAVIGATION TIPS: The titles above are linked to their respective pages. Hover over the title, then click to follow the link. Or scroll down to read through page by page. All pages have a "Back to Table of Contents" link at the bottom right, which will return you to this page.

DEAR ISBNPA MEMBERS AND COLLEAGUES,

Dr. Meg Bruening
Co-Chair

Dr. Marc Adams
Co-Chair

Welcome to the Valley of the Sun! We are so pleased that you will be joining us for the 2022 International Society of Behavioral Nutrition and Physical Activity meeting. We are thrilled to host the first in-person ISBNPA meeting since the start of the Pandemic. While we value our in-person connections with each other, we know that travel is not always possible in today's world. Leveraging our experience in the past two years of successful ISBNPA XChanges, we are excited to bring our attendees hybrid components of the meeting, live streaming, and hosting virtual and on-demand cutting-edge scientific content, increasing the reach of the ISBNPA to new heights.

For those of you who can join us in person, we welcome you to the ever-sunny, vibrant city of Phoenix, Arizona. Phoenix and its metro region, known as the Valley of the Sun, are located in the Sonoran Desert and boast beautiful hiking and mountain biking from 12 different mountain ranges surrounding the city. While visiting, please remember to drink lots of water and wear plenty of sunscreen.

Phoenix is a city focused on climate change and aims to be the most sustainable desert city on the planet. Bordering Mexico and with the largest indigenous population in the US, Arizona (and Phoenix) is a multicultural melting pot with unique influences. As the 5th largest urban metro in the US, Phoenix has become a hotspot for great food, drink, sport, and recreation. The Convention Center is in the heart of Downtown Phoenix, close to sporting events, the music scene, and urban art communities. Before you leave, be sure to check out one of our stunning sunsets.

Our program theme highlights the innovation and resilience needed during these challenging times for behavioral nutrition and physical activity, and it illustrates our commitment as a professional organization to supporting healthy outcomes for the most vulnerable. We have 4 amazing Keynote Speakers and 4 shorter Rising Star talks, highlighting the up-and-coming research from the Network of Early Career Researchers and Students of *ISBNPA and outstanding early career submissions.*

We would like to elevate and sincerely thank the conference Organizing Committee, our exceptional Executive Director Antonio Palmeira, and Kat Duda and the team from Venue West for doing such an outstanding job in creating an exciting meeting that incorporates the breadth of research interests of ISBNPA members and delegates.

We wish you all a wonderful meeting and hope you learn something new, enjoy catching up with old friends, make some new ones, and most importantly, be safe and have a great time.

Warmly,
Meg Bruening & Marc Adams
ISBNPA 2022 Co-Chairs

WELCOME TO PHOENIX

Phoenix is the capital of the southwestern U.S. state of Arizona. Known for its year-round sun and warm temperatures, it anchors a sprawling, multicity metropolitan area known as the Valley of the Sun. It is also the fifth-most populous city in the United States, the largest state capital by population, and the only state capital with a population of more than one million residents. The city is within one of the world's sunniest regions, with its sunshine duration comparable to the Sahara region. With 3,872 hours of bright sunshine annually, Phoenix receives the most sunshine of any major city on Earth.

More than 41,000 acres of Phoenix desert and mountain parks and preserves offer everything from busy, arduous summit climbs to secluded, meandering valley walks. Over 40 trailheads provide access to more than 200 miles of trails. Phoenix has an incredible spectrum of accommodation styles and special events venues that boast sophisticated meeting facilities, impeccable service and plenty of room for meeting as well as exploring, pampering and unwinding.

Phoenix's downtown vibe has a style all its own, with a trendy yet unpretentious ambiance that's accessible to all. The result is an eclectic mix of independent coffee shops, restaurants, bars, music venues and art galleries that create an inspiring atmosphere for fueling team collaboration and fresh ideas.

Travelling to Phoenix can cross off various bucket list items. The Valley of the Sun offers amazing day trips to unforgettable places like Grand Canyon, Sedona, Montezuma Castle National Monument, Petrified Forest National Park and many more.

COMMITTEES

Organizing Committee

Co-Chairs:

- Meg Bruening – College of Health Solutions, Arizona State University, USA
- Marc Adams – College of Health Solutions, Arizona State University, USA

Committee Members

- Rodney Joseph – Edson College of Nursing and Health Innovation, Arizona State University, USA
- Melanie Hingle – Department of Nutritional Sciences, College of Agriculture & Life Sciences, University of Arizona, USA
- António L Palmeira – ISBNPA Executive Director, Portugal
- Erica Hinckson – ISBNPA President, Auckland University of Technology, New Zealand
- Amy Yaroch – Gretchen Swanson Center for Nutrition, USA
- Kelly Cosgrove – College of Health Solutions, Arizona State University, USA
- Kylie Wilson – College of Health Solutions, Arizona State University, USA
- Marie Löf – Department of Biosciences and Nutrition, NOVUM, Sweden

Executive Committee

- Erica Hinckson – ISBNPA President, Auckland University of Technology, New Zealand
- Meg Bruening – Arizona State University, United States of America
- Sebastien Chastin – Glasgow Caledonian University, United Kingdom
- Kirsten Davison – Boston College, United States of America
- Scott Duncan – Auckland University of Technology, New Zealand
- Jenna Hollis – University of Newcastle, Australia
- Andre Muller – National University of Singapore, Singapore
- Teresia O'Connor – Baylor College of Medicine, United States of America
- Adewale L. Oyeyemi – University of Maiduguri, Nigeria
- Ines Santos – Universidade Lusófona, Portugal
- Delfien Van Dyck – Ghent University, Belgium
- Simone Verswijveren – Institute for Physical Activity and Nutrition (IPAN), Australia
- Amy Yaroch – Gretchen Swanson Center for Nutrition, United States of America
- António L Palmeira – ISBNPA Executive Director, Universidade Lusófona, Portugal

THANK YOU

The ISBNPA 2022 Abstracts Committee wish to acknowledge the abstract reviewers for the ISBNPA 2022 Annual Meeting. Their expertise is central to the quality of communications of the meeting.

Thank you for your invaluable contribution to the ISBNPA.

—Antonio Palmeira, Ines Santos, Meg Bruening & Scott Duncan (Chairs of the Abstracts Committee)

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Teatske Altenburg
Odysseas Androutsos
Maureen Ashe
Tom Baranowski
Elling Bere
Stuart Biddle
Meg Bruening
Greet Cardon
Valerie Carson
Mai Chin A Paw
Verity Cleland
Stacy Clemes
Sofie Compernolle
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Bas de Geus
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Tom Deliens
Kacie Dickinson
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SILVER SPONSORS

Arizona State University College of Health Solutions

The College of Health Solutions at Arizona State University is dedicated to translating scientific research into practical interventions. Its programs prepare students to address the challenges facing our populations to stay healthy, improve their health and manage chronic disease. Programs are offered in behavioral health, biomedical informatics and diagnostics, health care delivery, movement sciences, nutrition, population health, and speech and hearing science. Graduates are prepared to make an impact in the health workforce by addressing the factors that enable people to be and stay healthy. Learn more at chs.asu.edu.

Edson College of Nursing and Health Innovation

The Edson College of Nursing and Health Innovation at Arizona State University is distinguished as a model for excellence and inspiration in nursing and interprofessional practice, education and research to advance knowledge and innovative practice models, and new solutions to optimize the health and well-being of our diverse communities.

For more than 60 years, Edson College has provided a first-class education to thousands of health care alumni, making up our Legacy of Care and Discovery.

Gretchen Swanson Center for Nutrition

The Gretchen Swanson Center for Nutrition is an independent, nonprofit research and evaluation organization providing scientific expertise and partnership in the areas of healthy eating and active living, food insecurity, social determinants of health, and more. The Gretchen Swanson Center specializes in the development and implementation of mixed-methods approaches and works with partners internationally to provide research and evaluation services to communities, nonprofits, academic and government institutions, and policymakers. For more information, please visit www.centerfornutrition.org.

University of Arizona School of Nutritional Science & Wellness

Food, nutrition, and physical activity are essential to human health, and they're at the center of our work in the School of Nutritional Sciences and Wellness at the University of Arizona. We take a multifaceted, interdisciplinary approach to advancing the discovery and translation of the roles of nutrition and physical activity in optimizing health and wellness for people of all ages.

NESI DINNER

Actigraph

Arizona State University College of Health Solutions

The College of Health Solutions at Arizona State University is dedicated to translating scientific research into practical interventions. Its programs prepare students to address the challenges facing our populations to stay healthy, improve their health and manage chronic disease. Programs are offered in behavioral health, biomedical informatics and diagnostics, health care delivery, movement sciences, nutrition, population health, and speech and hearing science. Graduates are prepared to make an impact in the health workforce by addressing the factors that enable people to be and stay healthy. Learn more at chs.asu.edu.

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movisens

movisens provides technologies for ambulatory assessment, mobile psycho-physiological measurement and expertise in the field of stress- and lifestyle-monitoring and analysis. The movisens product line combines innovative and cutting-edge products such as wearable sensors for physical activity, ECG and electrodermal activity and suitable data analysis software. Our EMA platform movisensXS is the leading solution for experience sampling with smartphones. Today movisens markets Europe's most complete wireless ambulatory assessment and analysis package for unobtrusive monitoring of human physiology, mood, stress, behaviour and performance. movisens sensors and systems are used by top researchers all over the world.

PAL Technologies

The activPAL is a discrete body worn sensor designed to provide the researcher with objective measures of person-centered free-living physical behaviors. The standard activPAL outcomes are based on posture allocation and stepping behavior. These Real World Outcomes (RWO) are based on an analysis of the patterns of participation in the primary activities of Lying, Sitting, Standing and Stepping (and travel choices of Cycling and Car travel). In addition, the latest generation of the activPAL characterizes the locus of activity estimating the time spent in the primary household locus in comparison to the wider community loci.

Springer Nature

University of Arizona School of Nutritional Science & Wellness

Food, nutrition, and physical activity are essential to human health, and they're at the center of our work in the School of Nutritional Sciences and Wellness at the University of Arizona. We take a multifaceted, interdisciplinary approach to advancing the discovery and translation of the roles of nutrition and physical activity in optimizing health and wellness for people of all ages.

Conference Venues

1 **Main Venue:**
South Building of Phoenix Convention Center
33 S. 3rd St.

2 **Workshop Location:**
Arizona State University
Health North Building
(Downtown Campus)
550 N. 3rd St.

Hotels

3 Sheraton Phoenix Downtown

4 Residence Inn/Courtyard by Marriott Phoenix Downtown

5 Hyatt Regency Phoenix

6 Hilton Garden Inn

PHOENIX CONVENTION CENTER SOUTH

Registration Desk (Ballroom Lobby)
Plenary Room (Ballroom)
Posters, Exhibits, Food & Beverage (Rooms 160–167)
Breakouts Rooms (150–157)
Reserved (158)
Speaker Ready Room (159)

Plenary Room (Ballroom)

Reserved

Speaker Ready Room

| 155 | 156 | 157 | 158 | 159 |

South Lobby

| 154 | 153 | 152 | 151 | 150 |

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Posters Exhibits Food & Beverage

Registration Desk (Ballroom Lobby)

M W
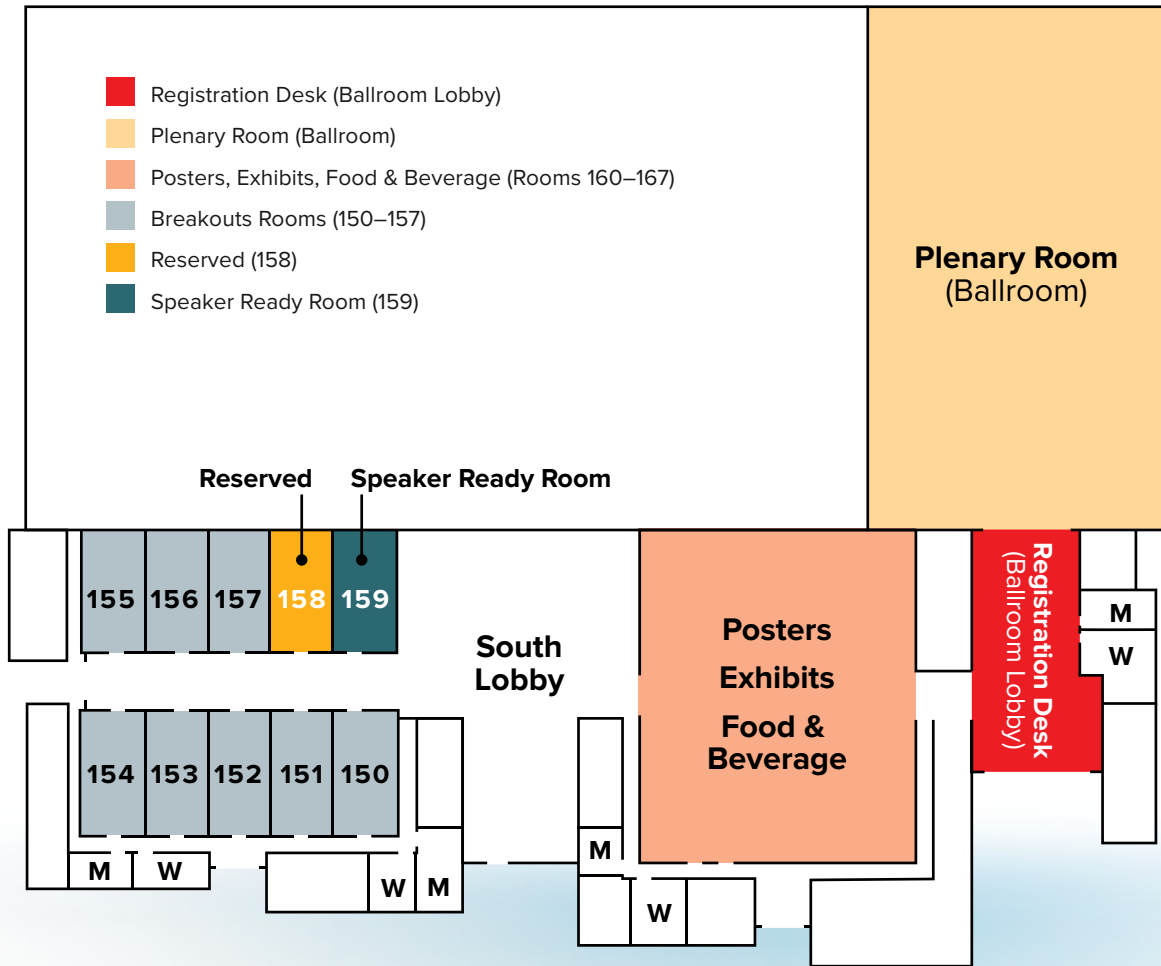
Venue

South Building, Phoenix Convention Center (PCC) is at the center of Downtown Phoenix. ISBNPA Annual Meeting will be held at the South building with the entrance from Third Street. **PCC Location:** 33 S 3rd St, Phoenix, AZ 85004, United States

Registration

Registration Desk for ISBNPA 2022 will be located in the Ballroom Lobby and will be open at the following times:

- Wednesday, May 18:   14:00 hours – 19:00 hours
- Thursday, May 19:   07:00 hours – 18:00 hours
- Friday, May 20:   07:30 hours – 17:00 hours
- Saturday, May 21:   08:00 hours – 14:00 hours

The exhibition, coffee breaks, lunches and Poster sessions will be located in the Poster Area 160-167

Exhibition schedule

Set-up:
- Wednesday, May 18:   13:00 hours – 16:00 hours

Exhibit hours:
- Thursday, May 19:   8:30 hours – 17:35 hours
- Friday, May 20:   8:00 hours – 18:10 hours
- Saturday, May 21:   8:00 hours – 13:35 hours

Move-out:
- Saturday, May 21: beginning at 14:00 hours

Morning Coffee Breaks and Poster Sessions

- Thursday, May 19:   10:50 hours – 12:05 hours
- Friday, May 20:   10:50 hours – 12:05 hours
- Saturday, May 21:   10:50 hours – 12:05 hours

Afternoon Coffee Breaks

- Thursday, May 19:   16:05 hours – 16:20 hours
- Friday, May 20:   16:05 hours – 16:20 hours

Lunches

- Thursday, May 19:   13:20 hours – 14:30 hours
- Friday, May 20:   13:20 hours – 14:30 hours

Social Events Tickets

Wednesday, May 18
The Welcome Reception will be held at the Ballroom Lobby level 2 **from 18:00 to 20:00 hours.**

Thursday, May 19
The ISBNPA Dinner will be held at Desert Botanical Garden from **18:30 to 22:00 hours.** The Garden is home to thousands of species of cactus, trees and flowers from all around the world spread across 55 acres. Our delegates will be able to stroll through five thematic trails to explore the fascinating beauty of the Sonoran Desert, from towering cacti and alluring succulents to brilliant wildflowers and lush trees. In addition to admiring the fascinating nature, we will get the opportunity to admire the art installations of Dale Chihuly.

Please note that the ISBNPA Dinner ticket is not included in full registration fee and is available for purchase during the registration process. The evening will include a buffet dinner, with entertainment and access to explore the garden trails.

Please check the back of your badge to confirm you already have a ticket as *tickets will NOT be available at the door.*

Transportation to the Garden:
- For everyone who purchased a ticket to the ISBNPA Dinner, you should have received an email with instructions.
- A Lyft code (ride share system) has been arranged and we encourage you to go with colleagues to keep costs down. We made these arrangements to provide you with the flexibility of leaving from your hotel at a the time that is convenient for you.
- We encourage you to pre-book your ride on the App.
- Address to the Desert Botanical Garden: 1201 N Galvin Pkwy, Phoenix, AZ 85008, United States

Internet Access

1. There is unlimited complimentary WiFi in the lobby areas only:
   Network: -PCC-FREE-WIFI (no password required)

2. We have limited WiFi in the meeting rooms and ask our colleagues from North America to use their data plans, if possible.
   Network: ISBNPA22; Password: HelloArizona

Social Media

Follow us on Facebook, Twitter and Instagram

International Society of Behavioral Nutrition and Physical Activity

@isbnpaadmin

Post or Tweet about ISBNPA 2022 using the following hashtags: #isbnpaannualmeeting
#isbnpa2022
#StayActive
#NESI_ISBNPA

Abstracts

The abstract book will be available on the meeting website.

Posters

Posters will be displayed in Poster Hall 160-167. Presenting authors are required to attend their posters during the appropriate poster session. Push pins will be provided to stick posters to each poster board. Each poster will be allocated a poster board that corresponds to the abstract submission ID. Posters should be mounted and removed by the presenters themselves at the following times:

Thursday, May 19 – Poster Session 1:
- Mounted between 07:00 and 08:00 hours and removed between 17:30 and 18:30 hours.
- Poster Session 1 presenters should stand by their poster to discuss the content with delegates from 10:50 to 12:05 hours on Thursday, May 19.

Friday, May 20 – Poster Session 2:
- Mounted between 07:00 and 08:00 hours and removed between 17:30 and 18:30 hours.
- Poster Session 2 presenters should stand by their poster to discuss the content with delegates from 10:50 to 12:05 hours on Friday, May 20.

Saturday, May 21 – Poster Session 3:
- Mounted between 07:00 and 08:00 hours and removed between 13:00 and 13:30 hours.
- Poster Session 3 presenters should stand by their poster to discuss the content with delegates from 11:20 to 12:20 hours on Saturday, May 21.

Any posters left on the boards at the end of each session will be removed by the organizers and can be picked up at the Registration Desk. Posters not collected by the end of the Meeting will be recycled.

CU Credits

25 CPEs will be available for RDNs/DTRs, pending approval from the Commission on Dietetic Registration.

Speakers' Ready Room

The Speakers' Ready Room will be located next to the breakout rooms in room 159. Speakers should visit this area, preferably at least two hours prior to the start of their session, to upload their presentation to the network and to organize their materials. Technicians will be on hand in this area should speakers have any questions or require assistance. The room will be open at the following times:

- Wednesday, May 18: 14:00 hours – 17:00 hours
- Thursday, May 19: 07:00 hours – 17:00 hours
- Friday, May 20: 07:00 hours – 17:00 hours
- Saturday, May 21: 07:00 hours – 12:00 hours

Delegate Name Badges

For security purposes, delegate badges must be worn at all times. Some badges will have a different categories of attendee noted at the bottom of the name badge.

General Assistance

Please go to the Registration Desk located in the Ballroom Lobby if you have any queries. Our student helpers are on hand to assist.

USEFUL INFORMATION

Banking Hours

Regular banking hours are Monday to Friday between 09:00 hours and 17:00 hours. Some banks may also be open on weekend. Cashpoints (ATMs) are available at all times.

Business Centre

The UPS Store #5750
125 N 2nd St, Ste. 110
Phoenix, AZ 85004
Next to Starbucks at 2nd Street and Adams.
https://locations.theupsstore.com/az/phoenix/125-n-2nd-st

Credit Cards

All major credit cards, including Visa, American Express, Discover, and MasterCard are widely accepted in Phoenix.

Mobile Phones

Out of courtesy to speakers and other delegates, mobile phones must be set to silent mode before entering sessions but we encourage our delegates to use the mobile app to create their personal agenda.

Parking

https://www.phoenixconventioncenter.com/dev/Pages/Parking.aspx

Public Transport

Valley Metro is the regional public transportation agency that operates city buses that travel along the main traffic arteries. They are also relatively inexpensive ($2 per ride; $4 for an all-day pass). You can view the available routes and plan your trip directly on their website.

Phoenix Sky Harbor is served by two Valley Metro bus routes. Travelers will also find a convenient airport connection aboard the PHX Sky Train® from the Valley Metro Rail station at 44th Street and Washington.

Intercity/Statewide Shuttles

Various intercity shuttle services are available for those coming to or from Sky Harbor.

Ride Share

Ride share services are available 24 hours a day, seven days a week.

Taxis

Any taxi company can drop off at the airport. Three taxi companies are under contract to pick up passengers at airport curbs, and their prices are regulated and set by City code. These companies include AAA/Yellow Cab, Mayflower Cab and VIP Taxi.

WEDNESDAY, MAY 18

Welcome Reception

18:00 to 20:00 hours
Ballroom/ Ballroom Lobby

All registered delegates and registered accompanying guests are invited. The Welcome Reception of the conference will be held at the Phoenix Convention Centre right after the first Keynote Session. Delegates will be able to enjoy light refreshments and a beverage while catching up with old friends and making new ones after a long time since the last in-person meeting.
(Laura please add a nice image of networking if there is a room/space for it)

THURSDAY, MAY 19

ISBNPA Dinner

18:30 to 22:00 hours
Tickets to attend the dinner are required and limited.
Dress code: Smart/Casual

The ISBNPA Dinner will be held at Desert Botanical Garden from **18:30 to 22:00 hours.** The Garden is home to thousands of species of cactus, trees and flowers from all around the world spread across 55 acres. Our delegates will be able to stroll through five thematic trails to explore the fascinating beauty of the Sonoran Desert, from towering cacti and alluring succulents to brilliant wildflowers and lush trees. In addition to admiring the fascinating nature, we will get the opportunity to admire the art installations of Dale Chihuly.

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- We encourage you to pre-book your ride on the App.
- Address to the Desert Botanical Garden: 1201 N Galvin Pkwy, Phoenix, AZ 85008, United States

ISBNPA MEETINGS

Wednesday, May 18

08:30 – 16:00 hours: Executive meeting, ASU

Thursday, May 19

13:20 – 14:30 hours: IJBNPA Meeting, Room 150

Friday, May 20

13:20 – 14:30 hours: ISBNPA Members' Meeting, Room 150

STAY ACTIVE!

Thursday, May 19: 7:00 — 8:30

Get a workout in at Arizona State University's Sun Devil Fitness Center (SDFC) in Downtown Phoenix. ISBNPA delegates will have access to the facility, including cardiovascular and strength equipment, and free weights (350 N. 1st Ave.).

Friday, May 20: 7:00 — 7:45

Join us for a Walking Tour with the Downtown Phoenix Ambassadors. This walking tour will highlight points of interest in downtown Phoenix. Meet at the Phoenix Convention Center West (2nd Street & Adams). Dress for movement and bring water.

Saturday, May 21: 7:00 — 7:45

Start the last day of the conference with a yoga/mindfulness session led by a certified yoga instructor on the West Patio of the Phoenix Convention Center South Building (33 S. 3rd St.). Attendance for this session is limited to 25 attendees. Please sign-up at the registration desk. Yoga mats will be provided

7:45 — 8:15

NESI is hosting a Coffee Meet-Up at the Arizona Center commons (455 N 3rd St.) following the yoga/mindfulnes session. Options for purchase include Starbucks and Bosa Donuts.
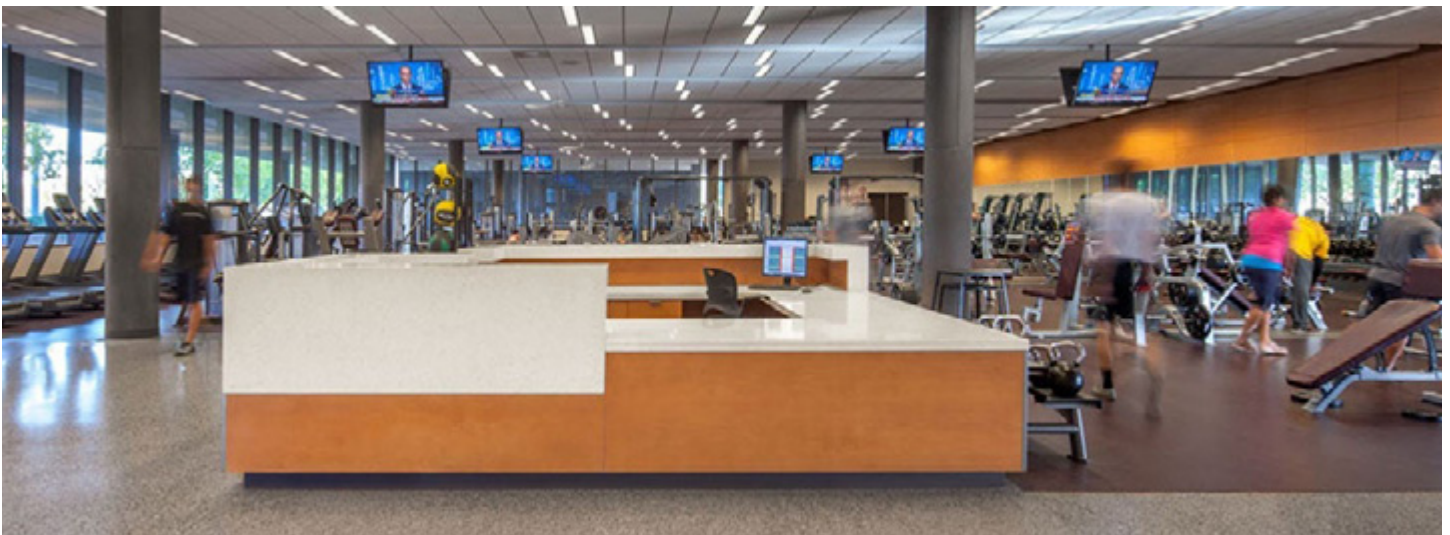
Implementation, Translation, Scale-up and Sustainability

Room: 150
Date: May 19
Time: 12:05 – 13:20

The SIG aims to build a multidisciplinary community of ISBNPA members interested in Implementation Science related to nutrition, promoting physical activity and reducing sedentary behaviour.

In the last few decades, governmental and other funding agencies have prioritized the development, piloting and evaluation of evidence-based public health programs, including those focussed on healthy nutrition, physical activity and sedentary behaviour. Despite evidence for the positive impact of such programs, and the increasing recognition of the importance of robust process evaluations within trials, there is less evidence for program effectiveness at scale and little evidence about successful scale-ups and sustained implementation.

There appears to be a gap between the development of efficacious interventions and their wide scale uptake and sustainability in practice. With the public health impact of these programs dependant on implementation on wider scale, it is timely to develop multi-disciplinary, international and collaborative forum for researchers, which combines the expertise of relevant behavioural, physical activity, nutrition, policy and sociological disciplines. Implementation science in the field of physical activity, nutrition and sedentary behaviours is relatively new and set to grow as the need to understand how implementation, scalability and sustainability can be promoted and evaluated.

Cancer prevention and management

Room: 151
Date: May 19
Time: 12:05 – 13:20

Lifestyle interventions and behaviour change across the cancer prevention and control continuum incorporating primary prevention, screening and early detection, and lifestyle interventions for cancer patients and survivors.
There is increasing recognition of the role of physical activity, diet and weight management in the primary prevention of cancer prevention (notably breast and colorectal) and there is an urgent need to demonstrate the feasibility and impact of behaviourally focussed interventions (on health outcomes and relevant markers of disease). In addition, there is increasing interest in the impact of lifestyle interventions in cancer survivors who are at risk of cancer recurrence, development of new primary cancers, treatment related side effects and other non –communicable chronic diseases.

This area of intervention is relatively new and set to grow as the need for prevention strategies gains international support and the number of cancer survivor's increase. It is timely therefore to develop a multi-disciplinary, international, and collective of researchers which combines the expertise of relevant behavioural,

physical activity and nutrition disciplines. These areas are important for policy level, public health and individual level interventions

E- & mHealth (SIG)

Room: 153
Date: May 19
Time: 12:05 – 13:20

The purpose of the SIG is to build a community of interested ISBNPA members to advance e- & mHealth related research specifically related to physical activity, dietary and sedentary behaviors.

The e- & mHealth Special Interest Group (SIG) will provide a platform to address e- & mHealth related research within the framework provided by the International Society for Behavioral Nutrition and Physical Activity (ISBNPA). ISBNPA addresses behavioral research in nutrition, physical activity and sedentary behavior.

Within the ISBNPA and SIG context, e- & mHealth are defined as the use of electronic & mobile technologies (e.g. the Internet, mobile devices and apps) to expand, assist or enhance health and health care delivery.

With increasing prevalence of unhealthy dietary practices, physical inactivity and sedentary behavior, effective and low cost approaches that can improve these health behaviors in large populations are needed to improve health and well-being and reduce health care costs. Interactive electronic & mobile technologies have potential to expand, assist and/or enhance delivery of health promotion initiatives and thus improve health behavior outcomes. Though a sizeable body of literature is developing in this area, the science of using e- and mHealth technologies is still relatively young and large gaps remain. For example, more work needs to be done to improve the (long-term) effectiveness and reach of behavioral e- and mHealth interventions, and many questions remain around optimal implementation and dissemination.

The purpose of the SIG is to build a community of interested ISBNPA members to advance e- & mHealth related research specifically related to physical activity, dietary and sedentary behaviors. The SIG will provide a forum to discuss new evidence, underlying mechanisms and specific components of e- &mHealth-based interventions that may lead to enhanced behavioral outcomes.

The e- & mHealth newsletters are sent regularly to SIG mailing list. You can join this mailing list by updating your membership profile and adding the SIG to your preferences; by sending an email to executivedirector@isbnpa.org or by accessing one of the newsletters and hitting subscribe on the footer of the newsletter.

Children and families

Room: 154
Date: May 19
Time: 12:05 – 13:20

The Children and Families SIG aims to build a community of ISBNPA members who share an interest in conducting research with children and families around nutrition behaviors, physical activity, sedentary behaviors, and sleep.

SCOPE
The key focus of this SIG is with children aged 0–18 years and their families, across a range of different settings, including schools, homes and neighborhoods.

Within this SIG, the term 'families' is broadly defined to include parents, caregivers, siblings and extended family.

Research includes, but is not limited to, nutrition behaviors, physical activity, sedentary behaviors, and sleep in the context of children, their families, and parenting/ caregiver practices

Please note: ISBNPA members who focus specifically on research relating to policies and practices centre-based child care or family day care homes, should consider joining the Early Care and Education (ECE) SIG.

GOALS
The Children and Families Special Interest Group (SIG) will provide a platform for members to:

- Share and discuss recent evidence and developments relating to children and families' behavioral nutrition, physical activity, sedentary behavior and sleep as well as discuss future directions for research, policy and practice.
- Connect and form collaborations with other researchers globally with similar research interests.
- Create a community of researchers to address critical research gaps in order to enhance the health and wellbeing of children and families.

Communication with members
The Children and Families SIG will connect and communicate with SIG members through webinars, social media, newsletters, and face-to-face meetings and social events at the Annual ISBNPA conference.

Ageing

Room: 155
Date: May 19
Time: 12:05 – 13:20

The Ageing SIG brings together researchers interested in how physical activity, sedentary behaviour and nutrition impact on the health of older people. This SIG recognises that the impacts of these behaviours may start before old age (traditionally defined as aged 60 or 65 years and older) which is also reflected in the name of the SIG.

One of the great public health successes of the 20th Century was the increase in life expectancy in populations around the world. One of the key challenges of the 21st Century will be to ensure that these extra years are healthy. As people age they may undergo transitions in employment, housing and social networks. These may impact health behaviours resulting in sarcopenia and declines in physical and cognitive functioning leading to disablement, dependence and reduced quality of life. However, regular physical activity, low levels of sedentary behaviour and optimal nutrition can help to prevent these declines and are crucial to maintaining independent living, something older adults themselves rate as very highly important to them.

The proposed Ageing SIG will take a multidisciplinary approach to focus on how physical activity, sedentary behaviour and nutrition are important for healthy ageing.

AIMS
The Ageing SIG aims to build a community of ISBNPA members interested in promoting optimal sedentary behaviour, physical activity and nutrition to ensure healthy ageing. This SIG will provide a platform to disseminate evidence and to promote networking and collaboration.

GOALS
- Develop a network of clinicians, policy makers and researchers interested in Ageing;
- Facilitate discussion and action;
- Encourage collaboration and networking;
- Provide professional support through exchanging information about relevant conferences, seminars and workshops and offering professional development opportunities;
- Map activities of members;
- Engage with other SIGs and societies related to Ageing, e.g. Society of Behavioral Medicine, International Association of Geriatrics and Gerontology.

Early care and education Room:

Room: 150
Date: May 20
Time: 12:05 – 13:20

The Early Care and Education (ECE) Special Interest Group serves to support existing ECE researchers and researchers with emerging interests in physical activity, sedentary behaviors, sleep and nutrition during the early childhood period.

The focus of this SIG is young children's engagement in out of home child care whether infant care, nursery school, preschool, kindergarten, child care centers, or family childcare home providers.

The ECE SIG will serve as a source of communication, information sharing, and collaboration among researchers whose goals are to improve the young child's health, growth and development through healthy eating, regular physical activity, adequate sleep and minimizing sedentary behaviors.

Young Adults

Room: 151
Date: May 20
Time: 12:05 – 13:20

Young adults (including emerging to late young adulthood aged 16–35 years) are on a weight gain trajectory, which is placing them at increased risk of heart disease, cancer, and diabetes. Poor dietary behaviours, physical inactivity and sedentary lifestyles are key factors contributing to this weight gain trajectory. Young adulthood is a transitional life stage including many significant life changes, such as leaving the family home, commencing university or entering the workforce. Therefore, there are many unique factors influencing the dietary behaviours, physical activity and sedentary behaviours of this target group, and our ability to intervene to improve them.

The young adult target group has received more research interest and investment in recent years but is a relatively new and growing area of research. It is also becoming evident conventional health initiatives are ineffective in this population. It is therefore an opportune time to establish a global, multidisciplinary community of researchers to help innovate and further advance this area of research.

The Young Adult (aged 16-35 years) SIG will create a community of ISBNPA members with research expertise and interest relating to young adult's behavioural nutrition, physical activity and sedentary behaviour. The SIG will provide an opportunity for members to:

Discuss and disseminate new evidence relating to young adult's behavioural nutrition, physical activity and sedentary behaviour.

Identify and address significant research gaps relating to young adult's behavioural nutrition, physical activity and sedentary behaviour.

Foster global collaborations to address identified research gaps, and advance research relating to young adult's behavioural nutrition, physical activity and sedentary behaviour.

Socio-economic inequalities

Room: 152
Date: May 20
Time: 12:05 – 13:20

Our aim is to serve ISBNPA members as a 'community' with an interest in exchanging and advancing knowledge into the socioeconomic inequalities in nutrition, physical activity and sedentary behaviours.

This SIG was established to:

Provide a forum for researchers with shared interests and expertise in socioeconomic inequalities in nutrition, physical activity and sedentary behaviours to exchange views, disseminate information, provide support, promote research, and encourage and organise activities such as symposia or workshops at the annual meeting.

Participatory Research in Health Promotion

Room: 153
Date: May 20
Time: 12:05 – 13:20

Participatory research is a promising and innovative approach to increase the effectiveness and impact of health promotion and address. This approach is especially useful to address public health "wicked" problems (such as the obesity epidemic) which are particularly resistant to resolution, specifically in vulnerable and difficult to reach populations.

The underlying assumption is that the persons whose life or work is the subject of the research actively collaborate with academic researchers throughout the entire research process, from identifying problems they struggle with to co-designing, implementing, evaluating and where possible advocating solutions for these problems. This requires a power-sharing governance between academic and non-academic stakeholders and is believed to result in increased feelings of empowerment, mutual learning and innovative insights that are helpful in gaining an in-depth understanding of specific health promotion issues and potential solutions. While many researchers are convinced about the value of participatory research, they struggle with the challenges that comes with it.

This SIG aims to build a community of ISBNPA members who conduct or have an interest in using participatory research in health promotion focusing on nutrition, physical activity, sedentary behaviour and sleep. We will provide a forum to

a) exchange views and experiences,

b) discuss challenges that comes along with participatory research,

c) promote and support high-quality participatory research, and

d) encourage and organize activities at the annual ISBNPA meeting (e.g. symposia and workshops), i.e. supporting the aforementioned activities.

We will communicate with the SIG members through webinars, social media, ISBNPA newsletter and face-to-face events at the annual ISBNPA meetings.

Dr. Sara Bleich *is the Director of Nutrition Security and Health Equity in the Food and Nutrition Service at the U.S. Department of Agriculture (USDA), after serving as the Senior Advisor for COVID-19 in the Office of the Secretary at USDA (2021). She is a policy expert and researcher who specializes in diet-related diseases, food insecurity and racial inequality with more than 175 peer-reviewed publications. She is on leave from her post as a Professor of Public Health Policy at the Harvard T.H. Chan School of Public Health, the Kennedy School of Government, and the Radcliffe Institute for Advanced Study. Dr. Bleich was also a White House Fellow during the Obama administration, where she worked at USDA as a Senior Policy Adviser for Food, Nutrition and Consumer Services and with the First Lady Michelle Obama's Let's Move! Initiative. She holds degrees from Columbia (BA, Psychology) and Harvard (PhD, Health Policy).*

Advancing nutrition security through the USDA Federal Nutrition Safety Net and leveraging behavior change science to inform policy

This keynote address will describe how USDA is advancing nutrition security through the Federal Nutrition Safety Net with an emphasis on key streams of research which can help inform policy. Dr. Bleich will first provide an overview of the variety of actions the Biden-Harris Administration has taken to prioritize nutrition security during the COVID-19 pandemic. That is, spending on USDA's food and nutrition assistance programs jumped 30 percent in fiscal year (FY) 2020 to a record $122.1 billion. This included USDA waivers allowing flexibility in the administration of USDA's 15 existing food and nutrition assistance programs and the creation of programs, including Pandemic Electronic Benefit Transfer (P-EBT, money for missed meals due to school closures). In FY 2021, USDA expenditures on federal nutrition assistance programs was further expanded through the American Rescue Plan, which extended SNAP, increased access to fruits and vegetables for each WIC participant, extended and expanded P-EBT, added new funding for US territories, and provided funding for meals for young adults experiencing homelessness. USDA also revised the Thrifty Food Plan – the basis for determining SNAP benefit amount – to better reflect the cost of a healthy basic diet. Taken together, the USDA is taking critical steps to ensure access to safe, healthy and nutritious food in all communities to assist with pandemic recovery and beyond. Throughout the presentation, Dr. Bleich will integrate key ways behavioral change science has informed USDA's actions to date and put forth recommendations for how behavioral change science can help the USDA further advance nutrition security through the Federal Nutrition Safety Net.

David Conroy, PhD *is a Professor at The Pennsylvania State University. His research aims to make behavior change less effortful and more enjoyable. This work seeks to realize the vision of precision behavioral interventions by leveraging information about people in context to promote health behaviors at critical moments of opportunity and vulnerability. His ongoing research is funded by the National Institutes of Health and the National Science Foundation. He currently serves as the President of the Society of Behavioral Medicine.*

Context-sensitive, just-in-time interventions to promote physical activity and fluid intake

Many ordinary behaviors in daily life can have an extraordinary impact on health. These ordinary behaviors, such as physical activity or fluid intake, become second nature and automatic for some. Others struggle with these behaviors, especially when their lives are busy and competing goals vie for their attention and effort. One solution for this sizable latter group involves using just-in-time adaptive interventions to tailor intervention delivery to moments of opportunity or vulnerability. In this talk, I will describe ongoing work that leverages technology to monitor contextual changes and inform micro-intervention decisions in two digital messaging interventions. The first example involves a physical activity intervention that applies tools from control systems engineering to develop person-specific models of physical activity dynamics and decision rules based on those models. Inputs in these models include a person's recent physical activity, the day of the week, momentary location-specific weather conditions, and historical responses to different message content (e.g., move more, sit less). Those person-specific models are used to determine if a message at that moment would be expected to increase physical activity and which message would be best to send. The second example involves a fluid intake intervention for patients with kidney stones. It integrates a connected water bottle, mobile application, and a custom smartwatch app that detects drinking gestures into a semi-automated tracking system to detect drinking behavior. When patients with goals to drink regularly throughout the day lapse, the system delivers delightful reminders to drink via multimedia text messages. These digital tools illustrate the potential for drawing on contextual information to deliver interventions at moments of opportunity or vulnerability. They represent one step toward realizing a vision of precision behavioral interventions for physical activity and behavioral nutrition.

Dr. Olga Sarmiento *is a Professor at the School of Medicine at the Universidad de Los Andes in Bogotá Colombia. Her research focuses on applied multidisciplinary and transdisciplinary research by evaluating community programs in Latin America. She has served as a board member in the International Society of Urban Health (ISUH), the Latin American Network of Urban Health (LAC-Urban Health), and the International Society of Physical Activity and Public Health (ISPAH). She is part of the project SALURBAL (Urban Health in Latin America), the IPEN network, and the Stanford-Colombia Collaboratory on Chronic Disease (S-C3). She has published 190 peer review papers.*

Inequality in physical activity from the region of Latin America

Latin America is one of the most violent and urbanized regions in the world, with large populations living in informal settlements and substantial social and spatial inequalities. Together, these social disadvantages manifest themselves in physical activity inequalities within and across cities. Amid social and gender inequalities, Latin America is also recognized as a major hub for innovation in recreation, urban transport, and mobility policies. These interventions provide culturally competent interventions to promote physical activity among vulnerable populations and women. During this presentation, I will show the evaluation through natural experiments and observational studies that use a mixed-methods approach of programs including the Ciclovías Recretivas, physical activity programs in Parks, and mass transit systems for the public transportation. These programs, out of the health sector have the potential to promote physical activity and impact the well-being of women, children, and older adults and their urban settings in the region of Latin America and could serve as examples for other regions in the world.

Dr. Valarie Blue Bird Jernigan, *DrPH, MPH is an Indigenous (Choctaw) community-based participatory researcher. Her work focuses on intervention science that combines research with action for social change. Valarie received her doctorate in public health from the University of California, Berkeley, and completed a postdoctoral fellowship in cardiovascular disease prevention at Stanford University, where she also completed a degree in documentary filmmaking. She has been the Principal Investigator or Co-Investigator on 10 NIH-funded trials focused on food systems and health, including the THRIVE study, the first randomized trial of healthy makeovers in tribally-owned convenience stores, and the FRESH study, a farm-to-school intervention to reduce obesity in Native families. Valarie directs the Center for Indigenous Health Research and Policy at Oklahoma State University Center for Health Sciences where she is a Professor of Medicine. In all her work, she has fostered long-term mutually beneficial relationships with Indigenous communities that support tribal sovereignty and build the capacity of Indigenous communities to improve health.*

Community-based participatory interventions to supply Indigenous food sovereignty and health

Indigenous communities experience disproportionality high rates of food insecurity and chronic disease as a byproduct of settler-colonial activities, which included forced relocation to rural reservation lands and degradation of traditional subsistence patterns. Many Indigenous communities have worked to revitalize their local food systems by pursuing food sovereignty, regularly expressed as the right and responsibility of people to have access to healthy and culturally appropriate foods, while defining their own food systems. Food sovereignty is a promising approach for improving health. However, virtually no scientific interventions have incorporated this approach into community based research studies to improve diet and reduce chronic disease risk. This presentation will share the process and outcomes from two randomized control trial studies guided by a food sovereignty framework with Indigenous communities in Oklahoma.

Audrey Elford, *Institute of Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Australia.*

Healthy, Environmentally Sustainable Food in Childcare – is it possible?

Food is a strong lever for both human and planetary health. Around half of children in high income countries attend childcare for an average of 30 hours per week, often being provided with 1 main meal and 2 snacks per day. The childcare setting therefore offers a promising opportunity to cultivate food practices that can benefit the health of the child and the health of the planet. In this presentation I will discuss the overall theme of my PhD "Healthy, environmentally sustainable food provision in childcare". I will provide an overview of the three main studies, which include quantitative, qualitative and co-design research methodologies. Results of studies conducted and currently underway will be shared, including the complexities and changes made due to COVID restrictions, implications for practice and policy, and insights on where I believe this research might lead.

Erika Ikeda, *MRC Epidemiology Unit, University of Cambridge, Cambridge, UK*

Which domains of physical activity should we promote for children and young people

Active travel, organised sport and physical education are important sources of physical activity for children and young people. Understanding which domain of physical activity should be promoted to most efficiently increase physical activity is informative for intervention design, policy development and infrastructure investment. Through harmonising data from the International Children's Accelerometry Database, we examined cross-sectional and longitudinal associations between domain-specific physical activity and moderate-to-vigorous physical activity. The findings support a need for a multi-sectoral approach where sports, transport, urban design, and public and private organisations work together to give all children and young people access to safe, equitable and varied opportunities to be active. During the talk, I will share benefits and challenges of the harmonisation, and how this experience has allowed me to create opportunities for international collaborations and develop knowledge and skills to be an interdisciplinary researcher and to work with a multidisciplinary team.

Jennette P. Moreno, *Assistant Professor, USDA/ARS Children's Nutrition Research Center, Baylor College of Medicine, USA*

Potential Circadian and Circannual Rhythm Contributions to Obesity in Primary School Children

During summer, primary school children increase their BMI at an accelerated rate compared to the school year. Our data showed that about 18 percent of children began a trajectory toward overweight or obesity when children were 5-8 years old with summer BMI increases contributing substantially. We have observed that during summer, students experience changes in their sleep and activity patterns, resulting in later sleep timing, shorter sleep duration, increased sedentary behavior, and decreased light physical activity. However, only later sleep timing during summer predicted increases in BMI during summer. The Circadian and Circannual Rhythm Model of Accelerated Summer weight gain posits these changes in sleep and activity patterns influence children's exposure to the light-dark cycle, resulting in changes in their height and weight gain. We have developed a novel circadian rhythm and sleep-focused mHealth intervention for the prevention of accelerated summer weight gain, which is in feasibility testing.

Allison Ross, *Assistant Professor, College of Health Solutions, Arizona State University, USA*

Moving forward with children's school-based physical activity

Widely recognized as a prominent and accessible setting with incredible reach, schools are critical spaces and places for children's physical activity. Over the past two decades, we have seen a paradigm shift toward a whole-of-school approach to increase and improve physical activity opportunities. This shift includes an emphasis on targeting multiple domains within the comprehensive school day when designing interventions and programs, as well as aligning physical activity objectives with social, emotional, and learning outcomes. Despite the potential, establishing and sustaining practices in schools remains a challenge given the complexity of school systems and environments. This presentation will include an overview of two school-based physical activity projects in Arizona, highlighting the potential of community partnerships and surveillance to embed and promote a culture of active schools.

WEDNESDAY, MAY 18

14:00 – 19:00　　　　　　　　　　　　**PCC, Ballroom Lobby**

Registration

Workshops

All workshops will take place at the Arizona State University (ASU) and must be pre-registered.

08:00 – 12:30

Half Day Workshop – Morning

Workshop 1 A

Network of Early Career Researchers and Students of ISBNPA (NESI) workshop

Sarah Shaw, University of Southampton
Dr Steph Chappel, Central Queensland University

Workshop 2

Natural experiments for physical activity research: creating competitive study designs to better evaluate environmental changes

Sarah Shaw, University of Southampton
Marilyn Wende, Baylor University
Morgan Hughey, College of Charleston
Renée Umstattd Meyer, Baylor University
Aaron Hipp, North Carolina State University

Workshop 3

Using Directed Acyclic Graphs to guide your research: an introduction, exercises and interactive discussions

Louise Poppe, Ghent University
Jelle Van Cauwenberg, Ghent University
Annick De Paepe, Ghent University

Workshop 5

Evaluating implementation of public policy for the promotion of physical activity and healthy nutrition: Why, how and what should this involve.

Catherine Woods, University of Limerick
Maartje Poelman, Wageningen University & Research
Peter Gelius, Friedrich-Alexander University
Jeroen Lakerveld, VUmc
Joanna Zuknowska, Politechnika Gdańska
Sarah Forberger, Leibniz-Institute for Prevention Research and Epidemiology – BIPS
Rebecca Lee, Arizona State University

Workshop 6

Capacity Building Network workshop: Heterogeneity and variability: the devil or the holy grail in longitudinal data analysis of physical activity and behavioral nutrition data?

Trynke Hoekstra, Vrije Universiteit Amsterdam
Borja del Pozo Cruz, University of Southern Denmark

13:00 – 16:30

Half Day Workshops – Afternoon

Workshop 1 B

Network of Early Career Researchers and Students of ISBNPA (NESI) workshop

Sarah Shaw, University of Southampton
Dr Steph Chappel, Central Queensland University

8:00 – 16:30

Full Day Workshops

Workshop 7

Cultivating equitable partnerships in behavioural nutrition and physical activity research

Anthony Okely, University of Wollongong
Mark Tremblay, Children's Hospital of Eastern Ontario
John Reilly, University of Strathclyde
Guan Hongyan, Capital Institute of Pediatrics
Cathi Draper, University of Cape Town
Bang Pham Nguyen, Papua New Guinea Institute of Medical Research
Himangi Lubree, KEM Rural Health Research Centre
Najmeh Hamzavi, Tarbiat Modares University
Marieke de Craemer, Ghent University
Alejandra Jauregui, Instituto Nacional de Salud Pública
Nicolas Aguilar, Universidad de La Frontera
Asmaa el Hamdouchi, Université Ibn Tofail Sorowar Hossein, Independent University
Katharina Kariippanon, University of Wollongong

NOTE: For the detailed abstracts, please refer to pages 35–567.

Wednesday, May 18th

Venue	Ballroom
16:30–18:00	**Opening Ceremony & Keynote #1: Dr. Sara Bleich:** *Advancing nutrition security through the USDA Federal Nutrition Safety Net and leveraging behavior change science to inform policy* – Ballroom
18:00–20:00	**Welcome Reception** – Ballroom/ Ballroom Lobby

Thursday, May 19th

Venue	Room 150	Room 151	Room 152	Room 153	Room 154	Room 155	Room 156	Room 157
08:25–09:40	**S.1.06** / 22120 Lessons learned from evidence-based practice: Promoting healthy ageing through improving movement behaviours *Convenor: Maria Gine-Garriga*	**S.1.05** / 22152 Sustaining the implementation of nutrition and physical activity interventions in early care and school settings *Convenor: Nicole Nathan*	**S.1.03** / 22148 The Impact of forces of change on physical activity research, policy, and practice: Exploring emerging approaches and their consequences *Convenor: Jacob Szeszulski*	**S.1.04** / 22104 Ecological momentary assessment in physical activity and sedentary behavior research: Evidence, challenges and opportunities *Convenor: Annick De Paepe*				
09:50–10:50	**Keynote #2: Dr. David Conroy:** *Context-sensitive, just-in-time interventions to promote physical activity and fluid intake* – Ballroom							
10:50–12:05	**Thursday Poster Session and Coffee Break** – Exhibit Area (Rooms 160–167) (75 min)							
12:05–13:20	Implementation, Translation, Scale-up and Sustainability (SIG) *Chair: Taren Swindle*	Cancer prevention and management (SIG) *Chair: Linda Trinh*		E- & mHealth (SIG) *Chair: Mavra Ahmed*	Children and families (SIG) *Chairs: Sanne Veldman and Taniya Nagpal*	Ageing (SIG) *Chair: Sofie Compernolle*	**O.1.01** Socioeconomic predictors of behavioral nutrition and physical activity *Chair: Kelly Morgan*	**O.1.02** Innovation in measurement for behavioral research *Chair: Teresia O'Connor*
13:20–14:30	IJBNPA Meeting (Room 150)	Lunch – Exhibit Area					**14:15–16:15 D2S.1.02** Develop mobile health and ecological momentary assessment interventions using a "no-code" app builder platform: Pathverse *Chair: Sam Liu*	**14:15–16:15 D2S.1.03** Indigenous cultural safety for community-based participatory researchers *Chair: Brittany McBeath*
14:35–16:05	**O.1.03** Parents' impact on child eating and physical activity behavior *Co-chair: Ana Carolina Leme*	**O.1.04** Apps, games, and social media, #OhMy! *Chair: Matt Buman*	**O.1.05** Advances in cancer and long-term disease survivorship *Chair: Niamh O'Callaghan*	**O.1.06** Physical activity and nutrition tools and practices in early care and educational setting *Chair: Meg Bruening*	**O.1.07** School nutrition and physical activity: Social and physical environmental influences *Chair: Emily Melnick*	**O.1.08** Environmental and social influences on physical activity and health *Chair: Robin DeWeese*		
16:05–16:20	**Coffee break** – Exhibit Area (15 min)							
16:20–17:35	**S.1.01** / 22075 Addressing lifestyle patterns and health in early life: From observation to intervention *Convenor: Sandrine Lioret*	**S.1.08** / 22084 Citizen science to advance behavioral change science: Empowering adolescents to create change *Convenor: Famke Mölenberg*	**S.1.09** / 22159 Applying innovative experimental methods to evaluate front-of-package nutrition labels *Convenor: Marissa Hall*	**S.1.10** / 22112 How does a day look like among patients with diabetes? Exploring physical activity, sedentary behavior and sleep across a 24-hour day *Convenor: Marieke De Craemer*	**S.1.11** / 22071 A review of the National Strategy for the Prevention and Control of Obesity in South Africa, 2015-2020 and the development of the new National Obesity Strategy, 2022–2027 *Convenor: Salome Kruger*	**S.1.12** / 22080 Changes in the food environment through childhood and adolescence: Towards sustainable approaches that promote healthy dietary behaviours into adulthood *Convenor: Constant Van Schayck*		
18:30–22:00	**ISBNPA Dinner** – Desert Botanical Garden. Dress code: Smart/Casual (ticketed event)							

NOTE: For the detailed abstracts, please refer to pages 35–567.

Friday, May 20th

Venue	Room 150	Room 151	Room 152	Room 153	Room 154	Room 155	Room 156
08:30–09:45	**S.2.13** / 22128 Movement behaviours in infants and toddlers: Exploring associations with health, measurement, and prevalence *Convenor: Kathryn Hesketh*	**S.2.16** / 22136 Public open spaces for older adults' physical activity and mental health *Convenor: Jenny Veitch*	**S.2.15** / 22100 Comparing designs for resilient whole community physical activity systems for children: Wellscapes rural community randomized trial Wave One effectiveness and implementation outcomes *Convenor: David Dzewaltowski*	**S.2.14** / 22132 Prevention and management of non-alcoholic fatty liver disease with lifestyle behaviors *Convenor: Natalia Heredia*		**S.2.18** / 22124 Measuring policy actions for healthy and sustainable food and physical activity environments *Convenor: Jeroen Lakerveld*	**D2S.2.04** 08:00-09:30 Participatory research methods: Where is the science? *Chair: Sebastian Chastin*
09:50–10:50	Best IJBNPA papers presentation – Ballroom **Keynote #3 Dr. Olga Sarmiento:** *Inequality in physical activity from the region of Latin America* – Ballroom						
10:50–12:05	**Friday Poster Session and Coffee Break** – Exhibit Area (Rooms 160–167) (75 min)						
12:05–13:20	Early care and education (SIG) *Chairs: Audrey Elford and Anne Martin*	Young Adults (SIG) *Chairs: Jessica Larose and Melinda Hutchesson*	Socio-economic inequalities (SIG) *Chair: Amanda McClain*	Participatory Research in Health Promotion (SIG) *Chairs: Maite Verloigne and Teatske Altenburg*	**O.2.09** Disease prevention research for specific populations *Chair: Steve Hooker*	**O.2.10** Exploring relationships between food environment, intake and health *Chair: Sisi Jia*	Policies and environments (SIG) *Chairs: Catherine Woods and Janas Harrington*
13:20–14:30	**General Assembly Meeting of the Members** (Room 150)	**Friday Lunch – Exhibit Area** (70 min)					
14:35–15:05	**Early Career Researcher Keynote Speakers** – Rooms 150–152						
15:10–16:40	**O.2.11** Schools and environments affecting children's nutrition and physical activity behaviors *Chair: Andrew Woods*	**O.2.12** Individual and contextual effects on motivation *Chair: António Palmeira*	**O.2.13** Determinants of behavioral nutrition and physical activity in young adults *Chair: Ana Mitchel*	**O.2.14** Optimizing D&I Research *Chair: Michael Beets*	**O.2.15** Latest findings and methods in participatory research in health promotion *Chair: Janneke de Boer*	**O.2.16** Machine learning and agent based modeling for physical activity and nutrition research *Chair: Marc Adams*	**D2S.2.06** ImPARfections in co-creation experiences *Chair: Maïté Verloigne*
16:40–16:55	**Afternoon Coffee break** – Exhibit Area (15 min)						
16:55–18:10	**S.2.19** / 22140 The 24-hour Movement Behaviour perspective in children: is any guideline better than no guideline to move the field forward? *Convenor: Marieke De Craemer*	**S.2.23** / 22144 Youth-informed participatory action research: from preparation to transfer to other contexts *Convenor: Maite Verloigne*	**S.2.21** / 22171 Research gaps and opportunities related to obesity prevention in early childcare settings *Convenor: Kim Gans*	**S.2.22** / 22167 Increasing the reach of physical activity and sedentary behaviour interventions in cancer survivors *Convenor: Linda Trinh*	**S.2.20** / 22179 Nutrition mHealth Apps: Innovative tools to empower health behaviour modification *Convenor: Mavra Ahmed*	**S.2.24** / 22156 Carrot or Stick?: Incentives versus Disincentives to Improve Dietary Behaviors in the United States (Debate) *Convenor: Amy Yaroch*	

NOTE: For the detailed abstracts, please refer to pages 35–567.

Saturday, May 21st

Venue	Room 150	Room 151	Room 152	Room 153	Room 154	Room 155
08:30–09:45	**O.3.17** Impact of COVID on children's nutrition and physical activity	**O.3.18** Children and families	**O.3.19** Food and physical activity insecurity	**O.3.20** Reaching and intervening underrepresented populations using e- & m-health *Chair: Rodney Joseph*	**O.3.21** Implementation and dissemination science in school-based settings	**O.3.22** Food policy and taxes on sugar-sweetened beverage and red meat purchases *Chair: Amy Yaroch*
09:50–10:50	**Keynote #4: Dr. Valarie Blue Bird Jernigan:** *Community-based participatory interventions to supply Indigenous food sovereignty and health* – Ballroom					
10:50–11:20	**What's next @ ISBNPA** – Ballroom					
11:20–12:20	**Saturday Poster Session and Coffee Break** – Exhibit Area (Rooms 160–167) (60 min)					
12:20–13:50	**O.3.23** The home environment: Evidence and impact	**O.3.24** Latest findings in aging *Chair: Rebecca Luong*	**O.3.25** What factors are associated with behavior change? *Chair: Pim Brandenbarg*	**O.3.26** The first 1000 days: latest science in behavioral nutrition and physical activity *Chair: Corrie Whisner*	**O.3.27** Evaluating process in practice and policy *Chair: Ana Mitchell*	**O.3.28** Measurement and modelling of built environment-physical activity relationships *Chair: Neville Owen*
13:50	**Lunch to Go**					

NOTE: For the detailed abstracts, please refer to pages 570–913.

Virtual Sessions: Wednesday, May 18th

Venue	Ballroom
16:30–18:00	Opening Ceremony & Keynote #1: Dr. Sara Bleich: *Advancing nutrition security through the USDA Federal Nutrition Safety Net and leveraging behavior change science to inform policy* – Ballroom

Virtual Sessions: Thursday, May 19th

Virtual Session	Virtual 1	Virtual 2	Virtual 3	Live Streaming (Room 151)
08:25–09:40	**S.1V.01** / 22108 Exploring the Great Outdoors: Promoting children's physical activity through reimagining outdoor play *Convenor: Cody Neshteruk*	**S.1V.02** / 22067 "Choosing All Together"; Community priorities for nutrition interventions in Sub-Saharan Africa *Convenor: Sarah Kehoe*	**08:15–9:40** **Supl. Virtual 5** *Chair: Elida Sina*	**S.1.05** / 22152 Sustaining the implementation of nutrition and physical activity interventions in early care and school settings *Convenor: Nicole Nathan*
09:50–10:50	**Keynote #2: Dr. David Conroy:** *Context-sensitive, just-in-time interventions to promote physical activity and fluid intake*			
12:05–13:20	**S.1V.07** Co-creation and dissemination of research with children: Lessons learned and reflections *Convenor: Andrea Smith*	**Supl. Virtual 1** *Chair: Shabnam Kashef*	**Supl. Virtual 3**	Cancer prevention and management (SIG) *Chair: Linda Trinh*
14:35–16:05		**O.1V.01** Determinants of behavioral nutrition and physical activity in elderly *Chairs: Shivangi Shah and Juliana Oliveira*	**O.1V.02** Predictors and its impact on behavioral nutrition and physical activity change *Chairs: Inês Santos and Verity Cleland*	**O.1.04** Apps, games, and social media, #OhMy! *Chair: Matt Buman*
16:10–17:30	**D2S.1V.01** Exploring Meaningful Health Promotion Research and Collaborations in the Caribbean *Chair: Danielle Walwyn*		**16:20–17:35** **S.1V.04** / 22163 Scalable approaches to supporting workers to stand up, sit less and move more at work *Convenor: Paul Estabrooks*	**16:20–17:35** **S.1.08** / 22084 Citizen science to advance behavioral change science: Empowering adolescents to create change *Convenor: Famke Mölenberg*
18:00–19:30	**D2S.1V.02** How to co-design a health intervention *Chair: Jillian Ryan*	**Supl.Virtual.02** Novel approaches to behavioral nutrition and physical activity science *Chairs: Rebecca Coulter and Adam Shoesmith*	**Supl. Virtual 04** *Chairs: Stephen Hunter and Olivia De-Jongh Gonzalez*	

NOTE: For the detailed abstracts, please refer to pages 570–913.

Virtual Sessions: Friday, May 20th

Virtual Session	Virtual 1	Virtual 2	Virtual 3	Live Streaming (Room 151)
08:30–09:45	**S.2V.05** / 22116 Innovative approaches to overcome lack of active travel data in low- and middle-income countries *Convenor: Rizka Maulida*			**S.2.16** / 22136 Public open spaces for older adults' physical activity and mental health *Convenor: Jenny Veitch*
09:50–10:50	Best IJBNPA papers presentation **Keynote #3 Dr. Olga Sarmiento:** *Inequality in physical activity from the region of Latin America*			
12:05–13:20	**0.2V.03** Latest evidence in implementation and scalability *Chair: Alison Brown*	**0.2V.04** Social influences on behavioral nutrition and physical activity in children and families *Chair: Nigel Harris*	**12:05-13:35** **D2S.V2.05** Psychedelics and Health Behavior Change *Chair: Arlen Moller*	Young Adults (SIG) *Chairs: Jessica Larose and Melinda Hutchesson*
14:35–15:05				**ECR Presentation**
15:10–16:40	**0.2V.05** Latest evidence on early care and education research	**0.2V.06** Focusing on parental influences on behavioral nutrition and physical activity *Chairs: Youjie Zhang and Phoebe George*		**0.2.12** Individual and contextual effects on motivation *Chair: António Palmeira*
16:55–18:10	**S.2V.07** / 22092 Co-designing lifestyle behaviour research with young adults: Opportunities and challenges *Convenor: Katherine Livingstone*	**S.2V.08** / 22175 New rapid assessment tools to measure obesity-related behaviours in 0 – 5-year-olds *Convenor: Stewart Trost*	**S.2V.17** / 22096 Community based system dynamics supports communities to better health *Convenor: Jillian Whelan*	**S.2.23** / 22144 Youth-informed participatory action research: from preparation to transfer to other contexts *Convenor: Maite Verloigne*

Virtual Sessions: Saturday, May 21st

Virtual Session	Virtual 1	Virtual 2	Virtual 3	Live Streaming (Room 151)
08:30–09:45	**O.3V.07** High level constraints in behavioral nutrition and physical activity *Chairs: Amy Yau and Laura Arazat*	**O.3V.08** Trends and latest findings in disease prevention and management *Chair: Ariella Korn*		**O.3.18** Children and families *Chair: Sarah Yi Xuan Tan*
09:50–10:50	**Keynote #4: Dr. Valarie Blue Bird Jernigan:** *Community-based participatory interventions to supply Indigenous food sovereignty and health*			
10:50–11:20	**What's next @ISBNPA**			
12:20–13:50	**O.3V.09** School- and city-based constraints in behavioral nutrition and physical activity *Chairs: Pulan Bai and Elizabeth Wenden*	**O.3V.10** Latest evidence in behavioral nutrition and physical activity *Chairs: Courtney Thompson and Manon Rouche*		**O.3.24** Latest findings in aging *Chair: Rebecca Luong*

2022 ABSTRACT BOOK

OVERVIEW PROGRAM

Wednesday, May 18th

Venue	Ballroom
16:30–18:00	**Opening Ceremony & Keynote #1: Dr. Sara Bleich:** *Advancing nutrition security through the USDA Federal Nutrition Safety Net and leveraging behavior change science to inform policy* – Ballroom
18:00–20:00	**Welcome Reception** – Ballroom/ Ballroom Lobby

Thursday, May 19th

Venue	Room 150	Room 151	Room 152	Room 153	Room 154	Room 155	Room 156	Room 157
08:25–09:40	**S.1.06** / 22120 Lessons learned from evidence-based practice: Promoting healthy ageing through improving movement behaviours *Convenor: Maria Gine-Garriga*	**S.1.05** / 22152 Sustaining the implementation of nutrition and physical activity interventions in early care and school settings *Convenor: Nicole Nathan*	**S.1.03** / 22148 The Impact of forces of change on physical activity research, policy, and practice: Exploring emerging approaches and their consequences *Convenor: Jacob Szeszulski*	**S.1.04** / 22104 Ecological momentary assessment in physical activity and sedentary behavior research: Evidence, challenges and opportunities *Convenor: Annick De Paepe*				
09:50–10:50	**Keynote #2: Dr. David Conroy:** *Context-sensitive, just-in-time interventions to promote physical activity and fluid intake* – Ballroom							
10:50–12:05	**Thursday Poster Session and Coffee Break** – Exhibit Area (Rooms 160 –167) (75 min)							
12:05–13:20	Implementation, Translation, Scale-up and Sustainability (SIG) *Chair: Taren Swindle*	Cancer prevention and management (SIG) *Chair: Linda Trinh*		E- & mHealth (SIG) *Chair: Mavra Ahmed*	Children and families (SIG) *Chairs: Sanne Veldman and Taniya Nagpal*	Ageing (SIG) *Chair: Sofie Compernolle*	**O.1.01** Socioeconomic predictors of behavioral nutrition and physical activity *Chair: Kelly Morgan*	**O.1.02** Innovation in measurement for behavioral research *Chair: Teresia O'Connor*
13:20–14:30	**IJBNPA Meeting** (Room 150)	**Lunch – Exhibit Area**					**14:15–16:15** **D2S.1.02** Develop mobile health and ecological momentary assessment interventions using a "no-code" app builder platform: Pathverse *Chair: Sam Liu*	**14:15–16:15** **D2S.1.03** Indigenous cultural safety for community-based participatory researchers *Chair: Brittany McBeath*
14:35–16:05	**O.1.03** Parents' impact on child eating and physical activity behavior *Co-chair: Ana Carolina Leme*	**O.1.04** Apps, games, and social media, #OhMy! *Chair: Matt Buman*	**O.1.05** Advances in cancer and long-term disease survivorship *Chair: Niamh O'Callaghan*	**O.1.06** Physical activity and nutrition tools and practices in early care and educational setting *Chair: Meg Bruening*	**O.1.07** School nutrition and physical activity: Social and physical environmental influences *Chair: Emily Melnick*	**O.1.08** Environmental and social influences on physical activity and health *Chair: Robin DeWeese*		
16:05–16:20	**Coffee break** – Exhibit Area (15 min)							
16:20–17:35	**S.1.01** / 22075 Addressing lifestyle patterns and health in early life: From observation to intervention *Convenor: Sandrine Lioret*	**S.1.08** / 22084 Citizen science to advance behavioral change science: Empowering adolescents to create change *Convenor: Famke Mölenberg*	**S.1.09** / 22159 Applying innovative experimental methods to evaluate front-of-package nutrition labels *Convenor: Marissa Hall*	**S.1.10** / 22112 How does a day look like among patients with diabetes? Exploring physical activity, sedentary behavior and sleep across a 24-hour day *Convenor: Marieke De Craemer*	**S.1.11** / 22071 A review of the National Strategy for the Prevention and Control of Obesity in South Africa, 2015-2020 and the development of the new National Obesity Strategy, 2022–2027 *Convenor: Salome Kruger*	**S.1.12** / 22080 Changes in the food environment through childhood and adolescence: Towards sustainable approaches that promote healthy dietary behaviours into adulthood *Convenor: Constant Van Schayck*		
18:30–22:00	**ISBNPA Dinner** – Desert Botanical Garden. Dress code: Smart/Casual (ticketed event)							

Friday, May 20th

Venue	Room 150	Room 151	Room 152	Room 153	Room 154	Room 155	Room 156
08:30–09:45	**S.2.13** / 22128 Movement behaviours in infants and toddlers: Exploring associations with health, measurement, and prevalence *Convenor: Kathryn Hesketh*	**S.2.16** / 22136 Public open spaces for older adults' physical activity and mental health *Convenor: Jenny Veitch*	**S.2.15** / 22100 Comparing designs for resilient whole community physical activity systems for children: Wellscapes rural community randomized trial Wave One effectiveness and implementation outcomes *Convenor: David Dzewaltowski*	**S.2.14** / 22132 Prevention and management of non-alcoholic fatty liver disease with lifestyle behaviors *Convenor: Natalia Heredia*		**S.2.18** / 22124 Measuring policy actions for healthy and sustainable food and physical activity environments *Convenor: Jeroen Lakerveld*	**D2S.2.04** 08:00-09:30 Participatory research methods: Where is the science? *Chair: Sebastian Chastin*
09:50–10:50	Best IJBNPA papers presentation – Ballroom **Keynote #3 Dr. Olga Sarmiento:** *Inequality in physical activity from the region of Latin America* – Ballroom						
10:50–12:05	**Friday Poster Session and Coffee Break** – Exhibit Area (Rooms 160–167) (75 min)						
12:05–13:20	Early care and education (SIG) *Chairs: Audrey Elford and Anne Martin*	Young Adults (SIG) *Chairs: Jessica Larose and Melinda Hutchesson*	Socio-economic inequalities (SIG) *Chair: Amanda McClain*	Participatory Research in Health Promotion (SIG) *Chairs: Maite Verloigne and Teatske Altenburg*	**O.2.09** Disease prevention research for specific populations *Chair: Steve Hooker*	**O.2.10** Exploring relationships between food environment, intake and health *Chair: Sisi Jia*	Policies and environments (SIG) *Chairs: Catherine Woods and Janas Harrington*
13:20–14:30	**General Assembly Meeting of the Members** (Room 150)	**Friday Lunch – Exhibit Area** (70 min)					
14:35–15:05	**Early Career Researcher Keynote Speakers** – Rooms 150–152						
15:10–16:40	**0.2.11** Schools and environments affecting children's nutrition and physical activity behaviors *Chair: Andrew Woods*	**0.2.12** Individual and contextual effects on motivation *Chair: António Palmeira*	**0.2.13** Determinants of behavioral nutrition and physical activity in young adults *Chair: Ana Mitchel*	**0.2.14** Optimizing D&I Research *Chair: Michael Beets*	**0.2.15** Latest findings and methods in participatory research in health promotion *Chair: Janneke de Boer*	**0.2.16** Machine learning and agent based modeling for physical activity and nutrition research *Chair: Marc Adams*	**D2S.2.06** ImPARfections in co-creation experiences *Chair: Maïté Verloigne*
16:40–16:55	**Afternoon Coffee break** – Exhibit Area (15 min)						
16:55–18:10	**S.2.19** / 22140 The 24-hour Movement Behaviour perspective in children: is any guideline better than no guideline to move the field forward? *Convenor: Marieke De Craemer*	**S.2.23** / 22144 Youth-informed participatory action research: from preparation to transfer to other contexts *Convenor: Maite Verloigne*	**S.2.21** / 22171 Research gaps and opportunities related to obesity prevention in early childcare settings *Convenor: Kim Gans*	**S.2.22** / 22167 Increasing the reach of physical activity and sedentary behaviour interventions in cancer survivors *Convenor: Linda Trinh*	**S.2.20** / 22179 Nutrition mHealth Apps: Innovative tools to empower health behaviour modification *Convenor: Mavra Ahmed*	**S.2.24** / 22156 Carrot or Stick?: Incentives versus Disincentives to Improve Dietary Behaviors in the United States (Debate) *Convenor: Amy Yaroch*	

Saturday, May 21st

Venue	Room 150	Room 151	Room 152	Room 153	Room 154	Room 155
08:30–09:45	**O.3.17** Impact of COVID on children's nutrition and physical activity	**O.3.18** Children and families	**O.3.19** Food and physical activity insecurity	**O.3.20** Reaching and intervening underrepresented populations using e- & m-health *Chair: Rodney Joseph*	**O.3.21** Implementation and dissemination science in school-based settings	**O.3.22** Food policy and taxes on sugar-sweetened beverage and red meat purchases *Chair: Amy Yaroch*
09:50–10:50	**Keynote #4: Dr. Valarie Blue Bird Jernigan:** *Community-based participatory interventions to supply Indigenous food sovereignty and health* – Ballroom					
10:50–11:20	**What's next @ ISBNPA** – Ballroom					
11:20–12:20	**Saturday Poster Session and Coffee Break** – Exhibit Area (Rooms 160–167) (60 min)					
12:20–13:50	**O.3.23** The home environment: Evidence and impact	**O.3.24** Latest findings in aging *Chair: Rebecca Luong*	**O.3.25** What factors are associated with behavior change? *Chair: Pim Brandenbarg*	**O.3.26** The first 1000 days: latest science in behavioral nutrition and physical activity *Chair: Corrie Whisner*	**O.3.27** Evaluating process in practice and policy *Chair: Ana Mitchell*	**O.3.28** Measurement and modelling of built environment-physical activity relationships *Chair: Neville Owen*
13:50	**Lunch to Go**					

KEYNOTE BY DR. SARA BLEICH

Advancing nutrition security through the USDA Federal Nutrition Safety Net and leveraging behavior change science to inform policy

Ballroom

May 18, 2022, 4:50 PM - 6:00 PM

This keynote address will describe how USDA is advancing nutrition security through the Federal Nutrition Safety Net with an emphasis on key streams of research which can help inform policy. Dr. Bleich will first provide an overview of the variety of actions the Biden-Harris Administration has taken to prioritize nutrition security during the COVID-19 pandemic. That is, spending on USDA's food and nutrition assistance programs jumped 30 percent in fiscal year (FY) 2020 to a record $122.1 billion. This included USDA waivers allowing flexibility in the administration of USDA's 15 existing food and nutrition assistance programs and the creation of programs, including Pandemic Electronic Benefit Transfer (P-EBT, money for missed meals due to school closures). In FY 2021, USDA expenditures on federal nutrition assistance programs was further expanded through the American Rescue Plan, which extended SNAP, increased access to fruits and vegetables for each WIC participant, extended and expanded P-EBT, added new funding for US territories, and provided funding for meals for young adults experiencing homelessness. USDA also revised the Thrifty Food Plan – the basis for determining SNAP benefit amount – to better reflect the cost of a healthy basic diet. Taken together, the USDA is taking critical steps to ensure access to safe, healthy and nutritious food in all communities to assist with pandemic recovery and beyond. Throughout the presentation, Dr. Bleich will integrate key ways behavioral change science has informed USDA's actions to date and put forth recommendations for how behavioral change science can help the USDA further advance nutrition security through the Federal Nutrition Safety Net.

S.1.03 - The Impact of forces of change on physical activity research, policy, and practice: Exploring emerging approaches and their consequences

Room 152

May 19, 2022, 8:25 AM - 9:40 AM

Purpose:
To highlight innovative approaches for improving, measuring, and sustaining physical activity in response to contemporary and emerging forces of change (i.e., COVID-19, climate change, and civil unrest).

Rationale:
Physical activity levels, modalities, locations, and contexts have been affected by forces of change worldwide, including COVID-19, climate change, and civil unrest. Despite evidence-based interventions available for improving physical activity, broad-scale adoption and sustainability of physical activity remains challenging, particularly in the context of the "new normal". Innovations developed in response to forces of change provide benefits but can also create or exacerbate inequalities.

Objectives:
Using established physical activity frameworks (e.g., Youth Physical Activity Timing, How, and Setting framework; Ecological Model of Physical Activity), we will highlight recent changes in physical activity patterns of children, adults, and seniors. We will describe research that focuses on promoting physical activity in the context of COVID-19, climate change, and civil unrest and discuss the positive and negative consequences of adapting to these changes. We will offer future research directions and methodologies for equitably increasing, measuring, and sustaining physical activity in our new normal, including cross-cutting interventions, community-based participatory research, anti-colonial approaches, digital health technologies, and implementation science.

Summary:

Panelists from Canada, Mexico, and the United States will share how emerging forces of change affect physical activity research, policy, and/or practices in their country. For example, COVID-19 has shifted physical activity interventions to online platforms, and the switch to online platforms has disproportionally affected individuals' in low-income and rural communities' ability to participate. Climate change has raised ambient temperatures and disrupted when, where, and how long individuals are willing/able to be active. Institutional racism against people of color has deterred some individuals from being active alone in outdoor public spaces and created neighborhood inequities that affect the availability of physical activity resources.

Format:
Dr. Szeszulski will introduce the forces of change and highlight recent changes in physical activity patterns (10 minutes).
Drs. Lanza, Lévesque, and Pérez-Paredes will share how emerging forces of change have affected physical activity research, policy, and/or practices in their country (15 minutes each).
Dr. Soltero will facilitate an interactive discussion (20 minutes).

Interaction:
Attendees will respond to interactive polls and engage in a Q&A session with a multi-disciplinary research panel. Questions from the moderator and responses from panelists will encourage attendees to reflect on how COVID-19, climate change, and civil unrest influence their own work.

Climate Change Adaptation for Physical Activity Promotion

Dr. Kevin Lanza[1], Dr. Jamie Faro[2], Dr. Rodney Joseph[3], Dr. Lucie Lévesque[4], Dr. Courtney Monroe[5], Dr. Elsa Pérez-Paredes[6], Dr. Erica Soltero[7], Dr. Jacob Szeszulski[8], Dr. Rebecca Lee[3]

[1]University of Texas Health Science Center at Houston, Austin, USA, [2]University of Massachusetts Medical School, Worcester, USA, [3]Arizona State University, Phoenix, USA, [4]Queen's University, Kingston, Canada, [5]University of South Carolina, Columbia, USA, [6]Universidad Abierta y a Distancia de México, Mexico City, Mexico, [7]Baylor College of Medicine, Houston, USA, [8]Texas A&M AgriLife Research, Dallas, USA

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: The Lancet Countdown has identified climate change as the greatest global threat to public health in the 21st century. Most climate change and health research is focused on climate-related morbidity and mortality, not the impact of climate change on physical activity. Herein, we review the literature to understand whether rising ambient temperatures and heat waves are a barrier or facilitator to physical activity participation, and offer environmental and programmatic interventions for physical activity in hot weather.

Methods: Guided by the Youth Physical Activity Timing, How, and Setting [Y-PATHS] framework and Ecological Model of Physical Activity, we conducted a literature search to determine the associations between temperature and physical activity. Search terms included 'climate change' or 'weather' or 'temperature' or 'heat' and 'physical activity' or 'exercise' or 'sport'. Inclusion criteria were (1) reported on ambient temperature; (2) reported on physical activity; (3) involved human subjects; and (4) published in English language. We screened articles and excluded those lacking quantitative results on the temperature-physical activity relationship.

Results: The majority of studies occurred in developed countries and revealed a positive association between ambient temperature and physical activity, and assumed a linear relation. Select studies have suggested extreme temperatures to be associated with decreased physical activity levels, and have projected rising temperatures under different scenarios of greenhouse gas emissions to have different impacts on physical activity levels depending on season and regional climate.

Conclusions: Based on the literature, elevated temperatures—the likes of which are expected to increase with climate change—may be a barrier to individuals engaging in physical activity due to thermal discomfort, and therefore may place individuals at higher risk for a host of chronic diseases associated with insufficient physical activity. We share a menu of interventions for municipalities to promote safe physical activity in a warming world, including the layering of proven heat management strategies with physical activity infrastructure (e.g., tree planting along sidewalks) and development of policies that minimize ambient heat exposure (e.g., scheduling school recess and sporting events during cooler times of the day).

Anti-colonial Health and Physical Activity Research in the Time of COVID-19

Dr. Lucie Lévesque[1], Dr. Jamie Faro[2], Dr. Rodney Joseph[3], Dr. Kevin Lanza[4], Dr. Courtney Monroe[5], Dr. Elsa Pérez-Paredes[6], Dr. Erica Soltero[7], Dr. Jacob Szeszulski[8], Dr. Rebecca Lee[3]

[1]Queen's University, Kingston, Canada, [2]University of Massachusetts Medical School, Worcester, USA, [3]Arizona State University, Phoenix, USA, [4]University of Texas Health Science Center at Houston, Austin, USA, [5]University of South Carolina, Columbia, USA, [6]Universidad Abierta y a Distancia de México, Mexico City, Mexico, [7]Baylor College of Medicine, Houston, USA, [8]Texas A&M AgriLife Research, Dallas, USA

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: The impact of the COVID-19 pandemic has exposed dramatic systemic inequities in access to physical activity and health between and within nations, creating an urgency to confront long-ignored colonial-based injustices. The shift to remote work during the COVID-19 pandemic has imposed unprecedented challenges on community-engaged physical activity research. This presentation will expose limitations of western-dominated research systems, explore innovative research approaches that prioritize Indigenous community voices and anti-colonial methodologies and highlight the role that ally researchers can play in decolonizing health and physical activity research.

Methods: Drawing on three community-engaged research projects set in Canada and in the Caribbean that each include physical activity intervention research components, I conducted a reflexive exploration characterized by scrutinizing my positionality and actions within our teams' decolonizing research efforts. From March 2020-November 2021, our teams of Indigenous, and/or Caribbean and settler-ally researchers conducted a scoping review of online Indigenous health promotion interventions, a Critical Interpretive Synthesis (CIS) of Indigenous community mobilization training initiatives, and weekly community-engaged remote brainstorming sessions to develop innovative, anti-colonial, health and physical activity promotion research methods and methodologies.

Results: My positionality affords me privilege through race, class, educational attainment, income, and job security that confers a responsibility to uphold ethical and respectful research relations and a commitment to community priorities in health and physical activity research. The large scale force of the COVID-19 pandemic caused the suspension of our field-based research and provided the opportunity for us to regroup and prioritize anti-colonial research methods and methodologies. By adopting an explicit commitment to include all voices in research discussions, we developed innovative approaches – such as the strawberry metaphor to community mobilization - to advance our decolonizing agenda and begin to respond to the social injustices the pandemic has exposed.

Conclusions: Dismantling dominant colonial constructs and ideologies in health and physical activity research requires researchers to explore their positionality and to question their adherence to western-dominated approaches. Authentic allyship requires a commitment to self-location and actions that support the self-

determination of research by community. The social justice tenets of health and physical activity promotion cannot be achieved until this occurs.

The Appropriation of Public Space for the Promotion of Physical Activity: Climate Change Mitigation Strategy in Cities

Dr. Elsa Pérez-Paredes[1], Dr. Jamie Faro[2], Dr. Rodney Joseph[3], Dr. Kevin Lanza[4], Dr. Lucie Lévesque[5], Dr. Courtney Monroe[6], Dr. Erica Soltero[7], Dr. Jacob Szeszulski[8], Dr. Rebecca Lee[3]
[1]Universidad Abierta y a Distancia de México, Mexico City, Mexico, [2]University of Massachusetts Medical School, Worcester, USA, [3]Arizona State University, Phoenix, USA, [4]University of Texas Health Science Center at Houston, Austin, USA, [5]Queen's University, Kingston, Canada, [6]University of South Carolina, Columbia, USA, [7]Baylor College of Medicine, Houston, USA, [8]Texas A&M AgriLife Research, Dallas, USA

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: Mexico follows international climate change recommendations IPCC (2021) and NAU (2016): cities should 1) increase green infrastructure, 2) produce public spaces equitably, and 3) promote participatory design of neighborhood parks. Although national and local programs (e.g., Mexico City), aim to design public spaces using a participatory approach, there are few established methodologies, instruments and case studies recognizing the appropriation of urban public spaces as a strategic tool for promoting physical activity.

Method: The National Study of Appropriation of Public Space (2019) investigated 20 case studies of urban parks, neighborhood parks and green areas in Mexican cities. Through the design of three qualitative instruments with an intersectional, citizen science approach, we explored mechanisms associated with the appropriation of public space: 1) accessibility and equitable distribution; 2) protection, comfort and pleasure of the place; 3) spatial practices based on the use, perception and availability of time, 4) subjective evaluations of the important aspects of public spaces, and 5) networks, citizen participation and activism. One case, Parque Madero en Cuauhtepec, was selected for in depth analysis due to its proximity to the Sierra de Guadalupe (protected natural area). We collected narratives and perceptions using socio-digital strategies to investigate advocacy actions and activities focusing on physical activity.

Results: The Citizen Socio-Environmental Laboratory in the Sierra de Guadalupe included a large coalition of 15 environmental, sports and cultural groups sharing the goal of conservation of the Sierra de Guadalupe in a time of climate change, pandemics, and civil unrest. We discovered the Parque Madero en Cuauhtepec to be small, not safe, and poorly lit, located in a dense residential area, with high traffic, and contaminated by business and government offices. However, the space was heavily used for physical activity, community organizing, and public enjoyment.

Conclusion: Appropriating public space is important for the promotion of physical activity within the neighborhoods of Sierra de Guadalupe. Virtual and face-to-face interaction methods are important to enhance cooperation, community organization, exploration of narratives about the territory (body-territory), and technical and activist capacities to influence how lands are appropriated for public use in cities.

S.1.04 - Ecological momentary assessment in physical activity and sedentary behavior research: Evidence, challenges and opportunities

Room 153

May 19, 2022, 8:25 AM - 9:40 AM

Purpose:
The aim of this symposium is to share expertise on the latest evidence, methodological challenges, and available opportunities of using ecological momentary assessment (EMA) in physical activity (PA) and sedentary behavior (SB) studies.

Rationale:
EMA is an innovative data collection method, involving repeated sampling of behaviors and experiences in their natural environment. Although EMA is promising to examine the individual and environmental dynamic determinants of PA and SB, the use of EMA is still in its infancy in this field of research. Examining the usefulness of this methodology and gaining insight in the dynamic determinants of PA and SB, can be the first step in the development of more effective behavioral change interventions (e.g. just-in-time adaptive interventions) to increase PA and decrease SB.

Objectives:
This symposium targets multiple objectives: • Giving an overview of current evidence on time- and event-based EMA studies in the field of PA and SB. • Summarizing the results of EMA studies to gain insight in the dynamic determinants of PA and SB in (older) adults. • Discussing the different stages of development and implementation of EMA, with a special focus on the methodology of event-based EMA and the measurement tools to capture events and trigger questionnaires. • Discussing the methodological challenges that are inherent to EMA studies and to provide implications based on the findings for further research using EMA.

Summary:

Annick De Paepe will introduce the symposium and explain the need to gain insight in the time- and context-specificity of determinants of PA and SB. Julie Delobelle will focus on event-based EMA methodology, more specifically on the capability of Fitbit to capture events of PA and SB correctly. Genevieve Dunton will present the results of a study that uses event-contingent EMA prompting to capture affective responses during PA. Finally, Malebogo Monnaatsie will discuss the feasibility of EMA in assessing PA and SB in shift workers. Delfien Van Dyck will lead the general discussion, with a special focus on the challenges and opportunities inherent to EMA studies.

Format:

Chair 0-5 minutes:

Introduction by Dr. Annick De Paepe Speakers, each with 10 minutes to present and 5 minutes for questions. 6-21 minutes:

Presentation by Julie Delobelle 22-37 minutes:

Presentation by Prof. Genevieve Dunton 38-53 minutes:

Presentation by Malebogo Monnaatsie Discussant 54-75 minutes:

Structured discussion between the presenters and delegates, moderated by Prof. Delfien Van Dyck

Interaction:

Interaction in the online symposium will be facilitated by the discussant.

Fitbit's accuracy to measure short bouts of physical activity and sedentary behavior: a validation and sensitivity study

Ms. Julie Delobelle[1], Ms. Elien Lebuf[1], Dr. Sofie Compernolle[1, 3], Dr. Tomas Vetrovsky[2], Prof. Delfien Van Dyck[1]
[1]Ghent University, Ghent, Belgium, [2]Charles University, Prague, Czech Republic, [3]Research Foundation Flanders, Brussels, Belgium

SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Sedentary behavior (SB) and a lack of physical activity (PA) are known to have unfavorable effects on our mental and physical well-being. Nevertheless, physical inactivity and sedentary time are still leading risk factors for noncommunicable diseases and death worldwide. Gaining insight in dynamic determinants of these behaviors trough event-based ecological momentary assessment (EMA) is important to counter this health problem. To ensure Fitbits are suitable devices to include in event-based EMA studies, examining the accuracy of the Fitbit to measure short bouts of SB and PA is important. The objective of the current study was to validate the Fitbit for steps in a 1, 5, 10 and 30 minute time interval and on a day level. The second aim was to define a sensitive threshold of steps/minute to assess bouts of moderate PA and SB, measured with Fitbit.

Methods: 20 adults (18-65y) and 20 older adults (65+) were recruited for this validation study. Four different activity trackers were worn during three consecutive days: a Fitbit Ionic and a Fitbit Inspire 2 at the non-dominant wrist, an ActivPal for SB at the thigh and an Actigraph GT3X+ for PA at the hip. Correlation analysis and Bland-Altman plots were used to compare the Fitbits with the two validated devices, as well as the data of the two Fitbits themselves. Sensitivity and specificity were calculated for reaching <10 (SB) and >100 (PA) steps/minute and for defining the right threshold.

Results: Preliminary results showed a systematic underestimation of the Fitbit to measure total steps during short bouts of PA and on a day level (mean percentage error: 39%), compared to the Actigraph. The different Fitbits showed similar results. Further analyses will be conducted and results will be presented at the conference.

Conclusions: EMA questionnaires or supporting messages could be initialized following a favorable event (e.g. walking five minutes), but the systematic underestimation of PA should be taken into account. Defining a sensitive threshold of number of steps/minute for moderate PA and SB for Fitbit, will allow to capture the event correctly. These findings will therefore have important implications for further event-based EMA studies.

An Ecological Momentary Assessment Study of Affectively-charged Motivational States and Physical Activity

Prof. Genevieve Dunton[1], Miss Bridgette Do[1], Miss Micaela Hewus[1], **Ms. Rachel Lyons**
[1]University of Southern California, Los Angeles, USA

SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Background: Affectively-charged motivational states refer to desires, wants, cravings and urges to engage in health-related behaviors. However, the extent to which they predict physical activity is largely unknown. Also, there is growing interest in understanding how affectively-charged motivations for physical activity vary from moment-to-moment as they offer a potential target for just-in-time intervention strategies. The objectives of the current analysis was to use Ecological Momentary Assessment (EMA) to examine changes in affectively-charged motivations for physical activity across the day and determine whether they have temporally-specific associations with physical activity of varying intensities.

Methods: A sample of adults (ages 19-65) (61% female) participated in a 14-day study. Affectively-charged motivations (i.e., "dread" vs. "excited" on a 0-100 scale) for upcoming physical activity were assessed in real-time using smartphone-based EMA in the evening ("next day"), morning ("next 2 hours"), at random times ("next 2 hours"), and 15 min before physical activity ("next 15 min"). Participants also wore an Actigraph GT3X accelerometer on their waist across this period.

Results: Complete data were available for up to 56 participants. Affectively-charged motivations for physical activity differed by time of day (F=14.3, p<.001) with the most positive values occurring 15 min before physical activity (M= 73.3, SD=20.9), followed by evenings (M= 72.7, SD=22.2), random times throughout the day (M= 68.5, SD=21.1), and mornings (M= 66.2, SD=19.0). On average compared to 15 min before physical activity, more positive affectively-charged motivations in the evening were associated with engaging in more light physical activity min/day (r=.248, p=.066) and total physical activity (light/moderate/ vigorous) min/day (r=.282, p=.035). On average compared to 15 min before physical activity, more positive affectively-charged motivations in the morning were associated with engaging in more vigorous min/day (r=.315, p=.029) and moderate-to-vigorous physical activity min/day (r=.307, p=.034).

Conclusion: Positive affective motivation for upcoming physical activity varies throughout the day with the highest levels immediately before a physical activity bout. Strategies to boost positive affective motivation in the evenings may be useful in promoting lower intensity physical activity whereas strategies enhancing morning positive affective motivation may help promote higher intensity activities.

The feasibility of an ecological momentary assessment (EMA) to measure physical activity and sedentary behaviour in shift workers

Ms. Malebogo Monnaatsie[1,2,4], Prof. Stuart Biddle[2], Mr. Adam Schmidt[1], Ms. Amy Willams[1], Ms. Anna Rogers[1], Associate Prof. Tracy Kolbe-Alexander[1,2,3,5]

[1]University of Southern Queensland, Ipswich, Australia, [2]University of Southern Queensland, Springfield, Australia, [3]University of Queensland, Brisbane, Australia, [4]University of Botswana, Gaberone, Botswana, [5]University of Cape Town, Cape Town, South Africa

SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Shift work involves atypical work schedules, as such mobile ecological momentary assessment (EMA) might be a feasible tool to measure physical activity (PA) and sedentary behaviour (SB) in shift workers. The aim of this study was to determine the feasibility of the Smartphone Ecological Momentary Assessment (SEMA) to measure physical activity (PA) and sedentary behaviour (SB) in shift workers. A second aim was to compare feasibility in shift and non-shift workers.

Methods: Participants were recruited via social media and snowball sampling. Five SEMA prompts were sent every 3 hours to participants' phones for 7-10 days assessing PA and SB. The SEMA prompts were tailored according to work schedule for the shift workers, while prompts to non-shift workers were at standardised times.

Results: Participants included 69 shift workers and 51 non-shift workers, 58% were female and, mean age was 36.0 (SD 10.6) years. An average of 38.5 EMA prompts were sent per individual, with 0.4 min taken to finish each survey. Compliance with completing the EMA prompts was lower in shift workers (63.9 %) than non-shift workers (68.6%). The most frequently answered SEMA was the first prompt of the day (24%), while the least frequent responses were observed for the 5th daily prompt (14%) in both shift and non-shift workers. Participants completed more EMA responses on a work day. Our results also show that EMA compliance was unrelated to age, BMI and gender.

Conclusions: Our findings suggest that mobile EMA is feasible in assessing physical activity and sedentary behaviour in shift workers. Tailoring prompts according to work schedules may increase the compliance rate,. EMA responses were reduced in all the groups after the fourth prompt, suggesting that there might be a limit to daily prompts. Using EMA in shift workers is therefore feasible and should be considered as an option when quantifying movement in this cohort.

Keywords: shift work, ecological momentary assessment, physical activity, sedentary behaviour

S.1.05 - Sustaining the implementation of nutrition and physical activity interventions in early care and school settings

Room 151

May 19, 2022, 8:25 AM - 9:40 AM

Purpose:
This symposium seeks to identify how best to sustain nutrition and physical activity interventions in educational settings. The symposium will include the perspectives of implementation researchers and practitioners and will present empirical research.

Rationale:
Governments have invested billions in the implementation, at scale, of nutrition and physical activity interventions in early care and school settings. Implementation science methods have identified strategies capable of achieving initial implementation of such interventions at a population level. However, "initiative decay" is common for interventions in these settings. Without sustained program implementation the potential public health benefits of evidence based interventions cannot be achieved, the substantial investment in achieving initial implementation is wasted, and community trust and support for future programmes is diminished. Despite the importance of sustaining program implementation, policy makers and practitioners are bereft of an evidence base of how best to do this.

Objectives:
To:

i)   describe barriers and facilitators to sustaining nutrition and physical activity programs in early care and school setting

ii)   describe the sustainment of schools' implementation of a mandatory physical activity policy following the cessation of implementation support and

iii)   describe a case study of a sustainability intervention in early care settings.

Summary:

First, Drs Adam Shoesmith will present the findings of a review which identifies the factors that influence the sustainment of interventions (policies, practices, or programmes) in childcare services an schools that address the leading risk factors of chronic disease. These are the he fundamental building blocks for the development of any implementation support strategy.

Second, Dr Taren Swindle will describe a study that assessed factors that were associated with sustainment of two evidence-based programs implemented in early childcare education.

Lastly, Dr Nicole Nathan will present the findings of an RCT to determine schools' sustained implementation of a mandatory physical activity policy following cessation of implementation support.

The symposium will include a discussant Dr Femke van Nassau who will reflect on the presentations and facilitate a panel and audience discussion about the gaps in the current evidence-base and what research questions and methods are needed to advance sustainment research in nutrition and physical activity.

Format:

This symposium will include a chair, three presentations and a discussant. The introduction by the chair will be 10 minutes and help frame the presentations in the context of current available evidence (Dr van Nassau), the three presentations (15 minutes) and the chair will facilitate an interactive discussion (15 minutes).

What factors influence the sustainment of nutrition and physical activity interventions in schools and childcare services: findings from a systematic review

Mr. Adam Shoesmith[1], Dr. Alix Hall[1,3], Prof. Luke Wolfenden[1,2,3], Associate Professor Rachel Shelton[4], Dr. Rachel Sutherland[1,2,3], Associate Professor Byron Powell[5], Associate Professor Sze Lin Yoong[1,2,3], Ms Cassandra Lane[1,2,3], Dr. Nicole Nathan[1,2,3]

[1]The University of Newcastle, Newcastle, Australia, [2]Hunter New England Population Health, Newcastle, Australia, [3]Hunter Medical Research Institute, Newcastle, Australia, [4]Columbia University, New York, USA, [5]Washington University, St. Louis, USA

SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: To identify and synthesise factors (barriers and facilitators) that influence the sustainment of interventions (policies, practices, or programmes) in schools and childcare services that address the leading risk factors of chronic disease.

Methods: Seven electronic databases and relevant reference lists were searched for articles, of any design, published in English, from inception to March 2020. Articles were included if they qualitatively and/or quantitatively reported on school or childcare stakeholders' (including teachers, principals, administrators, or managers) perceived barriers or facilitators to the sustainment of interventions addressing poor diet/nutrition, physical inactivity, obesity, tobacco smoking, or harmful alcohol use. Two independent reviewers screened texts, and extracted and coded data guided by the Integrated Sustainability Framework, an existing multi-level sustainability-specific framework that assesses factors of sustainment.

Results: Of the 13,158 articles identified, 31 articles met the inclusion criteria (8 quantitative, 12 qualitative, 10 mixed-methods, and 1 summary article). Overall, 29 articles were undertaken in schools (elementary n=17, middle n=3, secondary n=4, or a combination n=5) and two in childcare settings. Findings suggest that the majority of the 59 barriers and 74 facilitators identified to impact on intervention sustainment were similar across school and childcare settings. Factors predominantly relating to the 'inner contextual factors' of the organisation including: availability of facilities or equipment, continued executive or leadership support present, and team cohesion, support, or teamwork were perceived by stakeholders as influential to intervention sustainment.

Conclusions: This review identified multi-level factors that can be addressed by strategies to improve the sustainment of such interventions, and the presentation will show how future research might address gaps in the evidence base.

Predictors of Sustainment of Two Distinct Nutrition and Physical Activity Programs in Early Care and Education

Ms. Virginia Mitchell[1], Prof. Laura Bellows[2], Dr. Susan Johnson[3], Dr. James Selig[1], Dr. Geoff Curran[1], Dr. Leanne Whiteside-Mansell[1], Dr. Dong Zhang[1], Ms. Janna Martin[1], Ms. Abigal Flesher[3], **Dr. Taren Swindle[1]**
[1]University of Arkansas for Medical Sciences, Little Rock, USA, [2]Cornell University, Ithaca, USA, [3]University of Colorado Anschutz Medical Campus, Aurora, USA

SIG - Primary Choice: E. Implementation and scalability
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Purpose: Despite the importance of sustaining nutrition and physical activity in public health contexts, there has been limited research exploring factors that foster or impede sustainment. The purpose of this study was to investigate factors that were associated with sustainment of two evidence-based programs implemented in early childcare education (ECE) settings (Together, We Inspire Smart Eating; WISE and Food Friends, FF).

Methods: The research team distributed a survey to directors of sites who were previously trained in FF ($n = 29$) or WISE (n = 27). The survey included two indicators of sustainment as primary outcomes: (1) Continued Attention (e.g., general focus on nutrition and physical activity promotion) and (2) Program Fidelity (how well centers used specific components of WISE or FF). A modified Program Sustainability Assessment Tool (PSAT, Luke et al., 2014) assessed internal and external factors potentially related to program sustainment. The participant program (WISE/FF), the number of years since the program had been implemented (i.e., lag), and the subscales of the PSAT were entered into regression models as predictors of Continued Practice and Program Fidelity.

Results: PSAT scores accounted for a signification portion of variance in Program Fidelity [$F(8,37) = 12.21$, $p < .001$, $R^2 = 0.67$] but not Continued Attention [$F(8,37) = 1.28$, $p = .28$, $R^2 = .22$]. The Environmental Support [$\beta = .44$, $t(37) = 2.58$, $p = .014$], Organizational Capacity [$\beta = .62$, $t(37) = 3.04$, $p = .004$], and Program Adaptation [$\beta = .340$, $t(37) = 2.67$, $p = .011$] subscales were significant, positive predictors, and Fund Stability was a negative predictor [$\beta = -.57$, $t(37) = 2.67$, $p = .011$] of Fidelity. Program type (WISE/FF) and lag did not predict Continued Attention or Program Fidelity.

Conclusion: This study suggests that predictors of sustained Program Fidelity are distinct from predictors of Continued Attention. Further, organizational capacity was the strongest predictor of sustained Program Fidelity. This suggests that future implementation science in ECE may explore the value of capacity building strategies to improving sustainment of evidence-based practices for nutrition and physical activity.

Multi-strategy intervention increases school implementation of a mandatory physical activity policy but does it sustain it?: outcomes of a cluster randomised controlled trial

Dr. Nicole Nathan[1,2,3], Dr. Alix Ivers[1,3], Ms. Nicole McCarthy[1,2,3], Ms Cassandra Lane[1,3], Dr. Rachel Sutherland[1,2,3], Prof. Luke Wolfenden[1,2,3]

[1]*The University of Newcastle, Newcastle, Australia,* [2]*Hunter New England Population Health, Newcastle, Australia,* [3]*Hunter Medical Research Institute, Newcastle, Australia*

SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: To assess if a multi-strategy intervention which effectively increased weekly minutes of structured physical activity (PA) implemented by classroom teachers at 12 months is sustained at 18 months.

Methods: A cluster randomised controlled trial with 61 primary schools in New South Wales Australia. The 12-month multi-strategy intervention included; centralised technical assistance, ongoing consultation, principal's mandated change, identifying and preparing school champions, development of implementation plans, educational outreach visits and provision of educational materials. Control schools received usual support (guidelines for policy development via education department website and telephone support). Weekly minutes of structured PA implemented by classroom teachers (primary outcome) was measured via teacher completion of a daily log-book at baseline (October–December 2017), 12-month (October–December 2018) and 18-month (April–June 2019). Data were analysed using linear mixed effects regression models.

Results: Overall, 400 class teachers at baseline, 403 at 12 months follow-up and 391 at 18 months follow-up provided valid primary outcome data. From baseline to 12-month follow-up, teachers at intervention schools recorded a greater increase in weekly minutes of PA implemented than teachers assigned to the control schools by approximately 44.2 min (95% CI 32.8 to 55.7; p<0.001) which remained at 18 months, however, the effect size was smaller at 27.1 min (95% CI 15.5 to 38.6; p≤0.001)

Conclusion: A multi-strategy intervention increased mandatory PA policy implementation. Some, but not all of this improvement was maintained after implementation support concluded.

S.1.06 - Lessons learned from evidence-based practice: Promoting healthy ageing through improving movement behaviours

Room 150

May 19, 2022, 8:25 AM - 9:40 AM

Purpose:
The purpose of this symposium is to present the latest evidence regarding the associations between patterns of physical activity and context-specific sedentary behaviour, with geriatric-relevant health outcomes, and to provide in-depth information about conducive contexts and working mechanisms in sedentary behaviour interventions for older adults.

Rationale:
Evidence shows that older adults are the least physically active and most sedentary segment of the population. Less than one quarter engages in regular physical activity, and the majority spend at least 80% of their awake time in sedentary activities which represents 8 to 12 hours per day. This is alarming, as limited physical activity and prolonged sedentary behaviour has been associated with an increased risk for negative health outcomes.

Objectives:
The aim of this symposium is twofold. Firstly, we would like to inform future guidelines on physical activity and sedentary behaviour in older adults by giving insight into the specific associations between patterns of physical activity and context-specific sedentary behaviours with geriatric-relevant health outcomes (e.g. physical functioning, cognitive functioning, psychosocial functioning and frailty). Secondly, we would like to guide the development and implementation of future interventions by explaining how, why, and in which circumstances interventions aimed at the reduction of older adults' sedentary behaviour work or do not work.

Summary:

The symposium will start with a general introduction on physical activity, sedentary behaviour and healthy aging. Subsequently, three different studies will be presented and discussed. The first two studies are observational studies; one was conducted among Belgian older adults aged over 80 years, and one was conducted in US older adults aged over 50 years. Both studies examined associations with geriatric-relevant health outcomes. The final study was a realist review conducted to identify conducive context and working mechanisms of sedentary behaviour interventions in older adults. After the presentation of the three studies, a discussion will be facilitated.

Format:

- Prof. Maria Giné-Garriga (Spain): General introduction (10')

- Elien Lebuf (Belgium): Sedentary time and physical, cognitive and psychosocial functioning in the oldest-old: the Healthy 80+ study (15')

- Prof. Borja Del Pozo Cruz (Denmark): Physical activity fragmentation as novel early marker of frailty in older adults (15') Dr. Sofie Compernolle (Belgium): Identifying conducive context and working mechanisms of sedentary behaviour interventions in older adults: a realist review as part of the 'Stand UP Seniors' project (15')

- Prof. Sebastien Chastin (UK): Discussion (20')

Interaction:

Interaction will be facilitated by Prof. Sebastien Chastin

Sedentary time and physical, cognitive and psychosoical functioning in the oldest-old: the Healthy 80+ study

Ms. Elien Lebuf[1], Mr. Kenneth Vanhove[1], Dr. Melanie Beeckman[1], Prof. Delfien Van Dyck[1], Dr. Sofie Compernolle[1,2]
[1]Ghent University, Ghent, Belgium, [2]Research Foundation Flanders, Brussels, Belgium

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Sedentary Behavior

Purpose: Sedentary time is associated with an increased risk of mortality and cardiometabolic disease in older adults. However, little is known on the specific associations of (context-specific) sedentary time with geriatric-relevant health outcomes in the oldest-old. Therefore, the aim of this study was to examine the associations between (context-specific) sedentary time and physical, cognitive and psychosocial functioning in the oldest-old.

Methods: A cross-sectional exploratory study, called Healthy 80+, was conducted from March to September 2021 among 86 Flemish older adults (> 80 years). Total sedentary time was measured using Activpal accelerometers, and context-specific sedentary time was measured using a seven-day diary. Physical, cognitive and psychosocial functioning were assessed using the Short Physical Performance Battery (SPPB), the Cambridge Neuropsychological Test Automated Battery (Cantab), and the Short Form 36 (SF-36) Health Survey, respectively. Generalized linear models were performed to examine associations between (context-specific) sedentary time and physical, cognitive and psychosocial functioning.

Results: The oldest-old spend on average 10.48 (±2.57) hours per day sedentary. Highest sedentary time was spent while watching television (165.20 min/day ± 38.15), reading (73.87 min/day ± 11.88), and having meals (56.63 min/day ± 7.74). Preliminary regression analyses, adjusted for gender, age and socio-economic status, showed that total sedentary time was not associated with any of the investigated physical, cognitive and psychosocial functioning outcomes, whereas several associations were found with context-specific sedentary time.

Conclusions: As expected, sedentary time was high among the oldest-old. Additional efforts might be needed to reduce sedentary time in this sample of older adults. Although causal direction between context-specific sedentary time and geriatric-relevant health outcomes remains uncertain, our results suggests that future interventions should better focus on specific types of sedentary behaviour rather than on reducing total sedentary time.

Physical activity fragmentation as novel early marker of frailty in older adults

Prof. Borja Del Pozo Cruz[1]
[1]University of Southern Denmark, Odense, Denmark

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: This study aimed to explore the associations between activity fragmentation and frailty status in a population-based US sample of people 50 years and over.

Methods: Cross-sectional data of participants 50 years or over (n=2,586) were used from the 2003-2006 waves of the National Health and Nutrition Examination Survey (NHANES). Frailty status was assessed using a modification of the Fried criteria, validated for application to NHANES data. Physical activity fragmentation was measured by accelerometry. To calculate activity fragmentation, an active-to-sedentary transition probability was calculated as the number of physical activity bouts divided by the total sum of minutes spent in physical activity. Age, gender, ethnicity, education, mobility issues, drinking status, smoking status, and chronic diseases were self-reported in the NHANES study. Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared. A multivariable ordinal logistic regression model was conducted to examine the association between activity fragmentation and frailty.

Results: An increment of 30 min/day of physical activity was associated with a decreased likelihood of frailty (OR [95%CI] = 0.91 [0.87 to 0.94]; AME [95%CI] = –0.014 [–0.019 to –0.009]). An increment of 1SD in activity fragmentation was associated with an increased likelihood of frailty (OR [95%CI] = 1.36 [1.13 to 1.664]; AME [95%CI] = 0.048 [0.019 to 0.077]). Compared with participants in the "high activity fragmentation/low physical activity" category, participants in the "low activity fragmentation/low physical activity" and "low activity fragmentation/high physical activity" categories were associated with a lower likelihood of frailty.

Conclusions: Our results suggest that a high fragmented physical activity pattern is associated with frailty in adults and older adults. This association was evident independent of total volume of physical activity and time spent sedentary.

Identifying conducive contexts and working mechanisms of sedentary behavior interventions in older adults: a realist review as part of the 'Stand UP Seniors' project

Dr. Sofie Compernolle[1,2], Prof. Delfien Van Dyck[1], Mr. Kenneth Vanhove[1], Sebastien Chastin[3], Prof. Emelien Lauwerier[1], Prof. Greet Cardon[1]

[1]*Ghent University, Ghent, Belgium, *[2]*Research Foundation Flanders, Brussels, Belgium, *[3]*Glasgow Caledonian University, Glasgow, United Kingdom*

SIG - Primary Choice: A. Ageing
Age Category: All ages
Subject Category: Sedentary Behavior

Purpose: Although several interventions have been developed aimed at the reduction of sedentary behavior in older adults, little in-depth information is available on how these complex interventions work in different contexts. Therefore, the aim of this study was to unpack the mechanisms of how existing interventions aimed at the reduction of older adults' sedentary behavior work or fail to work in particular contexts in order to optimize the development and implementation of future sedentary behavior interventions.

Methods: A realist review was conducted as a first part of the Stand UP Seniors (SUPS) project. The review was structured according to the process recommended by Pawson et al.: (1) research questions were defined, and an initial program theory (IPT) was established, (2) evidence was searched and appraised based on relevance and rigor, (3) data were extracted using back-and-forth movements between the initial program theory and the observed data (i.e. retroduction), and (4) conclusions were drawn. The iterative process resulted in a final program theory that can be used to identify which context(s) trigger(s) which mechanism(s), and in turn might elicit which outcome(s). This theory will be used to inform the second and the third part of the SUPS project, which are, respectively, the development and evaluation of a sedentary behavior intervention in older adults.

Results: The Dual-Process Theory of Sedentary Behavior, and the Elaboration Likelihood Model of Persuasion were used to formulate the IPT. The three main assumptions of the IPT were: (1) the level of motivation, the available opportunities, and the functional capabilities influence how older adults respond to the offered resources in sedentary behavior interventions, (2) resources including social support, feedback on behavior, goal setting, self-monitoring of behavior and information about health consequences are successful to reduce older adults sedentary behavior if the context is conducive, and (3) increasing motivation, awareness, and self-regulation skills are expected responses needed to achieve reductions in older adults' sedentary behavior.

Conclusions: Successful interventions aimed at the reduction of older adults' sedentary behaviour are complex and should be tailored to older adults' context to trigger cognitive and emotional responses needed to achieve behaviour change.

KEYNOTE BY DR. DAVID CONROY

Context-sensitive, just-in-time interventions to promote physical activity and fluid intake

Ballroom

May 19, 2022, 9:50 AM - 10:50 AM

Many ordinary behaviors in daily life can have an extraordinary impact on health. These ordinary behaviors, such as physical activity or fluid intake, become second nature and automatic for some. Others struggle with these behaviors, especially when their lives are busy and competing goals vie for their attention and effort. One solution for this sizable latter group involves using just-in-time adaptive interventions to tailor intervention delivery to moments of opportunity or vulnerability. In this talk, I will describe ongoing work that leverages technology to monitor contextual changes and inform micro-intervention decisions in two digital messaging interventions. The first example involves a physical activity intervention that applies tools from control systems engineering to develop person-specific models of physical activity dynamics and decision rules based on those models. Inputs in these models include a person's recent physical activity, the day of the week, momentary location-specific weather conditions, and historical responses to different message content (e.g., move more, sit less). Those person-specific models are used to determine if a message at that moment would be expected to increase physical activity and which message would be best to send. The second example involves a fluid intake intervention for patients with kidney stones. It integrates a connected water bottle, mobile application, and a custom smartwatch app that detects drinking gestures into a semi-automated tracking system to detect drinking behavior. When patients with goals to drink regularly throughout the day lapse, the system delivers delightful reminders to drink via multimedia text messages. These digital tools illustrate the potential for drawing on contextual information to deliver interventions at moments of opportunity or vulnerability. They represent one step toward realizing a vision of precision behavioral interventions for physical activity and behavioral nutrition.

Coffee Break and Posters P1

May 19, 2022, 10:50 AM - 12:05 PM

P1.01 The effects of an intergenerational exercise program on the functional fitness and quality of life of older adults

Mr. Yu-Hsiang Peng[1], Associate Professor Hui-Ping Cheng[2], Assistant Professor Yi-Chieh Liang[3], Miss I-ling Kuo[4]
[1]Department of Physical Education and Sport Sciences, National Taiwan Normal University, Taipei, Taiwan, [2]Department of Leisure and Sport Management, National Taipei University, New Taipei, Taiwan, [3]Sports & Healthy Center, Huafan University, New Taipei, Taiwan, [4]Graduate Institute of Sport, Leisure & Hospitality Management, National Taiwan Normal University, Taipei, Taiwan

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

The physical and mental health of older adults is a critical issue in society. Past studies have confirmed that intergenerational activities and exercise can promote intergenerational communication and physical and mental health, including quality of life, satisfaction, well-being, and self-efficacy. Therefore, this study explored the effects of intergenerational exercise (IE) and multi-component exercise (MCE) on the functional fitness and quality of life of older adults and assessed the differences between IE and MCE.

A total of 77 older adults were recruited and divided into IE or MCE groups; all classes lasted 120 minutes and were taken twice a week for a total of 8 weeks. A pre- and post-test experimental design was utilized to test the effects of the interventions on functional fitness and quality of life, and dependent- and independent-sample t-tests were used to assess the differences between groups.

We observed significant differences in functional fitness and quality of life in the IE group, as well as significant differences in functional fitness in the MCE group. Significant changes in functional fitness and quality of life were also observed between the pre- and post-test performance differences in each group. Finally, the IE group demonstrated greater progress in functional fitness and quality of life compared with the control group.

The results demonstrated that IE courses can effectively improve physical and mental health, which can enhance the understanding between generations. Future studies should include a control group to compare results and explore different demographics, such as older adults in community institutions, nursing homes, and rural areas. Finally, utilizing a time-series research design could verify the differences between different intervention periods. The present research provides suggestions for future studies by academic or government-related institutions.

P1.02 The relationship between physical activity status of community-dwelling older adults and outdoor exercise equipment in parks: A pilot study

Prof. Shao-Hsi Chang[1], Assistant Professor Yi-Chieh Liang[2], Miss Yung-Chi Liu[3], **Mr. Yu-Hsiang Peng[1]**, Assistant Professor Hsin-hung Ho*[4]

[1]*Department of Physical Education and Sport Sciences, National Taiwan Normal University, Taipei, Taiwan, [2]Sports & Healthy Center, Huafan University, New Taipei City, Taiwan, [3]Graduate Institute of Sport, Leisure & Hospitality Management, National Taiwan Normal University, Taipei, Taiwan, [4]Mackay Junior College of Medicine, Nursing and Management, Taipei, Taiwan*

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: In recent years, many countries have responded to an aging society by increasing the availability of physical fitness facilities at community parks and implementing environmental change and infrastructure strategies to provide opportunities for and promote physical activity among older adults. This study aimed to clarify the availability of outdoor exercise equipment and evaluate physical activity among older adults, in addition to exploring the integration, ease of use, and accessibility of information regarding outdoor exercise equipment at various community parks provided by domestic government units or formal reports.

Methods: This study used online questionnaires to collect data using the self-produced Community Senior Neighborhood Park Use Survey and the widely accepted International Physical Activity Questionnaire Short Form (IPAQ-SF). Data analysis was performed on 403 valid questionnaires using statistical methods, such as descriptive statistics, analysis of variance, and Pearson product-moment correlation coefficient.

Results: Significant differences were identified in the amount of physical activity reported by older individuals depending on access to outdoor exercise equipment and the likelihood of visiting the park; however, distance from the park had no significant effect on the amount of physical activity reported. The amount of physical activity performed by older adults was affected by environmental factors, including whether fitness facilities are available and whether individuals are likely to visit the park. No correlation was found between the distance from an individual's home to a park and the amount of physical activity reported. Only five county governments in Taiwan provide open access to information on fitness facilities at local parks, and the names and descriptions of these facilities vary across governments, with no consensus in type and standard of facilities.

Conclusions: This study identified a correlation between physical activity of older adults and the availability of physical fitness equipment in community parks. Public disclosure regarding the availability of outdoor exercise equipment is not currently sufficient. The effects and health benefits of fitness facilities in parks among older adults requires additional research to verify these findings, and government departments must work to improve the accessibility and availability of information regarding sports equipment in park settings in the future.

P1.03 Adolescent exposure to food and beverage marketing on social media, by gender: A pilot study

Ms. Ashley Amson
[1]*University of Ottawa, Ottawa, Canada*

SIG - Primary Choice: D. e- & mHealth
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Differential exposure to food marketing may be contributing to gender disparities in diet, weight status, and health outcomes. Research has established that food marketers target adolescents on social media; however, little research has examined if and how food and beverage marketing on digital media differs by gender. The objective of this study was to explore whether or not adolescents viewed dissimilar food and beverage categories, food and beverage marketing, and food and beverage marketing techniques on social media, based on their gender.

Methods: This study was a secondary analysis of 49 adolescents' (aged 12-16) exposures to food and beverage marketing. Content analysis of marketing techniques in each marketing exposure was performed. Chi-square or Fischer exact tests were performed to compare the number of marketing exposures, the healthfulness of food marketing exposures, and the marketing techniques to which boys and girls were exposed.

Results: Overall, adolescent boys and girls were exposed to similar levels of food marketing instances (X= 3.1 for boys and X = 3.2 for girls) per 10-minute period of social media use. Girls observed more marketing for fast food items (n=52, 57% vs n=23, 37%) and ultra-processed foods (n=61, 88%) compared to boys (n=30, 71%; $x2 = 5.094$, p=0.024). Girls also viewed a greater proportion of exposures that included the presence of adolescents (n=12, 13%, p=0.046), whereas boys viewed a higher proportion of marketing exposures that exhibited appeals to achievement (n=14, 23%, p=0.006), athleticism (n=16, 26%, p=<0.001), and featured an athlete (n=11, 18%, p=<0.001).

Conclusions: This research indicates that gender plays a role when it comes to the digital marketing of unhealthy food and beverages. Marketing techniques, healthfulness of foods, and food categories appear to differ based on the gender of the viewer. Gender is a determinant of health and must be considered in policies that address obesogenic environments. Additional research investigating the gender-based differences of digital food and beverage marketing is necessary to advise the construction of gender-sensitive policies intended to limit unhealthy food marketing to adolescents.

P1.04 DFEND: Diet, Food, Exercise, and Nutrition During Social Distancing, a mHealth approach to promote behavior change

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: The rate of adult obesity in the United States is over 42%. Obesity is a complex problem and is the result of many factors including unhealthy eating patterns, lack of physical activity, food insecurity, and low health literacy. For this reason, efforts to reduce obesity and obesity-related chronic disease must address these issues on multiple fronts. The purpose of DFEND was to develop and implement a multimedia approach to enable and reinforce healthy eating patterns and physical activity in adults during the COVID-19 pandemic.

Methods: Participation was open to all adults over the age of 18 years. DFEND was a 20-week mHealth program offering weekly live Zoom sessions focused on behavior change; weekly e-newsletters, weekly personalized sessions with experts in physical activity, behavior change, and nutrition; weekly YouTube demonstrations, a private Facebook group, and "Fast Facts" posted on the DFEND website. A digital survey assessing health status, negative emotional state (DASS), sleep (PSQI), and dietary intake was administered pre-, mid-, and post-intervention and changes within individuals were compared using multilevel negative binomial regression.

Results: Between 40-100 unique participants joined weekly Zoom Sessions and 190 participants received the e-newsletter. For all participants beginning DFEND and completing pre-assessment surveys (n=65, 86% females, mean age=40.5), the mean DASS depression score was 5.5 (SD 5.4, n=64), anxiety was 4.0 (4.3, n-65), stress was 6.7 (5.6, n=63) and the mean PSQI was 6.7 (4.7, n=51). In participants who completed at least 2 assessments (n=33), DASS depression scores decreased from 10.7 (SE 3.4) at pre-assessment, to 8.9 (2.9) at mid-assessment, and 7.4 (2.5) at post-assessment (p=0.292). DASS anxiety scores decreased from 7.2 (SE 1.2) at pre-assessment, to 6.8 (1.2) at mid-assessment, and 4.0 (0.8) at post-assessment (p=0.004). DASS stress scores decreased from 10.9 (SE 2.5) at pre-assessment, 12.4 (2.8) at mid-assessment, and 8.4 (2.1) at post-assessment (p=0.129). Sleep scores did not change with 4.9 (SE 0.6) at pre-assessment, 4.6 (0.5) at mid-assessment, and 4.3 (0.6) at post-assessment (p=.687)

Conclusions: Participation in a multimedia mHealth program focused on behavior change improved sleep, depression, anxiety, and stress during the COVID-19 pandemic. However, further research is needed.

P1.05 Evaluate the effectiveness of a virtual family-based childhood obesity management program delivered during the COVID-19 pandemic

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SIG - Primary Choice: D. e- & mHealth
Age Category: Children 6-12 yrs
Subject Category: All

Introduction: The Generation Health Program (GHP) is a community-based 10-week healthy living program designed for families with children (8-12 years of age) who are off the healthy weight trajectory (BMI ≥85th percentile). Due to the COVID-19 pandemic, the GHP was adapted to virtual delivery, which consisted of 10 weeks of weekly online group sessions and access to a self-guided online portal. The purpose of this study was to assess the effectiveness of the GHP program delivery during the COVID-19 pandemic.

Objective: Evaluate the changes in children's physical activity, eating behaviours as well as parental healthy living support behaviours pre and post the GHP intervention.

Methods: Families with children aged 8-12 years old with a BMI ≥85th percentile were recruited in British Columbia, Canada. Virtual delivery GHP programs took place between April 2020 to July 2021. Families were asked to complete an online assessment pre and post GHP intervention. The program curriculum focused on family involvement, healthy eating, physical activity, sleep and mental health. Parental support for child healthy eating and physical activity, child's dietary behaviours and physical activity were assessed using validated questionnaires pre and post the program. Paired T-tests and effect size (Cohen's d) were used to examine changes in intervention outcomes.

Results: Participants (n=106 families) were representative of the BC population (white: 60%; Bachelor's degree or higher: 38%). Over the 10-week intervention, participating families spent an average of 421 minutes accessing the weekly e-sessions on the Family Portal. Children significantly improved moderate-to-vigorous physical activity levels (D = 0.42 ± 1.99; $p <.001$, $d=.21$) relative to baseline. However, no significant changes in child fruit and vegetable intake were observed following the intervention. Parents significantly improved home healthy food environment (D = 2.10 ± 0.89; $p = .014$; $d=.24$) and support for physical activity (D = -1.21 ± 1.90; $p < .001$; $d=.63$) following the intervention.

Conclusion: The adapted virtual GHP showed potential effectiveness in improving children's physical activity behaviour and parental support behaviours. Lessons

learned from this COVID-adapted GHP can be used to further enhance virtual family-based childhood obesity management programs.

P1.06 Online co-design sprints to develop a web app to promote responsive feeding practices among parents of toddlers

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SIG - Primary Choice: D. e- & mHealth
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Fussy eating – a common behavior during toddlerhood – is a source of stress and concern to many parents. Addressing parents' concerns about fussy eating is important, as concern for fussy has been shown to mediate the use of nonresponsive feeding practices, such as pressure and using food to reward eating. Previous research has reported on parents' interest in accessing support online and the importance of using co-design methods to develop health promotion interventions.

The aim of this presentation is to describe the online, iterative 'co-design sprints' used to develop Fussy Eating Rescue, a web-based intervention to promote responsive feeding among parents concerned for toddler fussy eating.

Using the tenants of Agile Design, Fussy Eating Rescue was iteratively developed during three cycles of 'co-design sprints,' with each cycle occurring over a period of 5 to 9 days. The cycles consisted of four steps: (1) prototype development, (2) real-time prototype refinement with participants during online co-design interviews, (3) analysis, and (4) identifying and prioritizing refinements to be included in the next cycle's prototype. A convenience sample of Australian parents concerned about their toddler's fussy eating were recruited to participate. WordPress was selected for prototype development because its 'what you see is what you get' editing capabilities facilitated real-time co-design with end users. The final version of Fussy Eating Rescue underwent two rounds of usability evaluation, which included cognitive interviews and rating via the System Usability Scale (SUS).

Nineteen parents participated in the co-design sprints, providing input on the features, content, layout, and functionality of the web app. Based on feedback received during the co-design sprints, Fussy Eating Rescue underwent substantive changes. Eight parents participated in the first found of usability evaluation, which showed an acceptable mean SUS of 75 (SD 19.2). Refinements made based on cognitive interview findings resulted in a higher mean SUS in Round 2 (mean = 81, SD 7.2).

Online co-design sprints with a real-time prototyping platform was an effective means of developing an online intervention for parents concerned for fussy eating. An ongoing pilot randomized-control trial will provide further insights into its acceptability and efficacy.

P1.07 Implementation of cardiac telerehabilitation to address access inequalities: A qualitative study of multi-stakeholder perspectives

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SIG - Primary Choice: D. e- & mHealth
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Cardiac telerehabilitation interventions could improve participation rates by addressing access barriers, but evidence to guide implementation in real-world clinical settings is lacking. We explored stakeholders' perceptions about critical factors that are likely to impact on successful translation of cardiac telerehabilitation into clinical practice in Western Victoria, Australia.

Methods: We recruited consumers [adults with CAD/ACS]; cardiac rehabilitation (CR) practitioners; and CR providers [healthcare managers]) from one metropolitan and three regional healthcare centers. We conducted semi-structured interviews (with consumers) and focus group discussions (1 each with practitioners and providers per site) when coincidentally, Victoria, Australia had experienced a strict lockdown due to the COVID-19 pandemic. Two implementation research frameworks (Consolidated Framework for Implementation Research [CFIR] and Nonadoption, Abandonment, Scale-up, Spread, and Sustainability [NASSS]) were used to guide interviews and discussions with the participants. An inductive analysis was carried out to identify emerging themes.

Results: In total, 47 stakeholders participated in the study (16 consumers, female=5, 61.1±10.0y; 20 practitioners, female=14, 36.6±11.8y, primarily exercise physiologists; 11 providers, female=7, 46.2±9.2y, primarily coordinators). Data were collected between February–October 2020. We identified six emergent themes: (1) Targeting the participants, (2) Knowledge, (3) Resources, (4) Change management, (5) Design, and (6) Regulation, which altogether consisted of 23 sub-themes. The sub-themes included a range of barriers and facilitators perceived imperative by the participants to implement cardiac telerehabilitation successfully. Perceptions were generally consistent across study sites, but the value proposition may be site-specific, and there was some variation between stakeholder groups.

Conclusion: Our study highlighted the need for a thorough strategy to address barriers and leverage facilitators for the successful implementation of cardiac telerehabilitation. Defining how cardiac telerehabilitation could be integrated into routine service adds value to the existing healthcare delivery practice.

P1.08 A Randomized Feasibility Study Comparing the Effects of Mobile-Based Financial Incentive Interventions for Adults at Risk of Developing Hypertension

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SIG - Primary Choice: D. e- & mHealth
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Background: Hypertension is the leading modifiable risk factor for cardiovascular disease and mortality. Adopting lifestyle modifications, like increasing physical activity (PA), can be an effective strategy in blood pressure (BP) control, but many adults are not meeting PA guidelines. Financial incentive interventions have the power to increase PA levels but are often limited due to cost. Further, mHealth technologies can make these programs more scalable. There is a gap in the literature about the most feasible and effective financial incentive PA framework, thus pay-per-minute (PPM) and social impact bond (SIB) frameworks were explored.

Objectives: 1) Determine the feasibility (recruitment, engagement, acceptability) of an eight-week mobile-based PPM and SIB hypertension prevention PA program, and 2) explore the effects of PPM and SIB interventions relative to control on PA levels, BP, and PA motivation.

Methods: Adults aged 40-65 not meeting the Canadian PA Guidelines were randomized into the following groups: financial incentive groups, PPM or SIB, or a control group. Feasibility outcome measures (recruitment, engagement, acceptability) were assessed. At baseline and follow up, BP and PA motivation were measured. Changes in PA outcomes relative to baseline were compared among groups at four and eight weeks. Changes in BP and PA motivation relative to baseline were compared at follow-up.

Results: 55 participants were randomized to PPM (n=19), SIB (n=18), control (n=18) groups. There was a 77% recruitment rate and 65% engagement rate. The intervention received positive feedback, with 90% of comments praising the intervention structure, financial incentive, and educational materials. Relative to control at four weeks, the PPM and SIB arms increased their MVPA with medium effect (PPM: η^2_p=0.06; SIB: η^2_p=0.08). At eight weeks, PPM maintained a small effect relative to control (η^2_p=0.003) and SIB displayed a medium effect (η^2_p=0.07). Small effects were observed for PPM and SIB relative to control for BP and PA motivation.

Conclusion: The recruitment, engagement, and acceptability results suggest that future full-scale RCT examining the efficacy of SIB, PPM relative to control is feasible. Further, the SIB arm may have a larger effect than PPM in increasing MVPA per week relative control at eight weeks.

P1.09 Implementation Strategies to Support Built Environment Approaches in Community Settings

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Background: Built environment approaches are recommended to improve population physical activity levels. Implementation strategies are needed to improve uptake, but little is known about effective strategies in to translate research to practice in community settings.

Purpose: Inform implementation strategies through understanding delivery agents' perceptions of 1) built environment approaches, 2) a toolkit developed to support implementation, and 3) other required implementation strategies.

Methods: A toolkit was developed to detail the process of partnering to change the built environment and provide examples of built environment approaches (e.g., walking paths, traffic calming). Data were collected through focus groups (N=3) with Extension Agents (n=46) in 2020. The semi-structured focus group script was based on the Consolidated Framework for Implementation Research and the Technology Acceptance Model. Rapid content analysis techniques and an inductive, grounded theory approach were used to interpret the data.

Results: Focus groups generated meaning units coded into themes of perceptions of the intervention (subthemes: barriers, resources needed, and facilitators) and perceptions of the toolkit (subthemes: components to add, positive perceptions, helpful components). The most common resources needed were coalition guidance and funding.

Conclusions: Agents experience barriers and facilitators to implementing built environment approaches and have specific needs for support. Based on the results, we created implementation strategies: 1) Places for Physical Activity toolkit, 2) Coalition Coaching, and 3) Mini-Grants. Future work is needed to investigate the effectiveness of these implementation strategies.

P1.10 Evaluating the implementation of a family-based childhood obesity management program delivered during the COVID-19 pandemic

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: The Generation Health Program (GHP) is a free, family-based 10-week healthy living program aimed to prevent and manage childhood obesity. Pre-COVID-19, GHP consisted of 10 weekly in-person and self-guided online sessions plus four additional community-based sessions. During the pandemic, GHP transitioned weekly in-person and community-based sessions to video conference delivery. The purpose of this study was to evaluate program implementation following transition to a virtual-only delivery model.

Methods: Families with children aged 8-12 years old with a BMI ≥85th percentile were recruited in British Columbia (B.C.), Canada. Virtual delivery GHP programs took place in B.C. from April 2020 to July 2021. Family level implementation measures were reach, recruitment, satisfaction, and barriers/facilitators to participation. Program delivery level measures were adoption, acceptability, and barriers/facilitators to implementation. Data was collected through parent and child satisfaction surveys, attendance forms, and post-program parent and program leader interviews. Interviews were transcribed and categories identified. Descriptive statistics were used to examine recruitment and satisfaction.

Results: 106 families enrolled in the four program cycles affected by COVID-19; some families delayed enrollment to wait for in-person programs. 73 families commenced the program and 53 completed. Participants were representative of the B.C. population (white: 60%; Bachelor's degree or higher: 38%). Parent and child satisfaction ratings were over 3/5 for all measures. Barriers to participation included: too much screen time ("Zoom-fatigue") and holding participants' attention; families reported few technology issues. Facilitators to participation included: time saved not travelling, no transportation concerns, free of cost, learning from the comfort of home, and complimentary recreation passes.

Program leader interviews showed acceptability across all sites (interview participation=93%). Barriers to implementation were recruitment, small group size, families arriving late, and families dropping to wait for in-person programs. Facilitators to implementation were increased participant attendance and engagement, and improved participant support from program leaders.

Conclusions: The virtual GHP was acceptable and feasible for both families and program delivery partners but additional benefits and challenges of virtual delivery were highlighted. These results can help improve future

program delivery and scalability of GHP and other virtual family-based healthy living and childhood obesity management programs.

P1.11 Inter-rater agreement in assessing fidelity of a pediatric weight management intervention

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Pediatric weight management interventions (PWMI) are shown to reduce child weight status but detailed information on implementation fidelity is needed to determine under which circumstances the intervention is effective. The purpose of this study is to report on the inter-rater agreement between an expert direct observer and trainees for a piloted fidelity direct observation assessment of a PWMI, Building Healthy Families (BHF). Direct observations occurred weekly for 12 weeks in 4 Midwest micropolitan communities. Three additional communities will implement BHF in the Spring of 2022.

A qualitative iterative process was used to create and refine a fidelity assessment to capture adherence to protocol, dose, quality of delivery, and participant engagement (n=8 research team members). We developed and piloted a fidelity checklist specific to the core BHF components to measure the session structure (e.g., adherence to core program components, the learning objectives met, and the planned activities completed) and process (e.g., the quality of delivery and adaptations). Items for activities completed and if adaptations occurred were scored yes or no, and the session objectives, structure, and process items were scored on a 3-point scale (0=did not cover, 1=inconsistently covered, 2=completely covered). An expert observer trained direct observers (n=6) by attending and completing assessments at sessions together until interrater agreement of >85% was reached for two consecutive sessions. On disagreements, observers were required to be within plus or minus one point of the expert observer to observe sessions independently. Sessions were recorded for future training purposes in the event of turnover or additions to staff to decrease burden of traveling.

All observers reached >85% agreement with the expert observer by their second session and were able to observe community BHF sessions independently. The observers agreed on 144 out of 172 (83.7%) observations over 5 BHF sessions and were within plus or minus one point for 100% of the observations. Observers have attended 5 cohorts of BHF and performed direct observations for approximately 60 BHF sessions.

Fidelity assessment is essential to identify which components of BHF contribute to outcomes and provides guidance to translate a PWMI into diverse settings.

P1.12 Evaluating the Implementation of Telehealth Behavioral Medicine Services in Veterans Affairs Tele-Primary Care

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: All

Psychologists and mental health clinicians have unique skills to assist interdisciplinary teams. Mental health clinicians help with the prevention and management of chronic diseases in primary care settings through health behavior change interventions. This poster will describe the workflow of a Veterans Health Administration team of Primary Care- Mental Health Integration (PCMHI) clinicians in Veterans Integrated Service Network (VISN) 21 Clinical Resource Hub (CRH), and their implementation of behavioral medicine interventions via telehealth. Behavioral medicine referral reasons included Type 2 and pre-diabetes, sleep-related concerns, chronic pain, obesity, tobacco use, and at-risk alcohol use. We examine patterns in total referrals, referral reasons, and percent change in referral trends as a function of clinic location and specialty of referring provider since program inception in 2018. Recommendations for program development and quality improvement are discussed.

P1.13 Trucking Company Stakeholder Views on Workplace Health Promotion Initiatives Using the Transtheoretical Domains Framework

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Truck drivers experience health disparities in relation to the general United States (U.S.) population. The purpose of this case study was to explore factors that may influence the implementation of workplace health promotion initiatives among trucking company stakeholders in Louisiana using the Transtheoretical Domains Framework (TDF).

Methods: An explanatory mixed method research design was used. A pre-existing survey following the TDF was adapted (i.e., surface-level changes) to reflect trucking company workplace terminology. The TDF was used to explore the views of trucking company stakeholders who would be responsible in some part for facilitating the implementation of workplace health promotion initiatives (e.g., nutrition, physical activity, mental health, sleep, smoking cessation) for the benefit of company truck drivers. Trucking companies in Louisiana were located using publicly available online information. Recruitment to complete an online Qualtrics survey occurred via phone and email in 2021. A semi-structured phone interview to understand survey responses in more depth was initiated among survey respondents who indicated interest. Interviews were audio-recorded, transcribed, and coded to understand barriers and facilitators.

Results: Eleven trucking company stakeholders completed the online survey (human resources, n=2; compliance manager, n=1; safety director, n=4; president, n=1; CFO, n=1; operations manager, n=1; and financial coordinator, n=1); two completed a follow-up interview. Nine (82%) agreed offering workplace health promotion programs would save the company money; however, most did not currently offer workplace health promotion initiatives. Nutrition and physical activity programs were of the most interest. Motivation/goals and knowledge were noted facilitators of potential workplace health promotion initiatives and environmental/resources and skills were noted barriers. Qualitative evidence expanded on barriers, in particular, including time, profits, the nature of a truck driving job (transitory), the COVID-19 pandemic, and a perceived lack of interest among company truck drivers. Incentives were described as an opportunity to increase truck driver's engagement in future workplace health promotion initiatives.

Conclusions: Nutrition and physical activity health promotion initiatives for truck drivers will likely require strategies to improve trucking company environmental context/resources in Louisiana. Perspectives from company truck drivers (end-users) may help to build momentum for workplace health programming to meet drivers where they are.

P1.14 Defining an Adaptive Implementation Strategy for a Nutrition Promotion Intervention in Early Care and Education Using Stakeholder Input

Ms. Daphne Gaulden[1], **Mrs. Peyton Murray[2]**, Dr. Tracey McElwee[3], **Dr. Julie Rutledge[2]**, Dr. Geoff Curran[1], Ms. Janna Martin[1], **Dr. Taren Swindle[1]**
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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Stakeholder input is vital to defining adaptive implementation strategy approaches that tailor intensity of implementation support delivery to optimize resources for broader scalability. This study sought to (a) collect stakeholder input on crucial decision points and tailoring variables and (b) use this input to specify an adaptive implementation strategy matched to site needs.

Methods: The current study's focus is on the evidence-based nutrition program, Together, We Inspire Smart Eating (WISE). Stakeholders with prior experience in WISE (e.g., food service staff, teachers, administrators) were recruited from ECE settings in two states in the southern USA to participate in semi-structured interviews or focus groups via video conference. Questions were designed to elicit feedback on crucial decision points and tailoring variables for an adaptive implementation strategy for WISE. Interviews and focus groups lasted 45-60 minutes. Data analysis included reviewing reflection notes, listening to recordings, and reading transcripts before coding and collating feedback across participants. A quasi-statistical approach to analysis summarized the most prevalent suggestions before consensus discussions across the research team.

Results: Stakeholder input contributed to 3 crucial decision points: 1) low intensity implementation support will include leadership commitments, local champions, an implementation blueprint, a classroom reminder for teachers, and task-focused facilitation at the site level; 2) response to low intensity will be assessed in October of the school year; and 3) sites not responding to low intensity by October will have the additional strategies of holistic individualized facilitation and tailored educational materials at the teacher level. This reflects that stakeholders emphasized that all sites need some facilitation; struggling sites need more. Stakeholders also helped to define the tailoring variable to identify non-response; stakeholders said that sites with a minority of classrooms achieving fidelity to WISE evidence-based practices (< 60%) would need high intensity support.

Conclusions: This study illustrates the use of stakeholder feedback for defining the key elements of an adaptive implementation strategy. Our approach has significant potential to specify adaptive implementation strategies for scaling health-related EBPs in ECE and other settings (e.g., home visiting, worksites, and schools). The adaptive implementation strategies will be tested in a future, full-scale trial.

P1.17 Preliminary Utility Testing of the Building Healthy Families Resources and Program Package

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SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: Physical activity and nutrition

Building Healthy Families (BHF) is a 12-week, adapted evidence and family-based pediatric weight management intervention focusing on behavior change strategies, improved dietary intake, and increased physical activity. A backward design approach was used to create an online blueprint for implementation of BHF in micropolitan and surrounding rural communities. This process included identifying multiple user groups and solicitating feedback by each user group. The purpose of this study was to determine the initial utility of the BHF resources and program package based on feedback from health promotion practitioners.

We used a convergent parallel mixed methods design. Participants included 4 community advisory board members and 15 health promotion practitioners. Quantitative data collection included an adapted 31-item survey to measure perceptions of the innovation (BHF package) and factors that influence program adoption and implementation outcomes (e.g., intervention acceptability, appropriateness, and feasibility). Descriptive statistics were used to summarize results. All scales demonstrated good internal consistency reliability ($\alpha \geq .81$). Thematic coding was used for qualitative data collection and included an open-ended questionnaire to explore perceptions of BHF and functionality of the website.

Mean results from the survey indicated BHF is highly acceptable, appropriate, and feasible [4.49±.74, 4.50±.46, and 4.54±.49, respectively (maximum 5)]. Additionally, of a maximum 7 points, relative advantage (6.39±.59), ease of use (6.57±.67), and trialability (6.46±.83) of the package were rated favorably. Compatibility (5.61±1.05) and observability/result demonstrability (5.68±.74) of the package received moderately favorable scores. Qualitative responses were coded and grouped into three categories: acceptability (n=54), complexity (n=157), and adaptation (n=101). Overall, participants found the package, content, and program expectations acceptable. Responses indicated the website was easy to use, and suggested adaptations were straightforward fixes to content, resource formatting, and website functionality.

Results demonstrate positive overarching perceptions of the BHF packaged program and resources. Qualitative data provided excellent direction for modifications to reduce program complexity and improve acceptability. Action items as the result of this study included improvements to website aesthetics, flow of information, generalizability of content, reduction of repetitive content, and correction of errors in website navigation and document labeling.

P1.18 Do socioeconomic inequalities arise during school-based physical activity interventions? An exploratory case study of the GoActive trial

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity
Purpose: Our understanding of how the intervention process impacts socio-economic inequalities is limited. We aimed to explore this during the implementation and evaluation of the secondary school-based GoActive physical activity (PA) intervention.

Methods: The GoActive trial was a cluster-randomised control trial of a universal school based programme to increase moderate-to-vigorous PA (MVPA) among 13-14-year-old UK adolescents (n=2862 from 16 schools). Using school environment and student data, we investigated if and when socioeconomic inequalities arose across 6 stages in the intervention process, as follows: (1) the provision of and access to intervention resources at baseline (2) individual uptake of the intervention (3) differential intervention efficacy (accelerometer-assessed MVPA) (4) differential long-term compliance (5) differential response in evaluation (6) variation in health outcomes (e.g. BMI z-score, waist circumference). We explored these stages using a combination of self-report and objective measures. Data were analysed by individual- and school-level socioeconomic position (SEP) using a combination of classical hypothesis tests and statistical modelling.

Results: (1) There was no difference in provision by school-level SEP. (2) There was no difference in intervention uptake and engagement by individual-level SEP. (3) At post-intervention, subgroup analyses showed a positive intervention effect on MVPA in low-SEP adolescents (3.13 minutes/day, 95%CI: -1.27,7.54) but not for middle/high (-1.49 minutes/day, 95%CI: -6.54,3.57). (4) At 10-months post intervention, this difference in effect increased (low SEP: 4.89 minutes/day, 95%CI: 0.96,9.70; middle/high SEP: -2.76; -6.78,1.26). (5) There was lower compliance to evaluation measures among low-SEP adolescents, which increased though the intervention process (e.g. % accelerometer non-compliance low vs. high SEP: BL: 11.6 vs. 7.5; post-intervention: 38.4 vs. 30.8; 10-month follow up: 45.5 vs. 29.8). (6) There was a suggestion of a favourable intervention effect on the BMI z-score of low-SEP adolescents (Low SEP: -0.96;-0.19,0.00, medium/high: 0.03;-0.047,0.12).

Conclusions: These findings show the potential for school-based PA interventions to have a positive effect on PA and BMI in low-SEP adolescents, suggesting universal interventions could help to reduce existing inequalities. However, differential response to evaluation measures may have biased these conclusions. We therefore need to develop strategies to better engage adolescents from all backgrounds in the research process.

P1.19 Associations between screen time in early childhood and body mass index: the ELFE birth cohort study

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Sedentary Behavior

Purpose: Observational studies have reported positive associations between screen time and body mass index (BMI) in early childhood. However, the evidence remains weak since there is a lack of large, longitudinal studies controlling for appropriate confounders, including behaviours competing with screen time. We examined the associations of screen time at age 2 and 3.5 years with BMI from age 3.5 to 7.5 years in 14,220 children from the French nationwide ELFE birth cohort study.

Methods: At age 2 and 3.5 years, parents declared their child's time spent watching TV, using smartphones, tablets and computers, and playing video games on a typical week and weekend days. At ages 2 months, 1, 2, 3.5, 5.5 and 7.5 years, parents reported their child's weight, height and measurement dates recorded in their child's health booklet. Weight and height measures were modelled using the nonlinear mixed-effect Jenss-Bayley growth model, and BMI (in kg/m^2) at age 2, 3.5, 5.5 and 7.5 years was estimated. Associations of daily total and device-specific screen time with BMI were assessed by linear regression adjusted for confounders, including sociodemographic factors, parental BMI, and frequency of children's outdoor/active plays.

Results/findings: At age 2 and 3.5 years, children accumulated on average (SD) 0.77 (SD: 0.98) and 1.17 (1.01) h/day of total screen time, respectively, predominantly TV time. Mean (SD) BMI was 15.6 (1.3) and 15.3 (1.9) kg/m^2 at age 3.5 and 7.5 years, respectively. In unadjusted models, total screen time at age 2 years was associated with greater BMI at age 3.5 y (b [95% CI]: 0.06 [0.04, 0.09] kg/m^2 per one hour increase) and 7.5 y (0.07 [0.03, 0.10] kg/m^2 per hour). After adjustment, these associations vanished towards the null (-0.01 [-0.01, 0.00] and 0.01 [-0.02, 0.03], respectively). Associations were similar when examining device-specific screen time and screen time at age 3.5 y.

Conclusions: Our results show weak to null associations between early childhood screen time and their BMI at a later age after controlling for sociodemographic and behavioural confounders. It supports the time displacement hypothesis suggesting that screen time leads to greater BMI by displacing more active activities.

P1.20 "God Start": A 4-day family-centered, resource-oriented, and interdisciplinary program for families with 0-4-year-old children with Cerebral Palsy

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: In Denmark, 110-130 children are diagnosed with Cerebral Palsy (CP) each year resulting in lifelong challenges affecting the whole family. The Elsass Foundation is a private foundation aiming to improve quality of life for people with CP and their families. The foundation offers a 4-day intensive program to families with 0-4-year-old children with CP, structured as a family-centered intervention. "God Start" means "a good start" and refers to supporting families with children with CP through the early phases of their new life circumstances. The program seeks to improve quality of life by increasing family empowerment and sense of parental competence, including integrating the intensive training-need for these children in everyday life. The purpose is to present the overall outline of the evaluation of "God Start".

Methods: A logic model, looking at causal mechanisms between program-activities and expected outcomes, developed in spring 2021 together with the "God Start"-staff, formed the basis for the research design.

Data collection is carried out between October 2021 and September 2022. Four independent "God Start" programs will be followed providing data from 24 families.

Data collection consists of:

· Questionnaires on family empowerment, sense of competence, and quality of life, collected from parents before, two weeks and six months after the program.
· Observations during the program.
· Interviews focusing on parent's experiences with the program will be conducted two-three weeks and six months after the program.
· Interviews with staff from "God Start" focusing on the interdisciplinary approach will be conducted after the four programs.

Results/findings: At present, no results have been fully evaluated. Preliminary results will, however, be presented at the ISBNPA conference in May 2022. An increase in family empowerment, sense of competence, and quality of life after participating in "God Start" is expected. Additionally, changes in the families' experience of managing everyday life (e.g. integrating training) is also expected.

Conclusion: The "God Start" program is a potential best-practice example on how to support everyday life and quality of life for families with children with CP, and furthermore, how a family-centered program with an interdisciplinary approach influences the integration of training into everyday life.

P1.21 Maternal Experiences and Perceptions of Discussing Complementary Feeding Recommendations in Primary Care Settings

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: To explore mothers' experiences and perceptions of complementary feeding recommendations in the primary care setting.

Methods: Mothers of infants aged 4-11 months were recruited from WIC offices in Rhode Island and later through snowball sampling. Semi-structured telephone interviews were conducted in English and Spanish. Participants were asked about their experiences with infant feeding, what feeding advice they had received, what their child's pediatrician had told them about infant feeding, and their overall impressions of child wellness visits. Inductive and deductive thematic analysis informed by Grounded Theory and the Fundamentals of Care theoretical framework, respectively, was performed to identify themes in the data.

Results: The average age of the sample (n=13) was 30 years, 62% were Latina, and 77% were receiving WIC benefits at the time of the interview. Five major themes were identified. Overall, mothers reported their wellness visits as positive with most being satisfied with their visits and the childcare recommendations they received, even when visits were virtual (theme 1). They trusted the information they received from their pediatrician and perceived them as knowledgeable about pediatric health and valued meaningful connections with them (theme 2). While all reported trusting the pediatrician, most also felt that many feeding recommendations are vague or not applicable to their child's behaviors or their own cultural preferences (theme 3), and that they are comfortable using alternative sources of advice to fill these gaps (theme 4). The participants described ways to improve the feeding recommendations within well child visits, most notably the need for additional take-home materials on feeding (theme 5).

Conclusions: Despite having positive opinions of pediatric primary care, this predominantly Latina sample of mothers did not always perceive pediatricians' infant feeding recommendations as comprehensive enough to meet their needs. Improving the content, delivery, and cultural relevance of infant feeding recommendations in primary care settings with more specific and tailored information may promote maternal adherence to evidence-based feeding practices.

P1.22 Did the Pandemic Influence Body Mass among Middle School Aged Adolescents in a Rural Midwestern Community?

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Sedentary behavior and nutrition

Purpose: Longitudinal data from the CDC suggests that the prevalence of obesity has increased from 19.3% to 22.4% over the pandemic months among 2-19 years of age and the rate of weight gain increased (Lange et al, 2021). The purpose of the current study is to compare the prevalence of obesity and body mass among 6th-8th grade children between pre-pandemic and post- pandemic periods in a rural mid-western community and evaluate body mass gains based on BMI classifications.

Methods: Students in grades 6-8 (n=1045, age = 12.8 ± 0.94 yrs) participated in school health screenings of body mass and stature in 2017. Students from the same school district in grades 6-8 (n=936, age = 13.2 ± 0.84 yrs) participated in screenings in 2021. To account for the significant difference in age, a weight-for-age ratio was determined. Weight status was defined using CDC age-and-gender growth charts.

Results: Although not significant, prevalence of obesity increased from 17.8% in 2017 to 19.1% in 2021 (p>0.05). Children in the normal weight category had a weight-for-age of 7.9 ± 1.2 lbs/yr in 2017 which was significantly greater in 2021 (8.3 ± 1.2 lbs/yr, p<0.05). No significant differences were found in weight-for-age between 2017 and 2021 for children with overweight (10.2 ± 1.1 vs 10.3 ± 1.1 lbs/yr, p>0.05) or obesity (13.2 ± 2.2 vs 13.3 ± 2.3 lbs/yr, p>0.05).

Conclusion: Although not significant, over the pandemic, obesity prevalence increased 1.3% and body mass averages were higher. However, children in the normal weight category weighed significantly more, had higher BMI and weight-for-age ratios in the post pandemic period. The children in the normal weight category may have experienced greater life changes over the pandemic resulting in less activity and more unhealthy habits than the children with overweight or obesity.

P1.23 Exploring How Caregivers of Young Children Enrolled in Childcare Experience Dinner

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: The purpose of this study was to better understand the experience of dinner acquisition and preparation for caregivers of young children enrolled in childcare. Researchers also sought to assess caregiver experiences with food purchasing, dinner choices, and balancing caregiver responsibilities and dinner preparation.

Methods: This study utilized a non-probability, voluntary sample of families from three childcare sites recruited to participate in a pilot dinner service program (N=33). Participants were asked to complete a 45-60 minute individual interview session using a semi-structured interview guide focused on meal acquisition behaviors. Interviews and transcripts were recorded via Zoom transcription and later reviewed by research team members for accuracy. NVivo Qualitative software v.12 was used to code transcripts using a priori thematic analysis and to apply latent themes. Transcripts were blindly reviewed and coded by two researchers with any discrepancies reviewed and discussed. Inter-rater reliability in the code application was greater than 90%.

Results: Emerging themes centered around meal planning, food purchasing, dinner choices, and balance between caregiver responsibilities and dinner preparation. Participants discussed general feelings towards meal planning, time management, and dividing parental responsibilities. Many respondents reported that they liked cooking on weeknights (n=14, 44%), while other caregivers described cooking as stressful and time-consuming (n=8, 25%). Factors that appeared to affect food purchasing and dinner choices included whether family members would like or eat it (56%), cost (28%), convenience (12%), and the healthfulness of the food (34%). Dissatisfaction about dinner choices was often tied to disliking new meals (20%), fast food consumption (25%), feeling stressed (20%), and a hectic workday (15%). Support strategies that helped caregivers provide healthy dinners included meal planning, meal and shopping organization, time management, sharing responsibilities with partners, and using or purchasing outside support and resources.

Conclusions: This study provided a narrative of how parents of young children in childcare experience, structure, and think about dinner acquisition and preparation. The results of this study also highlight strategies and sources of support that could serve as potential avenues for future interventions aimed at providing home cooked, nutritious, affordable meals for families.

P1.24 Parental self-confidence regarding healthy meal preparation for preschool age children attending childcare

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Introduction: The demands of working and parenting young children create a challenge in finding time to plan and prepare nutritious family meals. A social cognitive approach was used to identify the importance of parental support, parental satisfaction, and self-confidence on food agency.

Methods: A cross-sectional survey was conducted in Cabarrus County, NC including 34 caregivers of preschool age students attending childcare. Participants completed a 67-item online survey via Qualtrics assessing parental responsibilities, self-efficacy, meal behavior patterns, and weight. A univariate analysis was conducted using SAS 9.4 version.

Results: Most of the respondents were non-Hispanic white (66%) and shared the responsibility of childcare with another adult in their home (84%). All of the participants reported being satisfied with their role as a parent and enjoyed spending time with their children. Similarly, 100% of the respondents reported having some level of confidence in their ability to prepare and serve healthy foods and beverages in an appetizing way (some confidence: 87.5%, completely confident: 12.5%) and create a positive atmosphere for mealtimes (some confidence: 81.3%, completely confident: 18.8%). Additionally, almost 97% of the participants responded to having some confidence in being able to properly prioritize spending time on locating healthy foods and beverages for purchase in preparation for cooking a healthy meal for their children. Finally, three quarters of the parents reported having confidence in their ability to be a good role model for their children about healthy eating and drinking.

Discussion: The findings of this study suggest that the participants have a high level of parental satisfaction and self-efficacy in providing a healthy food environment for their children. These parents displayed the confidence in being able to plan and prepare meals in an appetizing way for their children. The shared responsibility of parenting with a partner in the home likely allows for time to confidently prepare nutritious meals. Future research should include evidence-based interventions that investigate the frequency of healthy meal preparation of parents who display high levels of confidence and healthy food access.

P1.25 Describing the evolution of sport participation profiles during adolescence

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Few studies describe sport participation patterns in the general population using multiple characteristics, which limits available information for designing and implementing programs aimed at improving physical activity levels. Since better insight into the natural evolution of sport participation will help inform more effective sport and physical activity programs, the objective of this study was to identify sport participation profiles during adolescence and to describe transitions across profiles from grades 5 to 12 (age 10 to 18 years).

Methods: We used data from 916 participants (55% girls; age 10-12 years at inception) of the Monitoring Activities of Teenagers to Comprehend their Habits (MATCH) study. Participants self-reported involvement in 36 different sport and physical activities three times per year from grades 5 to 12 (maximum of 24 data collection cycles from 2011-2018). At each school grade, we derived four categorical variables of yearly sport involvement: number of organised sports (0, 1, 2, 3+), number of unorganised activities (0, 1, 2, 3+), weekly physical activity sessions (<7, 8-13, 14-20, >20), and number of year-round activities (0, 1, 2+). To identify sport participation profiles, we used latent class analysis at each grade. To identify transitions between sport participation profiles across grades, we used latent transition analysis.

Results: Five distinct sport participation profiles emerged: 'non-participants', 'unorganised activity only', 'single-sport low frequency', 'single sport high frequency', and 'multi-sport'. While participants classified as 'non-participants' rarely transition towards higher active profiles, only 'multi-sport' participants were unlikely to be classified as 'non-participants' over time. Further, given the stability of the 'non-participant' profile, results study suggest that it will be difficult to improve physical activity levels of youth with this sport participation profile.

Conclusions: This study highlights the importance of encouraging multi-sport participation to protect against later non-participation in sport and physical activity, and helps identify important times to intervene for improving physical activity levels. Using multiple characteristics when describing sport and physical activity profiles provides unique insight into behavior patterns of teenagers.

P1.26 Incorporating Youth Development Techniques into Nutrition Education: UC 4-H Cooking Academy

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

4-H is a worldwide youth development program found in over 50 countries. The goal is to increase the likelihood that a child will grow into a successful, thriving adult. The "H's" stand for Head, Heart, Hands, and HEALTH. In the United States, poor diet quality and obesity are major obstacles to healthy living. A top reason cited for this by Americans is a lack of food preparation skills, which results in the purchase and consumption of ready-made fast and prepared foods high in ultra-processed ingredients. In order to address this barrier to healthful eating, the 4-H Youth Development Program teaches cooking skills to children and teens using a teens-as-teachers approach.

Partnering with federally funded nutrition education programs, 4-H uses the motivational force and educational pedagogy of having older teens and young adults teach to children in out-of-school group settings. This harnesses the desire of adolescents to have increasingly meaningful responsibilities (care and contribute), to work with peers (connect), and to gain employment experience for future college and career success (competence and confidence). By integrating positive youth development theories into nutrition programs, we increase not just the likelihood for dietary change, but also for broader improvements in the adolescents intellectual and emotional development. Afterschool sites in 3 counties in California participated in the Cooking Academy. Fifty youth completed the pre/post standardized national Expanded Food and Nutrition Education Program Surveys. The data is being entered into the federal WebNEERS system for analysis. Preliminary analysis show that 91% of youth improved their abilities to choose nutritious foods. Qualitative findings regarding teen perception of leadership skills will be presented. Teens also reported positively on their experience as a teen teacher, with scores ranging from 3.3 to 4.0 on a 4 point scale. Nutrition education has primarily relied on psychology (and to a lesser degree educational) research to guide its approaches. By recognizing that the field of youth development can provide significant contributions and suggestions, and integrating these principles into nutrition education programs, we can continue to improve the effectiveness of our interventions.

P1.27 Predictors of Food Insecurity Among Households with Children in the United States During the COVID-19 Pandemic

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: To understand predictors of food insecurity among households with children in the United States (U.S.) during the COVID-19 pandemic.

Methods: A 52-question survey using validated instruments was created and distributed online between April and September 2020 across five states. Respondents who indicated residing in a household with at least one child during the COVID-19 pandemic (<18 years old) were included in this analysis (n=1,199). Logistic regression examined odds of food insecurity (i.e., lacking access to enough safe and nutritious foods) versus food security among U.S. households with children by urbanicity (measured using Rural-Urban Commuting Area codes), race/ethnicity, age, marital status, household size, education, federal nutrition assistance participation, economic hardship, and foods not available when shopping during the COVID-19 pandemic, *a priori* $p<0.05$. The model was informed by historical U.S. data on sociodemographic characteristics and food insecurity. Open-ended survey questions about the types of foods not available in stores were grouped by category.

Results: Urbanicity was not predictive of food insecurity ($p>0.05$) among households with children. Hispanic (compared to non-Hispanic white) respondents in households with children were 4.28 times more likely to report food insecurity (95%CI 1.90-9.75, $p<0.01$). Other predictors of food insecurity among households with children included: respondents between the ages of 25 and 44 ($p<0.05$); being widowed, divorced, or separated (OR 2.45, 95%CI 1.15-5.22; $p<0.01$), food assistance participation (OR 3.93, 95%CI 2.55-6.06; $p<0.01$), economic hardship during the COVID-19 pandemic (OR 4.93, 95%CI 3.15-5.87; $p<0.01$), and foods not available when shopping (OR 2.42, 95%CI 1.55-3.77; $p<0.01$). With each additional adult household member, odds of food insecurity increased (OR 1.37, 95%CI 1.14-1.63; $p<0.05$); the number of children in the household was not associated with food insecurity. Respondents (n=942) listed 3,104 food items as not available during

the COVID-19 pandemic. These items were in majority grains (32%), proteins including meats, fish, and eggs (23%), dairy products (12%), and vegetables (10%).

Conclusions: The COVID-19 pandemic negatively impacted food security among U.S. households with children across five states and likely exacerbated existing nutrition and health inequities. Food supply interventions during crisis situations are also warranted to improve food security among households with children.

P1.28 Differences in Fruit and Vegetable Selection, Consumption, and Waste in Rural vs. Urban Arizona Schools

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Studies show that rural schools may be less supportive of student fruit/vegetable (FV) consumption, but few studies have investigated the relationship between school locale and FVs. The aim of this research is to analyze the relationship between school locale (rural vs. urban) and students' FV selection, consumption, and waste in elementary, middle, and high schools.

Methods: A cross-sectional analysis of 37 Arizona schools evaluated differences in the selection, consumption, and waste of fresh FVs from students (n=2525; 45.7% female; 41% non-white; mean age=11.6±3.3; 23.5% rural) using objective plate waste measures. Zero-inflated negative binomial regressions examined differences in FV grams selected, consumed, and wasted by urban vs. rural locale, adjusted for sociodemographics and school.

Results/findings: The percent of students who selected, consumed, and wasted zero grams of FVs were 14%, 21%, 20%, respectively. Among students with some (non-zero amounts), the average selected, consumed, and wasted FVs were 115.0±81.4g, 51.7.5±65.4g, 65.2±66.7g, respectively. Rural students (versus urban) had lower odds of selecting (OR=0.84, 95% CI: 0.60, 1.18), consuming (OR=0.87, 95% CI: 0.66, 1.16), and wasting (OR=0.71, 95% CI: 0.53, 0.95) any FVs, after adjusting for covariates. However, among students with some FVs on their plates, rural students selected (IRR=1.46, 95% CI: 1.39, 1.54), consumed (IRR=1.20, 95% CI: 1.08, 1.33) and wasted (IRR=1.71, 95% CI: 1.59, 1.84) more grams of FVs.

Conclusions: Rural students had reduced odds of selecting and consuming any FVs, but with lower odds of waste, perhaps due to reduced selection. Once some FVs were on the tray, likelihood of consumption and waste by rural students were greater. Results support interventions targeting rural students' FV intake to reduce waste.

P1.29 Breakfast consumption and their food sources among children with feeding difficulties: an analysis from a reference center in nutrition and feeding difficulties

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Breakfast can be one of the most problematic behavioral problems in children with feeding difficulties. Important nutrients might be under or overconsumed. The purpose was to examine breakfast consumption, nutrient profile, and food sources of children with feeding difficulties.

Methods: This was a cross-sectional study with 137 children (M= 3.91, 95%CI 3.39, 4.42 years; 63.5% male) with complaints of feeding difficulties from the childcare center. Socio-demographic characteristics were pulled down from the clinical anamnesis. Parents self-reported their children's diet intake via a 24h-recall. Breakfast consumers were defined as those consuming the first meal of the day between 5-10 am, comprising any energy-containing food/beverages. Nutrient profiles were identified, and energy food sources were classified according to the adapted NHANES/WWEIA classification system. Descriptive statistics, Kruskal-Wallis, and t-student test with a significant level of 5% ($p < 0.05$) were used.

Results: The majority of children were consuming breakfast (80.3%) and 63.95% of the children were picky/fussy eaters, followed by 31.58% with limited appetite. The median energy intake for breakfast was 54.67kcal (IQR 16.54, 115.20). Comparing the nutrient profiles with age groups, infants consumed higher amounts of carbohydrates, protein, vitamin A, zinc, phosphorus, thiamin, niacin, vitamin B6, and vitamin K as compared to preschoolers and schoolers. Alternatively, schoolers have a higher intake of vitamin C, calcium, magnesium, dietary fiber, potassium, and, iron. Preschoolers showed higher intakes for trans-fat, cholesterol, riboflavin, vitamin B12. Baby-food formulas, baby cereals, milk, and bread were among the top energy food sources, regardless of age group, sex, and type of feeding difficulties.

Conclusion: Infants presented better vitamin and nutrient intake as compared to older children. Food sources have been limited and this situation is not satisfactory. Thus, there is a need for actions to improve regular and well-balanced breakfast for children with feeding difficulties

P1.30 Loved or Left Untouched: A Cross-Sectional Analysis of Food Waste and Consumption in the National School Lunch Program

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Children in the United States consume less than the recommended amounts of fruits, vegetables, whole grains, and dairy. The National School Lunch Program (NSLP) serves nearly 30 million children daily, and has the potential to influence the diet quality of children. However, high levels of food waste in the NSLP have been observed, particularly for fruits and vegetables. The purpose of this descriptive study was to identify which school lunch menu items students wasted and fully consumed most frequently.

Methods: Students (n=2,881) from elementary, middle, and high schools (n=37) in Arizona, USA who received school lunch were randomly selected and assented for participation. Individual student lunch trays were photographed before and after the students ate their meal. Trained raters (3 per tray) visually estimated if menu items were untouched (0%), partially (1%-99%) or fully (100%) consumed. An expert adjudicator resolved any disagreements between raters. Menu items were standardized and categorized into the following menu categories: entrée, fruit, vegetable, and beverage. The frequency menu items untouched or fully consumed were summarized in percentages by menu category and stratified by elementary, middle, and high school level.

Results: Across all school levels, tortilla wraps, whole packaged apples, and cherry tomatoes were the most frequently untouched entrée, fruit, and vegetable menu items, with 40%, 57% and 70% of servings untouched, respectively. Chicken fingers, bananas, and tater tots were the most popular entrée, fruit, and vegetable menu items with 75%, 51% and 55% of servings fully consumed, respectively. White milk and juice were the most untouched beverages, both of which had 20% of servings untouched. Cold vegetables were untouched with the greatest frequency, with 39% of all servings untouched. High school students fully consumed entrees, fruits, and vegetables with greater frequency than elementary and middle school students.

Conclusion: Results can help schools to plan menus with food items that are more popular among their students. Further research should also examine why high school students are fully consuming their meals more frequently than elementary and middle school students.

P1.31 What do the kids say? Youth perspectives on physical activity across childhood

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: There is consistent evidence that physical activity (PA) levels decline across childhood. Youth perceptions of PA may also change with age. Young children tend to engage in PA for enjoyment, while many young adults report exercising for extrinsic reasons, such as weight loss or appearance. Thus, this study aimed to examine youth perceptions of PA, and to determine whether and how these perceptions differ among children of different ages.

Methods: Children in grades K-12 (*N*=146) completed an individual interview to ascertain their perspectives about PA. Questions included: *What is physical activity?, Why should kids do physical activity?,* and *What do you like most about physical activity?* Responses were transcribed and categorized into themes; frequencies of responses were compared across age groups [grades K-4 (elementary), 5-8 (middle school), and 9-12 (high school)].

Results: Children's descriptions of PA differed significantly by age group (X^2=49.73, p<0.001). Elementary aged children mentioned movement (33%) or playing (25%) most frequently, whereas middle school children frequently mentioned movement (58%) or exercise (48%), and high school children mostly referenced movement (69%) or physiological activation (26%). Overall, the most frequently cited reason to do PA was to be healthy (58%). Elementary children also said to get stronger (26%) and have fun (23%), middle school children referenced future health (32%), and high school children also described cognitive and mental health benefits (20%). Only 3% of the total sample referred to body weight or appearance benefits. Aspects of PA children liked most included moving and playing (38% of grades K-4), building physical status (32% of grades 5-8), feeling good (43% of grades 9-12), social interaction (28% of grades 5-12), and having fun (24% overall).

Conclusions: Descriptions of PA focused more on exercise vs. informal play as children aged, and older children referenced more extrinsic reasons to be active (e.g., future health) compared to younger children (e.g., to have fun). However, children of all ages identified intrinsic reasons for liking PA, and very few children discussed PA in the context of losing weight or improving appearance. These results provide insight regarding future strategies to promote PA among children.

P1.32 Integrating training in everyday life and play amongst 0-4-year-old children with Cerebral Palsy

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: In Denmark, 110-130 children are diagnosed with Cerebral Palsy (CP) annually resulting in lifelong challenges affecting the whole family. The Elsass Foundation is a private foundation aiming at improving quality of life for people with CP and their families throughout a lifespan. Among many initiatives, the foundation has developed a 4-day intensive program ("God start") for families with 0-4-year-old children with CP. "God Start" means "a good start" and refers to supporting families with children with CP through the early phases of their new life circumstances. The program is structured as a family-centered intervention where physio- and occupational therapists and psychologists work in interdisciplinary teams to meet each family's individual challenges. The program seeks to improve quality of life by increasing family empowerment and sense of parental competence. The purpose of this abstract focuses on integrating the children's intensive training-needs into everyday life using a playful approach, which serves as a huge challenge for many families.University of Southern Denmark serves as evaluators of the "God Start" program.

Methods: Data collection is carried out between October 2021 and September 2022. Four independent "God Start" programs are assessed, providing data from a total of 24 families. Data includes observations during the program; questionnaire surveys on family empowerment, sense of parental competence and quality of life; interviews with families and professional staff.

Results/findings: For now, no results have been fully evaluated. However, preliminary results will be presented at the ISBNPA 2022 conference. It is expected that the developed program focusing on 'playful training' instead of 'training as training' will have a positive impact on the families' senses of competences, quality of life and experience of managing everyday life.

Conclusion: The "God Start" program is a potential best-practice example on how to approach families with children with CP. The evaluation will contribute to the rather limited knowledge on how to support everyday life and quality of life for families with children with CP. Furthermore, the study will contribute to the knowledge of switching focus from a training approach to a playful approach when working with 0–4-year-old-children and their families.

P1.33 Association Between Negative Affect and Perceived Exertion in Overweight and Obese Youth

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Background: The Borg scale for Ratings of Perceived Exertion (RPE) assesses subjective experiences of physical activity (PA) intensity. While perceived exertion is related to objective measures of exertion, RPE is subjective and can vary between people and within a person depending on time or context. Affect can influence people's perceptions of pain; therefore, it stands to reason that perceived exertion might be influenced by affect. This study aimed to assess if the link between objectively measured PA and perceived exertion is moderated by negative affect.

Methods: Timeseries data from Fitbits (Charge-2) were collected over a 3-month period from 13 children (7-15 years, 47% female) with overweight/obesity as part of a pilot study examining kidney health. Participants completed daily surveys about their affect over the past day (10-item Abbreviated Positive and Negative Affect Schedule). Surveys were administered 2x/week on random days. Participants completed the Borg scale when they reported engaging in physical activity. Youth had an average of 30 valid days of Fitbit wear (range= 3-53) and completed an average of 11surveys (range= 2-19).

Results: Youth averaged 12.0 minutes of VPA (±8.8) and 50.5 minutes of MVPA (±22.1) daily. On days when youth had higher Borg ratings, they had significantly more VPA (B = 27.6, 95% CI= 4.4, 50.7). For every 1 unit increase in Borg rating, youth had 27.6 minutes more VPA compared to their usual VPA. Increased Borg ratings were not linked with increases in MVPA. Relative increases in negative affect were not associated with changes in MVPA or VPA. The association between change in Borg rating and VPA was moderated by average negative affect. Specifically, among youth with higher average negative affect (compared to their peers) the association between changes in Borg rating and VPA was attenuated (B = -3.0, 95%CI= -5.6, -0.3). Negative affect did not significantly moderate the association between daily Borg rating and MVPA.

Conclusion: Minutes of VPA is less associated with perceived exertion among youth with higher average negative affect. Future studies may include measures of affect prior to intervention engagement to tailor how interventions are delivered.

P1.34 Associations of Sleep Patterns and Feeding Practices Among Newborns in a Diverse Sample

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Sleep and nutrition

Purpose: Exclusively breastfed (EBF) newborns wake more often than partially breastfed, or exclusively formula fed (EFF) newborns, yet have equivalent 24hr sleep durations. Contextual factors during the first weeks of life related to these associations are understudied. We examined relationships among post-birth experiences, sleep-wake patterns, and feeding practices through three weeks post-delivery.

Methods: English or Spanish speaking mothers (n=36) and their full-term (≥37wk), singleton infants were recruited from Phoenix, Arizona. Mothers were 31.9±4.5y, 41.7% identified as Hispanic, 22.2% with < high school degree, and 36.1% were enrolled in the federal Women, Infants, and Children program. Infants were born normal weight (2500-4000g) and without major complications. Mothers completed the Brief Infant Sleep Questionnaire-Revised and an adapted Infant Feeding Practices Study-II questionnaire at three weeks post-delivery. Pearson correlations and t-tests examined relationships between sleep-wake patterns (e.g., nocturnal wake duration, sleep duration [diurnal, nocturnal, 24hr], and sleep quality), and feeding practices at birth and 3 weeks post-delivery.

Results: At birth, all mothers attempted breastfeeding, 37.1% of infants received formula, and 14.3% received sugar water at the hospital. Mean time for milk to come in was 2.6 days (range: 1-5). At three weeks, three mothers were EFF, 47.2% (n=17) were EBF, and 44.4% (n=16) were mixed feeding. Infant sleep-wake patterns included: nocturnal wake duration of 1:47±1:04; nocturnal and diurnal sleep duration was 8:40±1:50 and 7:40±2:50, respectively; 24hr sleep duration of 16:20±3:07; and 58.3% reporting their infants slept well/very well at night. Breastmilk feeding frequency was positively related to nocturnal wake duration (r=.42, p=.012) and nocturnal sleep duration (r=.36, p=0.03). Formula feeding frequency was negatively related to nocturnal wake duration (r=-.42, p=0.012) and nocturnal sleep duration (r=-.41, p=0.016). Greater time for milk to come in was associated with greater diurnal sleep duration (r=.38, p=0.03), poorer nocturnal sleep quality (t[-11.9]=31.1, p<0.001), and greater likelihood of receiving sugar water in the hospital (t[2.9]=12.7, p=0.013).

Conclusions: Feeding experiences and ability to breastfeed during the first days of life may play a role in the quality and patterning of sleep among newborns. Future research should investigate whether these associations persist into later infancy

P1.35 Toddler milk feeding practices and the role of health claims: a qualitative study.

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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Toddler milk, an ultra-processed milk-based drink marketed for children aged 9-36 months, often contains added sugar, and is not recommended by medical associations. Toddler milk packages have health claims that are not regulated by the US Food and Drug Administration. Little is known about toddler milk feeding practices and how toddler milk marketing influences parents in the US. This study qualitatively explored parents' experiences with, beliefs about, and attitudes towards toddler milk. We also explored parents' reactions to health claims and tested health warnings on toddler milk packages.

Methods: In 2021, we conducted 15 in-depth interviews and five focus groups (2-6 participants) virtually, with parents of young children 9-36 months old in the US, who had served toddler milk to their child. We used narrative analysis and systematic coding to identify salient themes related to the use, perceptions, and beliefs of toddler milk and parents' reactions to health claims and health warnings on toddler milk packaging.

Results: When shown an image of toddler milk, parents could not easily discern toddler milk from infant formula and perceived toddler milk as part of a larger category of "formula." Parents reported offering toddler milk for its convenience, nutrients, and perceived benefits tied to health claims present in the labels. When asked what stood out in an image of toddler milk, parents reported the health claims first grabbed their attention, and most participants did not express concern or skepticism over the veracity of the claims. A warning stating *"this product is not intended for children <12 months"* led participants to accurately believe that the product is inappropriate for infants. A warning *"this product has added sugar"* discouraged parents from wanting to serve toddler milk to their children. Parents reported confusion after being shown the toddler milk with a warning stating *"this product is ultra-processed."*

Conclusions: Findings suggest that health claims lead to more favorable perceptions of toddler milk among parents and that warning labels are a potentially promising approach for informing parents. Future research could investigate stronger regulations and parent-directed interventions for informing parents about the contents and risks of providing toddler milk.

P1.36 Are lifestyle behaviors associated with excellent self-rated health among American adolescents? A cross-sectional study

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: All

Purpose: Lifestyle behaviors such as physical activity, healthful eating, and sleep are associated with weight status and overall health, although the focus is often on understanding the behavioral exposures related to development of outcomes such as obesity and chronic diseases. The aim of this study was to examine lifestyle behavioral exposures in the United States adolescent population and their association with the outcome of excellent self-rated health.

Methods: The FLASHE study, a cross-sectional survey conducted by the National Cancer Institute, provided publicly available self-report data. Participants included adolescents (n=1350, mean age=14.5y) with complete data for self-rated health, lifestyle exposures (beneficial and detrimental food intake in accordance with literature on prevention of obesity and cancer, importance of family meals, free time physical activity and sedentary time, meeting sleep guidelines, having a regular bedtime, and having trouble sleeping), and potential confounders (weight status, smoking, age, sex, race/ethnicity, economic status). Logistic regression analyses were used to evaluate associations between lifestyle behavioral exposures and the outcome of excellent self-rated health.

Results: Fewer than half of males (47%) and females (35%) reported having excellent self-rated health. In fully adjusted models, four lifestyle behavioral exposures were significantly associated with excellent self-rated health: beneficial food intake frequency (p=0.004; OR=1.065, 95%CI=1.020–1.112 for each additional exposure); importance of family meals (p<0.001, OR=1.885, 95%CI=1.351–2.630, strongly agree vs not agree); frequency of physical activity in free time (p<0.001; OR=2.167, 95%CI=1.197–3.922, very often vs none); and trouble sleeping (p<0.001, OR=0.416, 95%CI=0.272–0.636, yes vs no). In contrast, the other lifestyle behavioral exposures were not significantly associated with excellent self-rated health: detrimental food intake (p=0.932); sedentary time (p=0.162); having a regular bedtime (p=0.910); and meeting sleep guidelines (p=0.974).

Conclusions: Certain lifestyle behaviors were associated with adolescents' excellent self-rated health. These findings support interventions targeting improvements in nutrition, physical activity, and sleep among adolescents.

P1.37 Young child feeding during and immediately after a COVID lockdown: Findings from qualitative interviews conducted with female caregivers to children under 5 in two low-income settings in South Africa.

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: As part of a larger study in the Western Cape Province of South Africa, adult female caregivers of children under 5 in two low-income settings were interviewed to explore how caregivers in these settings experience food, and other systems (e.g., healthcare), particularly during and immediately after a COVID lockdown.

Method: In-depth interviews (IDIs) were conducted via a phone or WhatsApp call with study participants in both sites (n=32). IDIs were recorded, transcribed, and thematically analysed. Guiding research questions and sub-questions provided a starting point for coding. A codebook was developed after two primary researchers independently coded initial transcripts.

Findings: Multiple themes emerged from the analysis. One of particular interest related to recent and current breastfeeding practices and the role clinics played in influencing these.

Overall, breastfeeding was reported as common practice. Women described a mixture of breastfeeding and formula feeding, depending particularly on work status. Many participants breastfed their most recent child, including exclusively for 4-6 months, and up to two years or longer, as per WHO guidelines. These women described doing so because it was affordable, because they enjoyed it, and because they were "staying at home anyway". Others reported hand-pumping while working. Additionally, given the high cost of formula, especially considering income pressures on households during COVID, women were highly motivated to breastfeed.

Participants emphasized the clinic's role in advocating for breastfeeding; however, in cases where participants did not breastfeed (for whatever reason), they did not receive the needed counsel/support from the clinic). Participants did mention the 'Road to Health' booklet issued by clinics as a useful resource; however, not all participants used the booklet as specific guidance for infant and young child feeding and related nutrition guidelines.

Conclusions: Now that clinical guidelines are unambiguously pro-breastfeeding in the Western Cape, and many participants were at home due to COVID-related factors, breastfeeding guidelines were often possible to follow. However, guidance from clinics was still reported as not sufficient. Caregivers to children under 5 could benefit from improved, more nuanced, patient specific guidance from local clinics, especially as we continue to move out of COVID lockdowns.

P1.38 Associations Between Infant Feeding Modality and Rapid Infant Weight Gain Across the First Year of Life

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Rapid infant weight gain (RIWG; upward crossing of ≥ 1 major centile space on the WHO growth reference chart) is associated with greater risk of childhood obesity. Formula-fed infants are at higher risk of RIWG than breastfed infants. Two possible mechanisms have been hypothesised to explain this association: the formula milk itself and/or bottle-feeding behaviour. The present study used the most detailed data on infant feeding methods collected to date to disentangle whether 'what' (formula milk vs. breast milk) or 'how' an infant is fed (bottle vs. breast) places them at greater risk of RIWG.

Methods: Data were from Gemini, a population-based sample of n=4800 British twins born in 2007. Parent-reported infant milk-feeding methods from birth to 3-months of age were categorised into; i) exclusive breastfeeding, ii) breastfeeding and expression of breastmilk, iii) exclusive expression, iv) breast and formula feeding, v) breastfeeding expression and formula feeding, vi) expression and formula, and vii) exclusive formula feeding. The outcome measure was change in weight–SDS from birth to 3- and 12- months. Two General Linear Models examined associations between feeding methods and weight-SDS change, adjusting for infant health and socioeconomic characteristics, excluding infants born <36 weeks' gestation.

Results/findings: At 3-months (n=2,655) and 12-months of age (n=1,360), infants fed through either exclusive formula feeding (3-months; n=971, $\beta = 0.37$, 95% CI: 0.24, 0.52, 12-months; n=428, $\beta = 0.19$, 95% CI: 0.00, 0.40), breastfeeding and formula feeding (3-months; n=896, $\beta = 0.22$, 95% CI: 0.08, 0.36, 12-months; $\beta = 0.24$, 95% CI: 0.05, 0.43), and breastfeeding, formula feeding, and expression (3-months; n=148, $\beta = 0.32$, 95% CI: 0.10, 0.52, 12-months; n= 85; $\beta = 0.35$, 95% CI: 0.05, 0.63) showed significantly higher increases in weight-SDS than exclusively breastfed infants. Infants fed expressed breastmilk did not differ from exclusively breastfed infants (3-months; n=52, $\beta = 0.23$, 95% CI: -0.11, 0.57, 12-months; n= 33, $\beta = 0.00$, 95% CI: -0.39, 0.40).

Conclusions: Formula-fed infants, but not expressed milk-fed infants, showed greater RIWG. Hence, 'what' (i.e. formula milk) rather than 'how' (i.e. through a bottle) might place infants at greater risk of RIWG.

P1.39 Do pregnant individuals experience weight stigma in prenatal physical activity contexts?

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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Current guidelines recommend physical activity throughout pregnancy to achieve significant health benefits. Yet only ~15% of pregnant individuals meet the guidelines of 150 minutes of moderate intensity physical activity each week. In non-pregnant samples, weight stigma experienced in physical activity settings results in avoidance of moderate to vigorous physical activity but this has not been examined in pregnancy. Therefore, we aimed to explore experiences of weight stigma in physical activity settings during pregnancy.

Methods: An online cross-sectional survey was administered to Canadians who were ≥12 weeks pregnant. Participants were asked to indicate if they had experienced any form of weight stigma during their pregnancy, and if they have specifically experienced this in physical activity related contexts. If yes, an open-ended response option allowed for them to provide examples. A content analysis was completed on provided examples to conceptualize experiences of prenatal weight stigma specifically in relation to physical activity.

Results: Two-hundred and fifty-four pregnant individuals completed the survey. Nearly half experienced weight stigma in the current pregnancy (n=121), and of those, 58% (n=71) specified weight stigma in physical activity-related contexts. Examples of weight stigma were provided and categorized into two main themes: 1) negative judgement and 2) exclusion from physical activity. Negative judgements were explicit statements or perceived judgement in physical activity related settings based on weight gain (e.g., being told one is 'too heavy' and therefore should be active). Exclusion was characterized as feeling as though others do not want or do not include individuals who are pregnant in physical activities because of their current weight or weight gain.

Conclusion: Pregnant individuals may experience weight stigma in physical activity related contexts, and future studies should explore whether this influences physical activity levels and guideline adherence. By understanding causes of weight stigma, mitigation strategies can be developed and implemented to improve inclusivity in prenatal physical activity.

P1.40 Prevalence and Correlates of Preschoolers Meeting vs Exceeding Screen Time Guidelines in China

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Sedentary Behavior

Purpose: Excessive screen use in early childhood may cause serious consequences for health and development, such as decreased self-regulation and parent-child interactions. The American Academy of Pediatrics (AAP) suggests limiting screen time (ST) to one hour or less per day for children aged 2–to-5-years-old. Yet, prevalence and correlates of ST in Chinese preschoolers are unknown. This study determined (1) the prevalence of children ages 4-5 meeting (≤1 h/d) vs exceeding (>1 h/d) ST guidelines and (2) the correlates associated with failing to meet these guidelines.

Methods: A total of 2092 preschool children and their families were recruited from four kindergartens in Jiaxing, Zhejiang, China. Children's screen-based sedentary time was assessed via parent-proxy report. Screen-based sedentary behaviors were categorized as (1) watching TV, (2) using tablets or mobile phones, and (3) using computers or other electronic devices. Time spent on sedentary behaviors was further quantified as (1)"no more than 30 minutes per day", (2) "30 minutes to 60 minutes per day", (3) "1 hour to 2 hours per day", (4) "2 hours to 3 hours per day", and (5)"more than 3 hours per day". Potential correlates included caregivers (i.e., parents vs. grandparents), screen accessibility, parental perception on child ST, and ST rules were also collected. Descriptive analyses as to meeting vs exceeding guidelines were computed while factors associated with exceeding ST guidelines were examined using a generalized estimation equation.

Results/findings: Prevalence of preschoolers meeting and exceeding ST guidelines were 59.56% and 40.44%, respectively. Factors that were significantly associated with exceeding the ST guidelines were being cared by grandparents (X^2=16.63, p<0.001), screens were more accessible (X^2=132.82, p<0.001), less parental perception (X^2=14.57, p<0.001), fewer ST rules (X^2=90.19, p<0.001), and more parental ST (father: X^2=94.71, p<0.001; mother: X^2=100.80, p<0.001).

Conclusions: A large proportion of Chinese preschoolers are not meeting ST guidelines. Our findings have significant implications for health initiatives and educational campaigns aiming to reduce ST exposure in Chinese preschool-aged children. Future research to further explore potential *home environment* mediators of ST and how screens were used (e.g., solitary vs co-viewed) is warranted.

P1.41 Local environmental factors influencing recreational walking behavior in socioeconomically disadvantaged adults: a study using walk-along interviews and focus groups

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Insufficient physical activity tends to be more prevalent among socioeconomically disadvantaged groups. There is evidence that this group might be more effectively reached through environmental and community-based approaches than through individual interventions, meaning that local physical, political, economic and sociocultural factors could play a more important role in promoting physical activity. The aim of this study is to investigate the perceived environmental factors influencing recreational walking behavior among Flemish socioeconomically disadvantaged adults. This study is part of the CIVISANO-project ("a mixed-method project using community-based approaches to tackle disparities in health behaviors in the Flemish peri-urban environment").

Methods: Purposeful convenience sampling was used to recruit 38 socioeconomically disadvantaged participants (16 males, 22 females) between 25 and 65 years old in two Flemish peri-urban municipalities in Belgium between July and November 2021. Individual walk-along interviews have been conducted in the neighborhood environment of the participants to identify the role of perceived environmental factors on recreational walking behavior. Furthermore, a short questionnaire assessing sociodemographic information and individual community-related empowerment have been conducted. After initial preliminary analysis, four focus groups (n=20) took place for member checking and to identify possible local actions based on the perceived environmental factors. After both the individual interview and focus group sessions the participants were asked to complete an evaluation form for process evaluation. Interviews and focus groups were recorded and transcribed ad verbatim. MaxQDA will be used for both inductive and deductive analysis.

Results: These walk-along interviews and focus groups are expected to result in detailed and context-specific insights in the role of the local environment on recreational walking among Flemish socioeconomically disadvantaged adults. Furthermore, tangible actions and local policy recommendations will be proposed by the participants. Results will be available in the upcoming months.

Conclusions: This community-based participatory approach will contribute to our understanding of how to maximize research impact in a local setting and to create effective evidence in linking recreational walking among socioeconomically disadvantaged adults with the physical, political, economic and sociocultural environment.

P1.42 The development of an intergenerational movement program for grandchildren and their grandparents using co-creation

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: All ages
Subject Category: Physical Activity

Purpose: Many children and older adults do not meet the WHO physical activity (PA) guidelines, despite the physical and mental benefits of sufficient PA levels. In recent years, increased attention has been devoted to intergenerational PA programs because they may have several benefits for children and older adults (e.g., learning skills from each other, improved social well-being, reduction of ageism). An intergenerational PA program focusing on grandchildren and -parents is innovative and may hold potential to promote PA and create better family ties in both children and their grandparents. We aim to develop such a program, using co-creation in order to facilitate future implementation and upscaling.

Methods: The theoretical framework Behaviour Change Wheel in combination with a co-creation approach will be used to develop a movement program for grandchildren and -parents. Five co-creation sessions will be organised: two with grandchildren, two with grandparents and one with both together. Eight grandchildren (6-10 years old) and eight grandparents will participate in the co-creation sessions. The barriers and motivators to be physically active together will be identified, activities that are enjoyable and feasible to do together in the sessions and at home will be explored, the needs and requirements for the movement program will be questioned and in the last session, some contents of the preliminary movement program will be tested.

Results: Co-development with grandchildren and -parents is expected to result in an attractive and feasible program, because researchers take into account requirements of both age groups. Co-PA is expected to improve PA, psychosocial well-being, motivation to be physically active and family ties in grandchildren and -parents.

Conclusion: This intergenerational movement program could help to motivate grandchildren and their grandparents to become more active. In a next step, a pilot study and an RCT to evaluate the movement program will be conducted.

P1.43 An open-source method of measuring photoplethysmography signal quality in motion corrupted data

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Accurate heart rate (HR) measures can improve energy expenditure estimates, but motion artifacts limit photoplethysmography (PPG) signal in free-living settings. Reliable automated artifact detection is a necessary first step toward artifact removal and data preservation. Current wearable PPG devices use proprietary algorithms for detecting and removing artifacts, rendering the data unverifiable. The purpose of the current study is to describe an open-source metric of poor PPG signal quality and examine the association with estimated HR accuracy.

Methods: Two datasets were used to develop and validate the 'self-consistency' metric of signal quality. The first dataset (Brno University of Technology Smartphone PPG; BUT PPG) was used to derive signal quality cut points. The second dataset (original data collection) was used to validate cut points. Participants were 11 healthy adults (Age 20-42) who completed 19 stationary bike trials while wearing a PPG device and Polar HR monitor. Algorithm derived signal quality metrics were compared with the gold standard criterion of spectrogram visual inspection for motion artifact corrupted data.We used ROC curves to identify area under the curve (AUC) and sensitivity/specificity for different values of the signal quality metric. Correlations were used to examine the association between signal quality and HR error (Mean absolute error [MAE] Root Mean Square Error [RMSE]) between PPG and criterion HR estimates.

Results: ROC analysis on BUT PPG data revealed an AUC of .741 (95% CI .589 to .883) for the self-consistency signal quality metric. We identified a cut-score of >30 for poor signal (sensitivity = .615/specificity .80). In the validation dataset, 6 of 19 observations were identified as poor-quality. There was substantial agreement in poor signal quality detection between self-consistency and visual inspection criterion (Kappa = .872). Signal quality was correlated (r = .79 to .82) with error (MAE and RMSE) between PPG and Polar HR.

Conclusions: This proof-of-concept work can inform measurement of free-living activity outside the lab, where motion artifacts are a reality. The open-source availability makes this tool approachable to applied researchers, thereby overcoming a limitation of the field whereby advances in engineering are not readily adopted in applied public health research.

P1.44 Determinants of mechanical efficiency trajectories from childhood to adolescence: findings from the QUALITY cohort

Dr. Roseane de Fatima Guimaraes[1,2], Dr. Tracie Ann Barnett[2,3], Dr. Ryan Reid[4], Dr. Angelo Tremblay[5], Dr. Melanie Henderson[1,2], Dr. Marie-Ève Mathieu[1,2]

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: To estimate the shape and number of mechanical efficiency (ME) trajectories from childhood to adolescence; and verify whether ME trajectory membership can be predicted by sex, biological maturation, body weight, body composition and physical activity (PA) in childhood.

Methods: Longitudinal data from QUALITY, an ongoing cohort study on the natural history of obesity, were used. Participants had at least one biological parent with obesity and those retained for analysis performed a maximal cycling test at baseline. They attended a baseline visit (8-10 years, n=630) and follow-up visits 1 (n=564), and 2 (n=359). ME was assessed by an incremental cycling test at 50w (ME_{50w},%) and at VO_{2peak} ($ME_{VO2peak}$,%). PA (Actigraphy) was analyzed in min/day. Height and body weight were measured using standardized methods and body composition was evaluated by DXA. Group-based trajectory analysis was performed. A logistic regression model estimated the associations between baseline predictors of trajectory membership, including sex, age, biological maturation and weight.

Results: Mean age of the 454 participants (boys=54%) was 9.7±0.9 years at baseline. Two distinct ME_{50w} trajectories were identified and all tended to decrease. No distinct trajectories emerged for $ME_{VO2peak}$; average $ME_{VO2peak}$ increased over time. Thus, the difference between $ME_{VO2peak}$ (Δ) at baseline and follow-up was calculated for correlation analysis. Groups were labeled "Low-Decreaser" and "High-Decreaser" (Reference) for ME_{50w}, describing the starting point and slope. High-Decreasers were mostly prepubertal girls, had lower body weight and fat free mass index, lower PA and lower VO_{2peak} at baseline (χ^2 or t-test, p<0.05). Girls were less likely to be Low-Decreasers (OR=0.56, 95%CI=0.42-0.74), while having overweight/obesity predicted a greater likelihood of classification in the Low-Decreaser trajectory (OR=2.38, 95%CI=1.16-4.88). Those with higher PA were more likely to be Low-Decreasers (OR=1.02, 95%CI=1.01-1.04). Finally, concerning $ME_{VO2peak}$, sex, biological maturation, body weight, zBMI, fat free mass index, PA and VO_{2peak} were positively correlated with Δ $ME_{VO2peak}$.

Conclusions: We found evidence that excess weight predicts low levels of ME in childhood and adolescence. Additionally, higher PA at baseline is not related to higher ME_{50w} levels. More research is needed to identify different approaches to explore this measure over time, especially at VO_{2peak}.

P1.45 Determinants of cardiorespiratory fitness trajectories from childhood to adolescence: findings from the QUALITY cohort

Dr. Roseane de Fatima Guimaraes[1,2], Dr. Tracie Ann Barnett[2,3], Dr. Ryan Reid[4], Dr. Angelo Tremblay[5], Dr. Melanie Henderson[1,2], Dr. Marie-Ève Mathieu[1,2]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: The aims are to (1) estimate the shape and number of cardiorespiratory fitness (CRF) trajectories from childhood to adolescence; and (2) verify whether CRF trajectory membership can be predicted by sex, biological maturation, body weight, body composition and physical activity (PA) in childhood.

Methods: Longitudinal data from QUALITY, an ongoing cohort study on the natural history of obesity, were used. Participants had at least one biological parent with obesity and the ones retained for analysis all performed a maximal cycling test at baseline. They attended a baseline visit (8-10 years, n=630) and follow-up visits two (n=564), and seven years (n=359) after baseline. Peak oxygen consumption (VO_{2peak}), assessed by an incremental cycling test, was used to assess fitness. Moderate-to-vigorous PA (Actigraphy) was analyzed in min/day. Height and body weight were measured using standardized methods and body composition was evaluated by DXA. Group-based trajectory analysis for relative VO_{2peak} ($ml \cdot kg^{-1} \cdot min^{-1}$) was performed (SAS/ACCESS® 9.4). A logistic regression model estimated the associations between baseline predictors of trajectory membership, including sex, age, biological maturation and weight (IBM SPSS Statistics, Version 25.0).

Results: Mean age of the 454 participants retained for analysis was 9.7±0.9 years at baseline. Three distinct VO_{2peak} trajectories were identified and all tended to decrease. Groups were labeled "Low-Decreaser", "Moderate-Decreaser" and "High-Decreaser" (Reference trajectory), describing the starting point and slope. High-Decreasers were mostly prepubertal boys, had lower body weight and fat free mass index, higher PA levels and higher VO_{2peak} ($ml \cdot kg^{-1} \cdot min^{-1}$) at baseline ($X^2$ and t-test, p<0.05). Female sex and higher weight were associated with a greater likelihood of classification in the Low-Decreaser trajectory (OR=74.03, 95%CI=27.06-202.54; OR=1.48, 95%CI=1.36-1.60) while those with higher PA were less likely to be Low-Decreasers (OR=0.96, 95%CI=0.94-0.97) compared to the reference trajectory.

Conclusions: It appears that sex, body weight and PA are key determinants of VO_{2peak} ($ml \cdot kg^{-1} \cdot min^{-1}$) trajectories reflecting the transition from childhood to adolescence. The observation of an apparent role of PA in the attenuation of the decrease of VO_{2peak} over time provides an additional argument to encourage regular PA participation in childhood and adolescence

P1.46 The Weeknight Supper Savers programme: A feasibility study

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Nutrition

Purpose: Families in Guelph (population: 135,000), Canada, waste approximately 3 kg/week of food that, if managed better, could have been eaten. This level of food waste has important economic, nutritional, and environmental consequences. Improving food literacy may reduce household food waste. The primary objective of this study was to assess the feasibility and acceptability of the Weeknight Supper Savers programme among 18 families with children aged 9-12 years. The secondary objective was to assess the effect of this programme on quantity of food waste and level of food literacy and waste-related knowledge, attitudes, and behaviours.

Methods: The 4-week intervention was delivered in October-November 2020, and included a chef-led online cooking class, a food waste toolkit, and tips to reduce food waste delivered via 4 text messages/week. At pre- and post-intervention, research staff conducted 4-week household waste audits and parents completed surveys assessing their satisfaction with the program, their food literacy, and waste-related knowledge, attitudes, and behaviours.

Results/findings: All 18 families attended their scheduled cooking class. All parents (18 out of 18) reported being satisfied with the overall programme, the cooking class, and the toolkit. Only 1 parent reported dissatisfaction with the number of text messages. Compared to pre-intervention, per capita avoidable fruit and vegetable waste and unavoidable other waste significantly decreased by 37% and 53%, respectively. More parents also reported being confident in reducing food waste at post-intervention.

Conclusions: The Weeknight Supper Savers programme was very well-received and may decrease both avoidable and unavoidable food waste, but sample size was small and a control group was not used. Therefore, a randomized controlled trial with a larger sample is warranted.

P1.47 Methods for analyzing correlated data on park use: a comparison of conditional and marginal models

Dr. Marilyn Wende[1], Dr. S. Morgan Hughey[2], Dr. Alexander McLain[3], Mrs. Shirelle Hallum[3], Dr. J. Aaron Hipp[4], Dr. Jasper Schipperijn[5], Mrs. Ellen Stowe[3], Dr. Andrew Kaczynski[3]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Specialized analytic techniques have gained popularity to account for multi-level or correlated/non-independent determinants of physical activity (PA) behavior, including those related to park use. However, no current research has compared different statistical approaches for analyzing correlated park use data. The objective of this study was to compare marginal and conditional modeling approaches for identifying neighborhood, park, and individual predictors of park use.

Methods: The current data were derived from the ParkIndex parent study, which occurred in 128 census block groups in Brooklyn (NY), Seattle (WA), Raleigh (NC), and Greenville County (SC). Adult survey respondents (n=320) provided demographic/behavioral characteristics and indicated parks within one half-mile of their block group used within the past month. Parks (n=263) were audited using the Community Park Audit Tool and a composite park quality metric was created. Measures were collected at the individual (park visitation, PA behavior, sociodemographic characteristics), park (distance to each park, park quality, park size), and block group (count of neighborhood parks, population density, age structure, racial composition, walkability) levels. For conditional and marginal modeling, generalized linear mixed models and generalized estimating equations were used, respectively. Ten-fold cross-validation was completed using Root Mean Squared Error (RMSE) to compare the predictive value of models.

Results/findings: In the conditional model, significant park use predictors included population >65yrs (β=0.02,p<.0001), distance from residence to park (β=0.56,p<.0001), park quality (β=0.03,p=.0024), participant race (non-White: β=-0.48,p=.0057), and participant education (2-4-year college: β=0.57,p=.0185; advanced degree: β=0.84,p=.0008). For the marginal model, significant park use predictors included population>65yrs (β=0.02,p<.0001), distance from residence to park (β=0.64,p<.0001), participant race (non-White vs White: β=-0.41,p=.0118), and participant education (2–4-year college: β=0.75,p=.0001; advanced degree: β=0.98,p=<.0001). RMSE for the conditional final model was 0.34, compared to 0.36 for the marginal model.

Conclusions: Conditional and marginal models identified similar park use predictors, with the only difference being the significance of park quality, but the conditional model showed the best predictive value. Results can inform research identifying multi-level determinants for park use by providing input on the most appropriate analytic techniques.

P1.48 Estimating activity energy expenditure across the human lifespan using accelerometry or heart rate alone or in combination? A systematic review and meta-analysis

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Physical activity and sedentary behavior

Purpose: Accurate measurement of physical activity energy expenditure (PAEE) is critical to understanding the complex and interdependent relationship between PAEE and health outcomes. While accelerometry and heart rate (HR) devices provide objective measures of PAEE, validation studies of objective monitors to measure energy expenditure (EE) suggest the combination of HR and accelerometry may provide more accurate estimates than either method alone. The purpose of this systematic review and meta-analysis is to quantify the difference in PAEE estimates when measured via HR or accelerometry alone and in combination (accelerometry+HR).

Methods: Four electronic databases (i.e., PubMed, SportDiscus, ScienceDirect, and Web of Science) were systematically searched for published validation/calibration studies of objective, research-grade devices that examined the validity of using accelerometry and HR to estimate PAEE against criterion measures. To be included, studies had to estimate PAEE with HR or accelerometry alone and in combination in human populations. Search results were imported into Endnote for duplicate removal, pre-screened for exclusion terms and uploaded into Covidence for additional screening, review, study selection, and data extraction.

Results/findings: 42,792 articles were originally identified from the search strategy. After removing duplicates (n = 14,132) and pre-screening titles and abstracts based on certain exclusion words (n = 17,644), 11,016 were included in the initial title and abstract screen. To date, 7,719 articles have undergone title and abstract screening (70%), with 203 full-text articles retrieved and 9 articles identified for inclusion thus far. Preliminary analyses on the 9 included studies indicates accelerometry, HR, and accelerometry+HR explains 76.0% (SD=13.6%), 83.1% (SD=11.2%), and 90.9% (SD=4.4%) of the variance in PAEE, respectively. Meta-regression estimated accelerometry+HR explained 20% (95CI=10%, 30%) more variability in PAEE when compared to accelerometry and 13% (95CI=2.0%, 23%) more variability when compared to HR. Further, compared to accelerometry, HR explained 8.0% (95CI=-2.0%, 19.0%) more variability in PAEE, but the difference did not reach statistical significance.

Conclusions: Preliminary analyses from this ongoing systematic review and meta-analysis indicate the combination of accelerometry+HR explains substantially greater variability in PAEE than either HR or

accelerometry alone and likely leads to more precise and accurate estimates. Final results will be presented at the conference.

P1.49 Associations between BMI and eating habits among a cohort of college students

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: College students' BMI have been found to increase during the four-year college time, and this puts them at risk of developing weight-related diseases. Many factors relate to this change, like nutrition perception, knowledge and cognition. Undergraduates' level of healthy eating knowledge is general, but their detailed knowledge is a concern. The purpose of the study was to assess associations between BMI and eating habits among a cohort of college students at a southeastern university in the United States.

Methods: This cross-sectional study assessed demographic characteristics and eating habits of college students (n=1271, aged 18-24) using an online survey. Multiple linear regression analysis assessed participants' knowledge of healthy eating, problems associated with healthy eating, and feeling about healthy eating as predictors of BMI.

Results: In total, 72.6% of the participants were female, 87.3% were Caucasian, and 36.4% were overweight/obese. BMI was negatively associated with knowledge of healthy eating and feeling about healthy eating. However, there was a positive association between BMI and problems associated with healthy eating. The multiple linear regression model was statistically significant, $F_{(10, 1260)} = 12.16$, $P < .000$, and accounted for approximately 8.1% of the variance of the participants' BMI ($R^2 = 0.088$, Adjusted $R^2 = 0.081$). BMI was significantly predicted only by knowledge of healthy eating and problems associated with healthy eating.

Conclusions: The findings of this study underscore the need for good knowledge of eating healthy. Understanding and addressing problems associated with eating healthy is key to maintaining good eating habits. This information is vital for nutrition interventions aimed at college students.

P1.50 Food addiction and psychopathological severity with and without binge eating disorder

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Food addiction (FA) has been operationalized through the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) eleven diagnostic criteria for substance-related and addictive disorders (e.g., tolerance, withdrawal, higher than expected consumption, unsuccessful attempts to reduce). FA has been associated with greater psychopathological severity (e.g., higher psychiatric comorbidities, cravings, shape and weight concerns, and psychological distress) and even more when co-occurring with the binge eating disorder (BED). However, the important comorbidity between these two conditions makes it difficult to capture the contribution of FA to the global psychopathological severity. The purpose of this study was to examine the psychopathological severity according to the presence or absence of FA and BED. The sample included 158 adults (≥ 18 years old, BMI ≥ 25 kg/m^2) consulting for weight and eating-related problems. They completed a diagnostic interview and questionnaires assessing eating behaviors (Yale Food Addiction Scale 2.0, Three Factors Eating Questionnaire, Binge Eating Scale, Grazing Questionnaire, and Food Craving Questionnaire - Trait, reduced), body satisfaction (Body-Esteem Scale for Adolescents and Adults), depressive symptoms (Beck Depression Inventory-II) and personality traits (Temperament and Character Inventory). Participants were separated into four groups: no diagnosis (n=42), FA (n=57), BED (n=8), and FA+BED (n=51). Comparative analyses (M/ANOVA) were performed without the BED group given the small number of participants in this group. Overall, for eating behaviors, body satisfaction, and depressive symptoms, the FA group showed higher severity than the no diagnosis group and the FA+BED group showed even higher severity compared to the other two groups. For personality traits, two differences (harm avoidance and self-directedness) between the FA+BED and no diagnosis groups were demonstrated. It seems important to consider FA as well as BED since both are associated with increased psychopathological severity. Although the study does not establish causality, it suggests that the combination of FA and BED is associated with even greater psychopathological severity. To get an accurate picture of the psychological severity of patients presenting with weight and eating-related problems, eating disorders evaluation and weight measurement are largely insufficient. The assessment of FA is a quick complement that fulfill this purpose.

P1.52 University students' perception of their dietary behavior during the COVID-19 pandemic: A qualitative study

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The COVID-19 pandemic upset the lives of university students when the education system turned remote. Uncertainty about the future and isolation may trigger unhealthy dietary behaviors, subsequently with adverse health outcomes. However, there is scant literature on how this behavior has changed and emerged through the different waves of the pandemic. The current study aims at exploring university students' perception of their dietary behavior during different waves of the pandemic.

Methods: To understand students' perceptions, the study is informed by an interpretive paradigm through a phenomenological framework. Using convenience sampling, approximately fifteen graduate students are being recruited from a private university in southwest Texas. After receiving verbal consent, in-depth, face-to-face interviews are conducted using a semi-structured interview guide. Interviews are audio-recorded and transcribed. Transcripts are thoroughly revised multiple times to ensure no missing or incorrect data. Cleaned transcripts are entered into ATLAS.ti (v.9) for thematic analysis.

Results: Three interviews were conducted as of date. All the participants were doctoral students, and currently living off-campus with roommates. Emerging themes from the existing data suggest that consumption of home-cooked meals, and frequency of snacking was higher during the first wave of the pandemic. Among all students, these food choices were associated with emotions such as boredom, stress, and homesickness. However, when they started going back to university post-vaccination, at the end of second-wave and during the third wave, the frequency of on-campus dining and restaurant food consumption increased. Some students compared the differences, in the influence of lifestyle behaviors on each other, when they were at home vs. went on-campus.

Conclusion: The study provides an opportunity to explore the changes in lifestyle behaviors of graduate students during the course of an unprecedented global pandemic. The findings present an emphasis on the importance of the availability and accessibility to healthy food options on the university campus. Additionally, they highlight the significance of considering affect while analyzing and intervening on dietary behaviors among young adults.

P1.54 Obesity prevention in childhood and youth: testing and evaluation of the web-based planning tool WEPI

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Children 0-18 yrs
Subject Category: All

Purpose: Prevention interventions often have an insufficient planning quality. Thus, an evidence-based development and a successful implementation are not guaranteed. Planning tools such as the Intervention Mapping Approach (IMA), which is a gold standard for project planning, cannot be used in practice without preconditions. Developing interventions according to the IMA is complex and requires resources such as time and personnel. Against this background, the research project WEPI was developed to design a digital evidence-based and user-oriented planning tool that promotes the planning process of childhood obesity prevention interventions. The project is funded by the Federal Ministry of Health, Germany.

Methods: From April 2019 to October 2020 the digital planning tool WEPI was developed. In October 2020 and February 2021, WEPI was tested by selected municipalities (n = 4) in Bavaria and schools (n = 4) in Lower Saxony for the first time. Test persons created prevention programs with WEPI and evaluated the comprehensibility and user-friendliness. Based on this, the modified version was tested a second time (05-11/2021) with a larger group of participants from municipalities and schools. Handling and acceptance of the planning tool were evaluated through a questionnaire survey.

Results: The first testing showed that aspects of content and wording as well as technical aspects should be optimized to improve the user-friendliness. Nevertheless, test persons described WEPI as structured and self-explanatory. WEPI offers evaluated and proven intervention methods as well as a download area, e.g. template for project application or summaries. This service had a high level of acceptance and helps to ensure planning quality. The second testing has already been completed by 6 municipalities (mainly health and district offices) and 4 people from the school sector. Initial feedback is already available.

Conclusions: WEPI helps practitioners to approach project planning in a structured way, with a balance of input and benefit. It was a challenge to implement the feedback of the first testing because scientific findings needed to be translated into practical logic and had to be simplified. After the second testing, further adjustments will be necessary. Nevertheless, prevention planning becomes more evidence-based and user oriented with WEPI.

P1.55 Eating Behaviors and Attitudes of Young Adults with Food Addiction

Ms. Rachel Wattick[1], Dr. Melissa Olfert[1]
[1]West Virginia University, Morgantown, USA

SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition
Purpose: Food addiction is a growing area of eating behavior research and most studies have occurred in the clinical population. College-attending young adults are at an emerging time period of life during which lifelong lifestyle behaviors are established. The purpose of this study is to investigate the prevalence of food addiction in college-attending young adults and its relationships with other eating styles and expectations.

Methods: College students enrolled during the fall 2022 semester were invited to participate in an online survey via Qualtrics. Survey items used validated tools including food addiction using the Yale Food Addiction Scale 2.0, eating styles using the Three Factor Eating Questionnaire which has subscales of cognitive restraint, emotional eating, and uncontrolled eating, and anticipated effects of food using the Anticipated Effects of Food Scale. Descriptive statistics were computed for all variables. Food addiction scores were categorized into no, mild, moderate, and severe food addiction. One-way ANOVA was used to examine significant differences in mean eating styles and anticipated effects of food scores among each level of food addiction severity. All analysis was conducted using JMP Pro Version 16.0.

Results/Findings: Respondents (N=1645) were primarily female (76.2%) and had a mean age of 22.03 ± 5.15. The prevalence of food addiction was 21.9%, with 5.7% having mild food addiction, 4.7% having moderate, and 11.5% having severe food addiction. One-Way ANOVA showed that more severe food addiction was significantly associated with lower cognitive restraint scores ($p<.0001$), higher uncontrolled eating scores ($p<.0001$), and higher emotional eating scores ($p<.0001$). More severe food addiction was also associated with higher negative expectancies for junk food ($p<.0001$) and healthy food ($p<.0001$), but not with higher positive expectancies for junk food ($p= .07745$) or healthy food ($p=0.8255$).

Conclusions: Results indicate that there is a significant prevalence of food addiction in college-attending young adults, and that individuals with food addiction have difficulties with emotional eating and controlling their food intake. Further, they may anticipate negative feelings after eating any type of food. These findings contribute to the understanding of the mental and emotional burden of food addiction.

O.1.01 - Socioeconomic predictors of behavioral nutrition and physical activity

Room 156

May 19, 2022, 12:05 PM - 1:20 PM

Changes in food environment and changes in adult BMI: New evidence from a prospective cohort study

Dr. Francesco Acciai[1], Dr. Robin DeWeese[1], Dr. Michael Yedidia[2], Dr. Punam Ohri-Vachaspati[1]
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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Several factors at the individual-, household-, and contextual-level contribute to rising rates of obesity in the United States. Using data from a sample of adults (≥18yo) living in four New Jersey cities (Camden, Newark New Brunswick, and Trenton), we examined the association between changes in the neighborhood food environment and changes in BMI. We also explored whether this association is moderated by a composite measure of socioeconomic status (SES).

Methods: Respondents' BMI was calculated at two time points between 2009 and 2017, using self-reported heights and weights. The count of different types of outlets (specifically, convenience stores, small grocery stores, upgraded stores, supermarkets, and fast-food restaurants) within ¼, ½, and 1 mile from the geocoded respondent residence was collected at baseline and tracked every month until follow-up. A binary (low/high) measure of SES was created through latent classes using four socioeconomic status indicators as well as race (to account for the intersectionality between SES and race). Multivariate linear regression first modelled the overall association between changes in BMI with measures of the food environment. Then the same models were replicated with the addition of interaction terms between SES and the food environment.

Results: Overall, an increase in the number of small grocery stores within ¼ mile was associated with a decrease in BMI (β=-1.4, p=0.015), while an increase in the number of fast-food restaurants, both within ½- and 1-mile radius, was associated with an increase in BMI (β=0.2, p=0.042, and β=0.1; p=0.042, respectively). The interaction analysis highlighted that different SES groups were affected differently by changes in food environment. For instance, the direct association between changes in the number of fast-food restaurants and changes in BMI was only observed among individuals in the lower SES group.

Conclusions: Contextual factors, specifically the food environment around one's home, are independently associated with BMI over time. This work contributes to the obesity literature by focusing on both (1) the association between changes in the food environment and changes in BMI and (2) variations among vulnerable individuals who might experience a disproportionate impact of changes in the food environment.

Prevalence of, and attitudes towards, energy drink consumption among UK adolescents

Dr. Christina Vogel[1,2,3], Miss Sarah Shaw[1,2], Dr. Sofia Strommer[1,2], Dr. Sarah Crozier[1,2,3], Miss Sarah Jenner[1], Prof. Cyrus Cooper[1,2], Prof. Janis Baird[1,2,3], Prof. Hazel Inskip[1,2], Prof. Mary Barker[1,2]

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: UK adolescents have poorer diets than other age groups, with soft and energy drinks the primary source of free sugars. Energy drinks contain large amounts of caffeine; sales have grown substantially over the past decade with adolescents the greatest consumers. To help inform policy change, we conducted a mixed-methods study.

Methods: Quantitative diet diary data from the UK National Diet and Nutrition Survey (NDNS), a repeated cross-sectional survey (2008-2016) with a nationally representative sample, were used to identify whether each participant aged 11-18 years (n=2587) consumed energy drinks. A diet quality score was derived for each participant using principal component analysis on 139 food groups; higher scores represented healthier diets. Household income and neighbourhood deprivation provided information on socioeconomic position. Logistic regression models were fitted to describe associations between energy drink consumption and diet and demographic variables.

Semi-structured interviews were conducted with 20 parents, 9 teachers, and 28 adolescents from Hampshire, UK to learn about adolescents' food habits. Qualitative data were coded in Nvivo by two researchers with input from three others.

Results: NDNS data showed adolescents' consumption of energy drinks was associated with poorer dietary quality (OR 0.46SD; 95% CI 0.37, 0.58; $p<0.001$). Adolescents in more deprived areas (deprivation quintiles) and from lower income households were more likely to consume energy drinks than those in more affluent areas and households (OR 1.40; 95%CI 1.16, 1.69; $p<0.001$; OR 0.98 per £1000; 95%CI, 0.96, 0.99; $p<0.001$ respectively). Between 2008 and 2016, energy drink consumption among adolescents living in the most deprived areas increased, but decreased among those living in the most affluent neighbourhoods ($p=0.04$). Three themes were identified from the qualitative data. First, many adolescents drink energy drinks because of their friends and because the unbranded drinks are cheap. Second, energy drink consumption clusters with other unhealthy eating behaviours and adolescents don't know why energy drinks are unhealthy. Third, adolescents felt that voluntary bans in retail outlets and schools do not work.

Conclusions: This study supports the introduction of age-dependent legal restrictions on the sale of energy drinks which may help curb existing socio-economic disparities in adolescents' energy drink intake.

Socioeconomic inequalities in self-assessed health and food consumption: the mediating roles of daily hassles and the perceived importance of health

Ms. Sanne Verra[1], Dr. Maartje Poelman[2], Ms. Andrea Mudd[1], Emely de Vet[2], Prof. John de Wit[1], Associate Prof. Carlijn Kamphuis[1]

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: People with a lower socioeconomic position (SEP) face more daily hassles than people with a higher SEP. Urgent goals associated with daily hassles are likely to limit one's energy and time to address less pressing goals. Consequently, health-related goals may become less focal, which could jeopardize health and health-promoting behaviors. This study examined an understudied pathway: whether an increased severity of daily hassles resulted in a lower perceived importance of health and whether these two factors sequentially mediated socioeconomic inequalities in self-assessed health and food consumption.

Methods: A cross-sectional survey among 1,330 Dutch adults was conducted in 2019. Participants self-reported indicators of SEP (household income, educational level), the severity of eleven daily hassles (e.g., financial hassles, legal hassles), the perceived importance of health (not being ill, living a long life), and three outcomes (self-assessed health, fruit and vegetable consumption, and snack consumption). Structural equation modeling was used to examine whether daily hassles and the perceived importance of health sequentially mediated income and educational inequalities in self-assessed health, fruit and vegetable consumption, and snack consumption.

Results: Although socioeconomic inequalities in all three outcomes were observed, no evidence of sequential mediation through daily hassles and the perceived importance of health was found. Daily hassles explained 83% of income inequalities in self-assessed health (indirect effect: 0.05, total effect: 0.06) and 22% of income inequalities in fruit and vegetable consumption (indirect effect: 0.02, total effect: 0.09). The perceived importance of not being ill and living a long life each mediated 14% of educational inequalities in self-assessed health (indirect effects: 0.01 and -0.01, respectively, total effect: 0.07).

Conclusions: Income inequalities in self-assessed health and food consumption were explained by daily hassles, and educational inequalities in self-assessed health were explained by the perceived importance of health. The perceived importance of health does not seem compromised by a goal conflict with dealing with daily hassles. Interventions or policies addressing challenging circumstances (e.g., alleviating financial or administrative hassles) associated with a low income may improve self-assessed health and healthy food consumption among lower-income groups.

Mini-ME: Developing a multimodal, culturally relevant, smart doll-based obesity intervention for Black/African American girls

Miss Stephanie Grace[1], Ms. Brooke Wagner[1], Ms. Elina Bajracharya[2], Ms. Katie Chang[2], Dr. Caree Cotwright[3], Mr. Tony Ma[2], Dr. Daheia Barr-Anderson[1]
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SIG - Primary Choice: D. e- & mHealth
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Black/African American (AA) girls are disproportionately affected by obesity. Healthy eating and active living (HEAL) interventions have been effective for obesity prevention and should begin early in childhood. Innovative strategies that incorporate cultural and social norms are needed to engage this population. A possibility is to capitalize on parasocial relationships resulting from engaging media characters to promote behavior change using observational and play-based learning.

Purpose: Conduct formative research with AA girls (aged 4-8 years) and their primary caregiver to inform the development of a culturally relevant, childhood obesity prevention program using a smart doll to teach Black/AA girls to adopt HEAL practices.

Methods: Two semi-structured focus groups were conducted with a community advisory board (CAB) of Black/AA girls and primary caregiver dyads (n=6; child age=5.2±1.1 years; BMI percentile=96±3.1) who reside in Minnesota. Questions informed by the Social Cognitive Theory assessed girls' HEAL behaviors for the intervention and preferences for the smart doll and multimedia app platform. A descriptive, narrative approach was utilized to analyze data using NVivo (v12).

Findings: Dancing was reported as girls' favorite indoor physical activity (n=3), while playing in the snow and sledding were girls' favorite outdoor physical activities (n=3 and n=3, respectively). Daughters also reported baking (n=3), cooking (n=4), and grocery shopping (n=3) when asked what they do with food besides eating it. Girls shared that their favorite dolls have accessories (n=3) and look like them (n=5).

All primary caregivers in the CAB were mothers. For intervention strategies regarding HEAL behaviors, caregivers suggested avoiding "food shaming" (n=1) and developing fun (n=2), affordable (n=1), and age-appropriate (n=1) activities. One mother mentioned that discrimination occurring while being physically active outdoors influenced their choice of activity location.

Conclusions: Black/AA girls and their primary caregivers were enthusiastic about using an interactive smart doll to improve HEAL behaviors. The CAB provided culturally relevant feedback on the doll mirroring the girls' image (i.e., curly hair, brown skin) and incorporating fun strategies for HEAL. The next steps include developing the smart doll and multimedia app based on the formative findings and pilot testing it with 20 Black/AA girls and their primary caregivers.

Determining the Effectiveness and Appeal of Delivering the Whole Body Approach (WBA) Program via text messages to Northern Illinois Food Bank My Pantry Express (MPX) Clients

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Middle aged adults 45-64
Subject Category: Physical activity and nutrition

Objective: To assess the effectiveness and appeal of delivering a virtual program regarding eating competence, interest and enjoyment in physical activity, and confidence related to consuming and providing fruits and vegetables for low-income mobile food pantry users.

Methods: In this study, 156 participants registered to join a free ten-week, non-diet virtual Whole-Body Approach (WBA) program which was offered in English and Spanish. Participants were asked to complete the pre-survey before the start of the program and a post-survey at the end of the program. The text messages were delivered using Simple Texting web interface. Text messages were delivered throughout the week to active participants relating to helpful tips regarding the topic of the week, a link to an educational video, and either a link to a recipe or second helpful tip. The topics that were discussed throughout the program include stress management, relationship with food, mindful eating, healthy body image, and enjoyable movement. Outcome measurement tools included Eating Competence Satter Inventory 2.0 (ecSI 2.0), fruit and vegetable Self-Efficacy Questionnaire, and the Interest/Enjoyment subscale of the Motives for Physical Activity Revised (MPAM-R). Paired samples t-test or Wilcoxon signed-rank test were used to compare baseline and follow-up outcome measures in participants who completed both the pre- and post-surveys.

Results: Of the 156 participants who registered, 100 completed pre-surveys (mean age 48 years, 89% female) before the beginning of the program. Over the span of 10 weeks, we maintained 112 participants and 21 completed post-surveys (median age 53.5 years, 96% female). The ecSI 2.0 showed a significant change (p=0.008) in internal food regulation and overall eating competence (p=0.02). Participants did not significantly increase their overall self-efficacy for fruits and vegetables or motivation for physical activity (p > 0.05).

Conclusion: The 10-week virtual nutrition education intervention for mobile food pantry users did not significantly improve exercise motivation and self-efficacy for fruit and vegetable related behaviors. Future studies may include a hybrid program where half of the classes will be in-person which may increase participant retention and engagement with the pro gram, a higher survey response rate, and significant improvements in outcome measurements.

O.1.02 - Innovation in measurement for behavioral research

Room 157

May 19, 2022, 12:05 PM - 1:20 PM

Development of an automated, objective assessment of children's mobile device use: FLASH-Mobile

Dr. Teresia O'Connor[1], Mr. Anil Kumar Vadathya[2], Ms. Oriana Perez[1], Ms. Alicia Beltran[1], Mr. Robert Barnett[2], Dr. Tom Baranowski[1], Dr. Sheryl Hughes[1], Dr. Jason Mendoza[3], Dr. Salma Musaad[1], Dr. Ashutosh Sabharwal[2], Dr. Ashok Veeraraghavan[2]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 6-12 yrs
Subject Category: Sedentary Behavior

Purpose: Screen use among children is a public health concern. Children's screen use assessment typically relies on self-report and suffers from biases. Our goal was to develop FLASH-Mobile, a background application (app) for Android Devices for tracking app usage with a user log-in to identify children's device use, even when devices are shared.

Methods: Four design studies were completed with a parent-child dyad/triad (parent and siblings). Two, 2-hour lab observation studies (n=15) assessed the accuracy of FLASH-Mobile to capture participant use of device compared to staff coding of video data (gold standard). Two 3-day studies in the child's home gathered real-world information on the feasibility to assess children's typical device use (n=33). The FLASH-Mobile app (built on HealthSense) included three different iterative versions to detect child user: V1) pop-up prompt when unlocked (n=8); V2) notification banner when unlocked and every 15 minutes of use (n=9); and V3) notification banner only when unlocked (n=31). The user identified themselves as "child" or "other". FLASH-Mobile collected time an app opened and closed. It estimated device use by summing duration of open apps for that user. Lab-based video data were coded by staff for device use by user (child, other or together). Agreement between FLASH-Mobile and actual child use is reported as percent agreement with gold standard for observation studies, and by parent report after reviewing usage logs during exit interview for real-world studies.

Results: 48 parent-sibling dyads/triads participated, 33 (69%) were able to download FLASH-Mobile on their device with all features functioning and 35 had complete data (2 used study device). Compliance with user identification improved across versions in home-based studies (56.1% V2 and 89.5% V3). Among 15 participants in lab observation, 3 had less than 20% compliance with user identification. Agreement of device use to gold standard among remaining sample was 73.6% (range 44.7-96.1%). The agreement of FLASH-Mobile to parent review of output log was high, with only minor discrepancies reported by two parents among real-world study with complete data (n=20).

Conclusion: FLASH-Mobile is a promising new tool to more accurately measure device use by children, including for shared devices.

Integrating Geographic Positioning Systems and accelerometer monitor data for assessing the spatiotemporal patterns of health behaviors

Dr. Deborah Salvo[1], Dr. Alexandra Van Den Berg[2], Dr. Deanna Hoelscher[2], Dr. Alejandra Jauregui[3], Dr. Kathryn Janda[2], Dr. Kevin Lanza[2], Dr. Umberto Villa[1]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Physical activity and nutrition

Purpose: Most geospatial indicators of built and food environment exposures are static (e.g., buffer-based GIS measures), and thus, are prone to the Uncertain Geographic Context Problem (UGCoP). Some physical activity and dietary behavior researchers have begun collecting time-matched GPS and accelerometry data to overcome this issue. However, processing and analyzing these data in a way that yields meaningful insights for answering health and place questions remains challenging. We aimed to develop an open-source code that integrates Geographic Positioning Systems (GPS) and accelerometer monitor data for obesity-related behavior research.

Methods: We developed an open-source, Python code that integrates QTravel BT-10000 GPS and GT3X-wBT Actigraph device data via temporal matching. We implemented a series of rules to generate analytic datasets including variables about locations visited, trips between locations (distance, duration, travel mode), and spatiotemporally matched physical activity intensity categories. Output files include datasets at the following levels: 1) participant-level, 2) trip-level, 3) location-level, 4) visit-level, 5) fix-level (coordinates detected by the GPS monitor every 15 seconds).

Results: To demonstrate the utility, versatility, and types of analytic outputs generated by the code, we successfully applied it to GPS and accelerometry data from four independent studies. The first study examines the impact of an initiative to increase geographic access to non-traditional food stores (farmstands, mobile markets, healthy corner stores) on food purchasing and intake patterns among low-income urban residents. The second study examines the impact of a large-scale rollout of Safe Routes to School Program on active commuting to school and overall physical activity among a diverse sample of school-age children. The third study assesses the impact of rapid, large-scale implementation of new bicycling infrastructure in a middle-income country mega-city. The fourth study explores the role of natural and human-made shade infrastructure on physical activity levels during school recess among children, across varying weather conditions.

Conclusions: This open-source tool represents a novel, valid, and versatile approach for reducing the UGCoP and more comprehensively examining how individuals interact with their city as a whole, and how these interactions influence their physical activity and diet-related behaviors.

Promising New Measures to Assess Household Resilience to Food Insecurity Risk in the United States

Dr. Eric Calloway[1], Ms. Leah Carpenter[1], Mr. Tony Gargano[1], Dr. Amy Yaroch[1]
[1]*Gretchen Swanson Center for Nutrition, Omaha, USA*

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Based on formative work we presented at ISBNPA 2021, this study aimed to psychometrically test novel self-administered measures of three aspects of a household's resilience to financial shocks (e.g., job loss) that can increase food insecurity risk. These three measures assess Absorptive Capacity (i.e., on-hand resources to absorb a shock, short-term), Adaptive Capacity (i.e., knowledge/skills/barriers to adapt to a shock, intermediate-term), and Transformative Capacity (i.e., community conditions affecting long-term transformation in household resilience). These measures were intended to provide a multidimensional view of a households' food insecurity risk resilience, as well as provide actionable data that complements the United States Department of Agriculture's Household Food Security Survey Module (HFSSM).

In April 2021, we piloted the measures in a convenience sample of individuals at risk for food insecurity in the United States. The pilot survey included the three new measures, scales for validation (Conner and Davidson personal resilience to challenges scale (CD-RISC), CFPB's Financial Wellbeing scale, and the HFSSM), and demographic questions. We used Classical Test Theory and Item Response Theory (IRT) approaches to assess model fit (confirmatory factor analysis (CFA)), Cronbach's alpha, IRT parameters (discrimination, difficulty), test bias (moderation effects), and convergent validity (Spearman's coefficients).

Respondents (n=494) were 18-89 years old, 67% experiencing food insecurity, 47% with high school diploma or less, and 72% were women. Races/ethnicities: non-Hispanic White (48%), Hispanic/Latino (22%), non-Hispanic Black (17%), Asian (4%), Tribal/Indigenous (2%), and multi-racial/ethnic or not listed (7%). Acceptable metrics were seen for: CFA model fit (AGFI=0.963-0.992; Standardized RMR=0.039-0.084), Cronbach's alpha (0.76-0.92), and IRT indicators (acceptable slopes, and thresholds spreads). No test bias was observed by race, gender, age, education, or test mode. Scores were negatively associated with food insecurity (-0.294 to -0.508) and positively associated with CD-RISC (0.302-0.336) and financial wellbeing (0.328-0.470).

These findings are encouraging and support reliability and validity of these new measures within similar samples. These measures can be used for needs assessments, program evaluation, clinical screening, and research/surveillance. We anticipate that widespread adoption will promote a more comprehensive understanding of the food insecurity experience and facilitate development of tailored interventions on upstream causes of food insecurity

Utilizing topological data analysis to better characterize the heterogeneity of "dieting"

Dr. Nancy Sherwood[1], Dr. Megan Winkler[2], Dr. Kaisa Taipale[1], Dr. Ann Haynos[1], Ms. Susan Telke[1], Ms. Laura Hooper[1], Dr. Rina Ashkenazi[1], Prof. Doreen Vescelius[1], Dr. Melissa Tracy[3], Dr. Melissa Simone[1]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: All

Purpose: The role of dieting in the etiology of obesity and disordered eating is controversial. "Dieting" during behavioral weight loss programs can lead to clinically significant weight and binge eating reductions, but "dieting" in population-based samples is a risk factor for obesity and disordered eating. This "dieting paradox" presents a challenge for developing strategies that address both problems. Innovative statistical tools are needed to investigate this paradox and better characterize the heterogeneity of "dieting". In this presentation we will demonstrate the process and advantages of using topological data analysis (TDA) to identify meaningful sub-groups of adolescents based on their dieting status, weight-related behaviors (e.g., energy intake, physical activity, binge eating) and psychological factors (e.g., body satisfaction). TDA is a novel, data-driven analytic technique that pairs unsupervised pattern detection and network visualization to obtain the full taxonomy among a complex dataset of inter-related variables. TDA potentially captures sub-groups that could be missed with traditional statistical clustering methods.

Method. Baseline data from the Project EAT study were utilized for these analyses. Participants were adolescents (ages 11-17, n=4746) attending 31 public schools in an urban area in the State of Minnesota in the United States. In Python 3.6, we used the Kepler Mapper library from scikit-tda 0.0.4 to identify fuzzy subgroups of adolescents. TDA uses a network structure in a highly-dimensional space to group participants based on the similarity of their variable profiles. This network, or highly-dimensional data shape, creates participant sub-groups visualized as nodes with relations among sub-groups represented as lines between nodes.

Results. We used an iterative process of visual examination and comparison of descriptive characteristics across nodes to identify clinically meaningful participant subgroups for a series of TDA solutions with varying numbers of nodes. Preliminary results support identification of nine sub-groups of boys and girls, respectively. We will demonstrate how TDA-derived sub-groups differ on key behaviors at baseline and their association with different obesity and disordered eating trajectories over time.

Conclusion. TDA shows promise for identifying clinically meaningful sub-groups of adolescents that could inform how intervention approaches should be targeted and tailored to optimize weight and disordered eating outcomes.

D2S.1.02 - Develop mobile health and ecological momentary assessment interventions using a "no-code" app builder platform: Pathverse

Room 156

May 19, 2022, 2:15 PM - 4:15 PM

Dr. Sam Liu, University of Victoria

Background: Smartphones have become an important tool for researchers to deliver health interventions and conduct remote assessments (e.g., ecological momentary assessment). However, the development of these mobile apps requires extensive resources and technical expertise, making it a significant barrier for researchers. In order to overcome these challenges, our research team developed a "no-code" mobile app development platform for researchers. This no-code platform allows researchers to create mobile phone apps through a graphic user interface rather than computer programming. Ultimately, this "no-code" app builder tool can be extremely useful for researchers to rapidly design, evaluate and deploy mobile health research apps.

D2S.1.03 - Indigenous cultural safety for community-based participatory researchers

Room 157

May 19, 2022, 2:15 PM - 4:15 PM

Brittany McBeath, Queen's University

Cultural Safety is an outcome that results in an environment where people feel safe when receiving health care and other services. Although it emerged from collective efforts to foster safe and equitable health care and health promoting environments for Indigenous peoples, cultural safety training is essential for anyone working with Indigenous peoples. Those of us committed to community-engaged research have a responsibility to practice culturally safe research. This Dare2Share session will be led by an Indigenous Elder, an Indigenous faculty member, an Indigenous graduate student and a non-Indigenous ally researcher from Canada. This introduction to cultural safety will provide insight into the social and historical context of structural inequality affecting Indigenous peoples across the globe drawing on inspiration from interactive theatre. We will take participants on a journey through the colonization of Turtle Island, exploring Indigenous conceptualizations of health and wellness with reference to cultural safety and its relevance to participatory health promotion research. Topics will include trauma-informed and relational approaches, challenging systemic barriers and promoting the self-determination of Indigenous peoples. This workshop will take place exclusively outside in order for participants to reflect deeply on their relationship to the land. Concrete takeaways for participants include strategies for integrating cultural safety practices into research. Attendees' participation will encourage transformative thinking through guided reflection, discussion, and planning for action to create culturally safe community-researcher relationships and environments.

O.1.03 - Parents' impact on child eating and physical activity behavior

Room 150

May 19, 2022, 2:35 PM - 4:05 PM

Food-related parenting practices and styles in households with sibling children: A scoping review

Miss Susannah Ayre[1,2], Dr. Holly Harris[3], Associate Professor Melanie White[4], Dr. Rebecca Byrne[1,2]
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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Interventions that promote responsive feeding in early childhood have been shown to reduce risks of obesity. However, interventions mostly target parent-child dyads and do not consider the complexities of implementing responsive feeding across multiple children within a family unit. An understanding of how parents adapt their feeding practices and styles between siblings may enable family-based feeding interventions to be tailored more effectively. This scoping review therefore aims to assess the scope and nature of the current literature examining parent feeding practices and styles in the context of siblings.

Methods: This scoping review was conducted in accordance with Joanna Briggs Institute (JBI) methodological guidance. Six electronic databases were searched (APA PsycINFO, CINAHL, Embase, Medline, ProQuest Dissertations & Theses Global, and Scopus) for articles published up until 25 November 2021. Studies were included if they compared the use of parent feeding practices and/or styles for two or more siblings aged ≤18 years. Journal articles, theses, and dissertations were considered for inclusion with a focus on empirical data. For relevant studies, data were extracted and analysed using basic descriptive statistics.

Results: A total of 18 studies (14 quantitative and 4 qualitative) met the eligibility criteria and were included in this review. Studies were undertaken in the United States (n=12) and Europe (n=6), with the majority (n=12) targeting school-aged children between 6 and 18 years of age. Most studies (n=11) tested differences in the use of parent-reported feeding practices between siblings, namely restriction and pressure to eat, in relation to differences in their characteristics, including weight status, eating behaviours, food consumption, temperaments, birth order, age, and sex.

Conclusions: Current research is reliant mostly on cross-sectional, parent-reported studies that were conducted in small, homogenous samples. The studies provide some evidence that parents may modify certain feeding practices or styles for siblings in response to differences in their characteristics. Future research should explore the contexts and consequences surrounding the use of differential feeding, with particular focus on early childhood when obesity preventative interventions may be most effective.

Dimensions of Caregivers' Feeding and Associations with Children's Eating Behavior

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Previous research has focused on the impact of specific feeding constructs (autonomy support, structure, and control) on children's weight status. However, less is known about how each construct relates to or differs from one another. Therefore, this study aimed to identify dimensions of caregiver feeding based on similarities and differences across reported feeding behaviors and evaluate the association between dimensions and children's eating behaviors. Using a Self-Determination Theory framework, we hypothesized that caregivers' feeding would fall along two dimensions based on their support of their child's needs and how directive they are regarding their expectations of their child's behavior at meals and that these dimensions would be associated with children's eating behavior.

Methods: We assessed baseline data from the pilot Strong Families Start at Home Study. Participants were caregivers of 2-5-year-old children. Caregivers completed the Parent Socio-emotional Context of Feeding (PSCF) questionnaire and the Childhood Eating Behavior Questionnaire (CEBQ). A non-metric multidimensional scaling analysis was used to plot PSCF items based on similarities and differences to identify dimensions of feeding. Linear regression assessed the association between feeding dimensions and CEBQ subscales.

Results: *Caregivers were predominately low-income Hispanic/Latinx mothers.* A clear separation emerged between supportive (autonomy and structure) and non-supportive (chaos and control) feeding in the hypothesized direction. While autonomy support and structure differed according to levels of directiveness, control and chaos were highly similar despite having theoretically different levels of directiveness. Supportive feeding was negatively correlated with food fussiness(b= -0.30, p=.012) and emotional overeating (b= 0.27, p=.036).

Conclusions: The PSCF identified supportive and non-supportive feeding environments but did not clearly identify directiveness. This study provides further evidence that need-supportive feeding is correlated with fewer problematic eating behaviors in children and highlights a need to better understand approaches caregivers use when providing direction during feeding

Breastfeeding and parental styles in children with feeding difficulties: Results from a reference center in nutrition and feeding difficulties

Ms. Priscila Maximino[1], **Dr. Ana Carolina Leme[1]**, Miss Victoria M. J. Franco[2], Ms. Raquel Ricci[1], Ms. Nathalia G Paula[1], Ms. Camila Fussi[1], Ms. Andrea Romero[2], Associate Professor Mauro Fisberg[1,3]

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Despite controlling over-feeding might be associated with the duration of exclusive breastfeeding (EBF), consistent evidence to support the relationship between breastfeeding and parental styles in children with feeding difficulties is still lacking. This study was to examine the prevalence of EBF and verify the associations between EBF duration with parental styles among children with feeding difficulties.

Methods: Cross-sectional data come from a Brazilian reference center in nutrition and feeding difficulties. Participated 194 (M=4.13; 95%CI 3.68, 4.56years, 65.98% female) children. EBF duration was assessed through parent interviews during 1st medical appointment. Parental styles were measured using the adapted Caregiver's Feeding Styles Questionnaire (CFSQ) into four styles – Authoritative, authoritarian, indulgent, and uninvolved. Socio-demographic, weight status, and other maternal lifestyles were evaluated in order to categorize the study sample and to be used as potential confounders. Descriptive statistics and linear regressions were used. For all tests, a significant level of 5% ($p < 0.05$) was considered.

Results: Overall, 19.23% of the mothers reported that they never breastfed their children, while 52.31% breastfed for 6months or more. Being 6months or more EBF was more prevalent among authoritative mothers (67.65%) while being never breastfed was more prevalent among uninvolved mothers (33.33%). Adjusted models showed that indulgent (ß=2.20, 95%CI 0.67, 3.73), authoritative (ß=2.15, 95%CI 0.62, 3.68), and authoritarian mothers (ß=1.92, 95%CI 0.37, 3.47) were associated with longer exclusive breastfeeding as compared to uninvolved mothers.

Conclusion: Controlling parental styles were positively associated with longer duration for EBF in children with feeding difficulties. Thus, a certain level of control might an important asset to encourage EBF and meet the WHO recommendations. Counseling approaches, with health care practitioners, to encourage breastfeeding and frame parental styles may benefit from targeting changes in the way parents lead with breastfeeding and other parental practices.

Prospective associations between fathers' engagement in infant caregiving and their weight-related behaviors and mental health

Dr. Brian Lo[1], Dr. Sebastien Haneuse[2], Dr. Brent McBride[3], Dr. Susan Redline[4,5], Dr. Elsie Taveras[2,6], Dr. Kirsten Davison[1]
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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Fathers' engagement in infant caregiving is linked with positive social, emotional and developmental outcomes in children; however, its relationship with fathers' own health is largely unknown. This longitudinal study examined associations between fathers' caregiving engagement with their 6-month-old infants and their physical activity, sugar-sweetened beverage (SSB) consumption, nighttime sleep duration and depressive symptoms 6 months later when infants were 12 months old.

Methods: Participants were 143 fathers of infants (62.7% non-Hispanic white, 82.3% with a bachelor's degree). Fathers reported their frequency of engagement in 7 caregiving activities (i.e., preparing meals, feeding, changing diapers, putting child to sleep, bathing, taking child outside the home and dressing child) when infants were 6 months old. Fathers' physical activity, SSB consumption, nighttime sleep duration and depressive symptoms were assessed when infants were 6 and 12 months old. Multivariate logistic regression analysis was used to assess if fathers who reported higher infant caregiving at 6 months had more positive health outcomes at 12 months, controlling for fathers' age, race/ethnicity, education, employment, household income and the outcome at 6 months.

Results: Fathers who reported higher caregiving engagement when infants were 6 months old had increased odds of being sufficiently physically active 6 months later [unadjusted OR=1.19 (95% CI=1.00, 1.41); adjusted OR=1.47 (95% CI=1.11, 1.96)]. No links were identified between fathers' caregiving engagement and their SSB consumption, nighttime sleep duration or depressive symptoms.

Conclusions: In summary, fathers' engagement in infant caregiving may be beneficial to their physical activity in the first year after birth. However, there was insufficient evidence in this study that the benefits of caregiving engagement were experienced broadly across multiple health outcomes.

Making the case for parent empowerment: Findings from a community-based obesity prevention trial

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Background: This study reports the outcomes of Communities for Healthy Living (CHL), a cluster randomized family-centered obesity prevention trial implemented in partnership with Head Start, a federally-funded preschool program for low-income families in the U.S.

Methods: Using a stepped wedge design, Head Start programs (n=16) were randomly assigned to one of three intervention start times. Focusing on parents as agents of change, CHL intervention activities included a media campaign, enhanced nutrition support, and a 10-week wellness program for parents, Parents Connect for Healthy Living (PConnect). At the beginning (Sept-Nov) and end (Mar-May) of each school year (2017-2019), data were collected on child BMI z-score (BMIz), child weight-related behaviors (diet, physical activity, sleep, media use), parents' weight-related parenting practices and parent health-related empowerment (i.e., feeling in control of one's situation and taking action). We used mixed effects linear regression to compare relative differences across the school year for Head Start families during the intervention vs. control periods (n=1219 vs. 2491) in (1) change in child BMIz, (2) the odds of meeting child health behavior recommendations, (3) change in parenting practices, and (4) change in parent empowerment. Looking specifically at intervention periods, we also compared outcomes among parents who participated in PConnect vs. not (n=50 vs. 340).

Results: During intervention periods (vs. control), children demonstrated greater – though not clinically meaningful – increases in BMIz (b=0.06, 95% CI=0.02, 0.10) and higher odds of meeting screen time recommendations (b=1.35, 95% CI=1.02, 1.80). Among parents, no statistically significant differences for intervention vs control periods were observed in parenting practices (b=0.05, 95% CI=-0.003, 0.11) or parent empowerment (b=0.04, 95% CI=-0.02, 0.11). During intervention periods, however, parents participating in PConnect (vs. not) demonstrated significantly greater increases in empowerment (b=0.18, 95% CI=0.06, 0.30).

Conclusions: Results from this intervention suggest that intervention elements which directly engage parents (e.g., PConnect) may be effective at increasing parental empowerment. With the trial prematurely suspended due to the COVID-19 pandemic, we were unable to observe longer-term changes in parenting practices and child behaviors which may have followed these empowerment increases

The effect of adults' positive facial expressions whilst eating a green vegetable on children's acceptance and consumption of green vegetables

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Research has shown that seeing positive facial expressions (FEs) towards food increases children's desire to eat foods rated as disliked. However, the immediate and sustained effect of adults' positive FEs whilst eating a vegetable on children's eating of less preferred but nutritious foods (e.g., vegetables) remains to be established. These studies examine the effect of models' FEs whilst eating raw broccoli on children's eating of raw broccoli and mangetout, and examine whether one or multiple exposures to models eating a vegetable is needed to encourage children's eating of vegetables.

Methods: Study 1 comprised 111 4-6-year-old children (64 male, 47 female) who were randomised to watch a video of unfamiliar adult models eating raw broccoli with a positive or neutral facial expression, or a non-food control video. Children's acceptance (willingness to try and frequency of tastes) and intake of raw broccoli was assessed. Study 2 will recruit 150 5-6-year-old children who will be randomised to watch a video of adult models eating raw broccoli with a positive facial expression, or a non-food control video. Children will watch the positive video once (single exposure) or 6 times over one week (repeated exposure). Acceptance, intake and liking of raw broccoli and mangetout will be examined at session 1 and session 2 (one-week later).

Results: Study 1 found that children who watched adults eating broccoli with positive FEs had greater frequency of tastes ($p = .04$) and intake of broccoli ($p = .03$), than children in the control condition. There was no effect of positive FEs on children's willingness to try broccoli ($p > .05$). Study 2 data will be analysed using mixed ANOVA and findings will be presented.

Conclusion: Study 1 demonstrated that observing others enjoy a commonly less liked vegetable increased children's tastes and intake of the vegetable. This effect is expected to last over one-week, and to generalise to acceptance and intake of a similar vegetable in Study 2. If exposure to others enjoying a vegetable is effective for increasing vegetable acceptance and intake, this could be used as a basis for an intervention to encourage children's eating of vegetables.

O.1.04 - Apps, games, and social media, #OhMy!

Room 151

May 19, 2022, 2:35 PM - 4:05 PM

A content analysis of nature imagery use on Australian food company websites

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SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Nutrition

Background: Nature images are images that are frequently used as design elements on websites and apps. The use of nature in advertising for products or companies without a clear link to nature or environment creates misconception of the brand and is termed 'greenwashing'. Previous literature has found that greenwashing can influence both perceptions of trust and aesthetics, which in turn may influence purchase intentions. Previous studies have explored nature imagery facilitated greenwashing in the energy and automobile industries, however little is known about the use of nature imagery in the food industry. Hence, this research aims to use content analysis methods to explore and describe the use of nature imagery facilitated greenwashing on Australian food company websites.

Methods: Australian top food and beverage companies, grocery stores and fast-food providers were identified. Full-page screenshots were taken of the website and social media pages where applicable. Next, each image on the screenshots was individually saved and coded. If an image contained nature, the Importance For Survival Scale (IFSS) was used for coding. IFFS scores range from 1 to 5 and Images scoring high have previously been found to be related to strong positive feelings in consumers. In addition, open coding was conducted for the nature scenes on the image. All coding was checked by a second independent coder and differences were discussed.

Results: Preliminary results on 22 websites and 53 screenshots showed that 38% of 295 images contained nature. The 111 images with nature scored on average a 2.6 on the IFSS scale. Most images showed of a type of agriculture, urban/park or body of water (e.g., ocean). If images portrayed any animals, they were mainly livestock, birds or fish. Humans in the nature images were most often farmers or children.

Discussion: The present study addresses an important gap in the literature surrounding greenwashing and digital food environments. It can be concluded that the use of nature imagery is widespread in the digital food environment, and they are commonly unrelated to the company, product or brand. Future research will need to investigate the impact of nature imagery on food choice and perception

How APPropriate are physical activity apps for pregnant women: A systematic search and content analysis of evidence-based content, features of exercise instruction, and expert involvement

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Physical activity during pregnancy is associated with health benefits for both mother and child. Pregnant women are increasingly using mobile applications (apps) to access health-related information. However, the extent to which apps provide physical activity/exercise advice that aligns with current evidence-based pregnancy guidelines is unclear. The purpose of this study was to conduct the first systematic search and content analysis of apps that promote physical activity/exercise in pregnancy to examine the alignment of the content with current evidence-based physical activity guidelines, features and credentials of app developers.

Methods: Systematic searches were conducted in the Australian AppStore and GooglePlay stores in October 2020. Apps were identified using search terms relevant to pregnancy and physical activity/exercise and screened for inclusion (free to download or did not require immediate paid subscription and an average user rating of 4+ out of 5). Each app was independently reviewed using an author-designed extraction tool. Data were exported, collated, and reported using descriptive statistics.

Results: Twenty-seven apps were included in this review (GooglePlay: n=16 and AppStore: n=11). Seventeen apps provided some information relating to each of the FITT principles (frequency, intensity, time, type) of exercise; however, only three provided this information in-line with current evidence-based physical activity guidelines. Ten apps provided information about contraindications to exercise during pregnancy and referenced the supporting evidence. No apps actively engaged in screening for potential contraindications. Only four apps collected information about the user's current exercise behaviours, three apps allowed users to personalise features relating to their exercise preferences, and ten apps provided information about developer credentials.

Conclusions: Few physical activity/exercise apps designed for pregnancy aligned with current evidence-based physical activity guidelines. There is a need to improve the quality of apps that promote exercise in pregnancy, to ensure women are appropriately supported to engage in exercise, and the potential risk of injury, complications and/or adverse pregnancy outcomes for both mother and child is minimised. This could be done by providing expert guidance that aligns with current guidelines, introducing screening measures and features that enable personalisation and tailoring to individual users, or by developing a recognised system for regulating apps.

The development of a hypertension prevention program using Pathverse: a "no-code" mobile app builder

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SIG - Primary Choice: D. e- & mHealth
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Background: Recent studies have shown that mobile health (mHealth) physical activity interventions can be an effective strategy to prevent hypertension. However, the development of mHealth apps can be extremely resource intensive. Our team recently developed a "no-code" app development platform (Pathverse) for researchers. This no-code platform enables researchers to create mobile apps without software coding; thus, this can significantly decrease the time and cost required to develop an app. Currently, the development process of a mHealth app using the Pathverse platform has not been described.

Purpose: The purpose of this study was to describe the process of developing an eight-week mHealth financial incentive hypertension education program (Healthy Hearts) and to evaluate the usability of Healthy Hearts using the Pathverse platform.

Methods: The IDEAS framework was used to guide the development of Healthy Hearts. The development process consisted of 1) intervention planning: how to shift a web-based program to a mobile app and to determine further needs of the program; 2) intervention development: iteratively designing the mHealth program grounded in Multi-Process Action Control (M-PAC) framework and further strengthened with financial incentives; 3) usability testing: assessing the mHealth program and gathering feedback from six participants to further enhance the user experience through online questionnaires and semi-structured interviews.

Results: A need for this program was suggested during the intervention planning phase, as there has not been a financial incentive-driven M-PAC mHealth program tested for physical activity. Intervention development successfully created an eight-week financial incentive hypertension education program using Pathverse for adults aged 40-65 not currently meeting the Canadian Physical Activity Guidelines (<150 minutes of moderate-to-vigorous physical activity per week). Usability testing was successful, with six participants recruited, feedback was gathered to enhance the content, layout, and design of Healthy Hearts to prepare a pilot study.

Conclusion: The Pathvese app builder platform shows to be an effective tool for developing mHealth hypertension prevention intervention. The Pathverse platform has enabled the researchers to effectively use an iterative co-design process to design a mHealth physical activity intervention. Through this process, users were able to provide valuable feedback on the content, design, and layout of the program.

Physical activity trackers among teachers: who uses them and do users meet physical activity guidelines?

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Millions of physical activity trackers (PAT) are sold worldwide each year, but who uses them and is usage associated with meeting physical activity (PA) guidelines?

Methods: A cross-sectional survey was conducted among 1136 primary/secondary school teachers in New South Wales, Australia. Questions asked about behavioural risk factors and PAT usage. PA was measuring using a previously validated single item PA question, with meeting guidelines classified at PA 5+days/week. Information was collected on PAT usage, length of use, and the perceived influence of PAT on activity levels. Logistic regression analyses determined the association between PAT usage and meeting PA guidelines and identified demographic characteristics associated with PAT use.

Results: Overall n=256 (23%) met PA guidelines and overall 668 (64%) had used a PAT. Of those who had ever used a PAT, n=451 (68%) currently used them and 30.4% of current PAT users met PA guidelines compared with 13.4% no longer using a PAT (p<0.001). Most current users (58%) were long term (2+years) users, and 80% of current users thought their PAT had influenced their PA levels. Significant associations noted between currently using a PAT and meeting PA guidelines after adjusting for age and sex (OR:2.82;95%CI:1.8-4.4;$\chi(1)2$=24.5;p<0.001). Other factors associated with meeting PA guidelines were 'comparing PA with others' (OR:2.34;95%CI:1.5-3.6;$\chi(1)2$=14.6;p<0.001), being active prior to PAT use (OR:2.60:95%CI:1.6-4.4;$\chi(1)2$=14.6;p<0.001) and perceiving PAT to have a minor (OR:2.09; 95%CI:1.1-3.8) or major (OR:3.45;95%CI:1.8-6.7) influence on PA ($\chi(2)2$=14.7;p<0.001). Factors associated with having used a PAT included identifying as female (OR:1.77;95%CI:1.3-2.5;$\chi(1)2$=11.5;p<0.001) and those aged 35-49. Those who were 50+ years were less likely to have used a PAT (OR:0.60 and 0.43 respectively, compared with younger adults;$\chi(2)2$=24.3;p<0.001), people from remote/rural areas were less likely that urban areas (OR:0.61;95%CI:0.4-0.9;$\chi(2)2$=6.2;p=0.045), and teachers with overweight/obesity were more likely than healthy weight range teachers to have used a PAT (OR=1.48,95%CI:1.1-1.9;$\chi(1)2$=7.9;p=0.0048).

Conclusion: These findings suggest PAT users are more likely to meet PA guidelines compared with non-users and provide support for the continued uptake of PAT. Advertising of these devices to middle aged/older adults as well as in rural/remote areas may enhance PAT uptake and PA levels in these populations.

The Effect of Narrative Addition to Active vs. Sedentary Virtual Reality Games on Moderate-to-Vigorous Physical Activity and Game Experience

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SIG - Primary Choice: D. e- & mHealth
Age Category: Young adults 19-24 yrs
Subject Category: Physical Activity

Purpose: Narratives have been added to many active video games to increase the players' immersion and motivation, thereby elevating their physical activity (PA) levels. However, the narrative effect is poorly investigated in fully immersive virtual reality (VR) headsets, which could enhance the immersion effect. We investigated the impact of the addition of a narrative on movement and non-movement behaviors during an active vs. sedentary VR game session and the effect of the type of VR game (active vs. sedentary) on players' game experience.

Methods: Thirty-six sedentary college students participated in this study (age=23.2±2.8 years; BMI=23.5±4.5 kg/m2; men=75%). They were randomized into the narrative or non-narrative condition (between-subject factor). All participants attended two gaming sessions in random order: active VR (AVR=Beat Saber) and sedentary VR (SVR=Thumper) (within-subject factor). None of the participants had played the games. The participants first received instructions on how to play and then had an accelerometer attached to their non-dominant wrists. The narrative group watched a 5-min narrative video before each VR session, while the non-narrative group played directly without watching the videos. Participants were instructed to play for as long they wanted, up to 60-min. After each play session, participants completed questionnaires about their game experience and physical activity engagement (PAE).

Results: Participants in the narrative condition spent an average of 14.2±5.5 minutes of moderate-to-vigorous PA (MVPA) when playing the AVR, whereas participants in the non-narrative condition had 12.2±7.3 of MVPA minutes. These results represent higher relative time (%) spent in MVPA and lesser time of non-movement in the narrative group (ps<0.05). No differences were identified for light PA or total gameplay duration. The comparison between AVR and SVR showed that the active sessions induced higher PAE and better gaming experience (Flow and Positive Affect).

Conclusion: The addition of narratives to AVR increased time spent in MVPA among sedentary college students. AVR induced around 15-min of MVPA, higher PAE, and a better game experience than SVR games. AVR is a feasible option to increase PA levels in sedentary young adults. The addition of narratives can increase players' engagement and MVPA.

Digital Behavior Modification Intervention User Experience associations with Physical Activity Level and Motivation in an 18-month Weight Loss Maintenance Intervention

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The study analyzes the association between the user experience (UX) of an electronic toolkit (TK)and physical activity(PA)levels and motivation in an 18-month weight loss maintenance intervention. The research uses the Technology Acceptance Model for Mobile Services (TAMM) to evaluate UX.

Methods: The NoHoW trial was a 3-centre, 2x2 factorial randomized controlled trial. Participants were invited to use an activity tracker and a TK tailored to their respective arms. UX data were collected through questionnaires based on TAMM. PA, calculated as the sum of light, moderate and vigorous activity, was assessed by the tracker data andmotivationusing the BREQ questionnaire. Repeated measures ANOVAs were conducted using R to examine variability in PA and motivation among the participants with low and high UX.

Results/findings: The ANOVAs indicate there was not a significant pre-to-post effect of UX on PA at p<.05 level [$F_{(3,1926)}$ = 944.74, p = 0.803, ges < 0.001] and on Autonomous Motivation at p<.05 level [$F_{(3,1926)}$ = 2.72, p = 0.067, ges < 0.001]. The group with high scores of UX had higher Autonomous Motivation when compared to the low UX scores [$F_{(1,642)}$ = 14.57, p = 0.0001, ges = 0.018].Regarding Controlled Motivation, the results also indicate no significant pre-to-post effect of UX at p<.05 level [$F_{(3,1926)}$ = 0.28, p = 0.833, ges < 0.001]. When considering the different PA levelsno impact was observed. However, despite of no statistically significant results over the time and associated to UX, there is a higher volume (+11%) of Moderate-to-Vigorous Physical Activity (MVPA) from baseline to 18-month on theoverallsample.

Conclusions: Higher levels of UXwereassociated with higher Autonomous Motivation.Nevertheless, no associations were found between UX and PA levels, but the MVPA increase in the overall sample suggest further studies looking at putative mechanisms of behavior change in digital health interventions, including UX-related variables.Clinical Trial ISRCTN88405328.

O.1.05 - Advances in cancer and long-term disease survivorship

Room 152

May 19, 2022, 2:35 PM - 4:05 PM

Understanding the barriers, facilitators and preferences to exercise for individuals living with non-curative cancer: A scoping review

Ms. Jodi Langley[1,2], Mr. Matthew Kivell[1], Dr. Christine Cassidy[1], Ms. Joy Chiekwe[1], Dr. Nicole Culos-Reed[3], Dr. Scott Grandy[1,2], Dr. Mary MacNeil[2], Dr. Stephanie Snow[2], Dr. Robin Urquhart[1,2], Dr. Lori Wood[2], Dr. Grace Warner[1,2], Dr. Melanie Keats[1,2]

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The purpose of this scoping review is to classify, describe, and map the existing knowledge on: a) non-curative cancer patients' preferences for, barriers to and facilitators of engagement in an exercise program; and b) strategies or interventions for practitioners to increase the uptake of non-curative cancer patients into exercise programs.

Methods: In accordance with Joanna Briggs Institute (JBI) methodology a scoping review was conducted. Six databases (MEDLINE, CINAHL, EMBASE, PsychInfo, Scopus and SportDiscus) were searched resulting in 5,284 identified records. Following screening, hand-searching and a gray literature search, 28 studies were included in the analysis. Studies included had to detail out barriers, facilitators, preference or interventions for exercise program for non-curative cancer patients in any healthcare setting. Data was extracted by two reviewers and coded using the Behaviour Change Wheel (BCW), Capability, Opportunity, Motivation- Behaviour (COM-B) model and intervention functions.

Results: A thematic analysis was conducted, and barriers were broken up into two categories: 1) non-curative cancer specific barriers and 2) general barriers. Non-curative cancer specific barriers included treatment related side effects, lack of practitioner expertise in area, and individuals believed there was no need to partake in exercise and were emotionally and mentally not ready to exercise. Facilitators to partaking in an exercise program included maintaining activities of daily living, being with likeminded people, having support from their healthcare provider, and having professional expertise in the area. Preferences included being led by a trained health professional and having an individualized program within a group-based environment. Current interventions were focussed on training, education and enablement.

Conclusions: The results show the need for specialized training for fitness professionals to work with individuals with a non-curative cancer diagnosis. Participants see exercise as a way to increase their social network and increase their quality of life. Future interventions should support maintaining physical functioning and activities of daily living as well, studies should ensure they are addressing barriers and enhancing facilitators and preferences to aid in creating programs that are enjoyable for participants and can be sustained in a community setting.

The meaning of nutrition for Irish cancer survivors: A photo voice study

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Nutrition

Purpose: The purpose of this study was to capture the meaning of nutrition for Irish Cancer Survivors who are post cancer treatment using a method of participatory photography known as photovoice.

Methods: This study followed the procedure for conducting photovoice studies outlined by Wang and Burris (1). Recruitment took place via email invitation through existing links with participants from a previous qualitative study. The participants were tasked with taking photographs to represent the meaning of nutrition for them post treatment. Group workshops and semi-structured interviews were conducted to facilitate reflection, dialogue and analysis. Data analysis followed Braun and Clarke's updated six phase thematic analysis (2).

Results/findings: One man and seven women (n = 8) across the Island of Ireland were recruited (mean age 51 years, the majority (n=7) finished treatment within the last 5 years). Participants identified six main themes (themes are illustrated with photographs) which reflected meaning of nutrition for them: (i) Food for the Soul – Healthy Mind. Healthy Body, (ii) Fresh is Best, (iii) Be kind to yourself, (iv) Building Blocks. Be Informed, (v) Post Treatment Healing Changes (vi) Chemo Rituals. These themes captured the importance of both physical activity and dietary intake of fresh fruit and vegetables post treatment to recover and maintain health. Participants expressed celebration through food with a reminder to be kind to yourself. Although different dietary choices and believes were present within the cohort; all agreed it is essential to be informed and build on their nutrition knowledge. While diverse; participants made post treatment changes to their dietary intake by introducing and eliminating certain foods or food groups. The cohort added the theme 'chemo rituals' as particular foods are now associated with their time receiving chemotherapy.

Conclusions: Overall our findings suggest how the meaning of nutrition for Irish cancer survivors is individual and often shaped by self-directed research. Photovoice was a highly effective tool to capture and communicate these differences. It is important to consider and clarify the implications this has had on those post treatment when providing nutrition guidance and advice to ensure that it is appropriate and specific.

Correlates of Changes in Physical Activity Participation of Cancer Survivors During the COVID-19 Pandemic

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The COVID-19 pandemic has presented novel challenges to physical activity (PA) participation among cancer survivors, resulting in fewer survivors meeting PA guidelines (≥150 minutes/week of moderate-to-vigorous PA [MVPA]). Social cognitive, self-regulatory, reflexive processes, and environmental factors have been associated with PA during the pandemic in the general population, however correlates of change in PA among cancer survivors remains unknown. The purpose of this study is to examine demographic, medical, motivational, and environmental correlates of changes in PA in cancer survivors during the COVID-19 pandemic.

Methods: This study was a secondary analysis from an online survey administered to a global sample of cancer survivors. Demographic (e.g., age, sex, employment), medical (e.g., BMI, cancer type) and environmental variables (e.g., access to equipment, space at home/neighborhood for PA) were assessed via self-report. Motivational variables from the Multi-process Action Control Framework included reflective (i.e., affective judgements, instrumental attitudes, perceived capability, perceived opportunity), regulatory (e.g., planning, self-monitoring), and reflexive (i.e., habit, identity) processes towards PA. PA before and since the start of the pandemic was measured using the modified Godin-Leisure Time Exercise Questionnaire. Multinomial logistic regressions compared correlates across MVPA change categories: non-exercisers (not meeting guidelines before or during), adopters (met guidelines during, but not before), relapsers (met guidelines before, but not during), and maintainers (met guidelines before and during).

Results: Participants (N=346; Mage=48.3±15.5) were primarily post-treatment (80.3%), and breast (27.5%), or hematologic (11.0%) cancer survivors. Compared to non-exercisers, adopters were more likely to have more positive affective judgements (p=.047) and relapsers were more likely to have discussed PA with a healthcare provider (HCP; p=.047). Maintainers were more likely to be employed (p=.04), have more positive affective judgements (p=.045), greater PA identity (p<.001), and have exercise equipment at home (p=.03) compared to non-exercisers. Compared to relapers, maintainers were more likely to be ≥5 years from diagnosis (p=.01) and have not discussed PA with an HCP (p=.01).

Conclusions: Individual, motivational, and environmental factors are associated with changes in PA during the COVID-19 pandemic. Health promotion efforts should consider social-ecological approaches to behaviour change, especially enhancing affective attitudes and PA identity among cancer survivors.

Long term association between physical activity, weight regain, metabolic risk factors and quality of life (QOL) in patients undergoing bariatric surgery

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O.1.05 - Advances in cancer and long-term disease survivorship, Room 152, May 19, 2022, 2:35 PM - 4:05 PM

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Aim: To analyze the association between physical activity, weight regain, metabolic risk factors, and quality of life (QOL) in patients undergoing bariatric surgery. It also intends to evaluate how physical activity and weight regain may be associated with sleep quality and sedentary behavior.

Method: Observational study, with retrospective data collection. The study had the participation of 84 individuals, who underwent bariatric gastric bypass surgery for more than 5 years, in a Center for Integrated Responsibility for Surgery of Obesity and Metabolic Diseases. A data collection instrument was developed, with validated questionnaires (IPAQ-International physical activity questionnaire is a measure of physical activity; IWQOL-Impact of weight on the quality-of-life questionnaire; PSQI-Pittsburgh- Sleep quality index) and collection in the form of telephone interviews, to which data were added from the patient's clinical process. Chi-square, Mann-Whitney and ANOVA were used to analyze associations between several groups, namely health data, associated comorbidities, QOL, physical activity, sedentary behaviors, and sleep.

Results: We found that in the study sample only two levels of physical activity were present, the sedentary and irregularly active, with low levels of physical activity indicating more weight regain (x2=7,872; p=0,005). Quality of life (p=0,005), as well as sleep quality (x2=4,356; p=0,037), are inversely related to weight regain, as well as sedentary behavior in general (p=0,010). Metabolic risk factors are only associated with surgery variables (p=0,134; p=0,701; p=0,224).

Conclusions: Bariatric surgery induces a significant weight loss in the first year. Physical activity, even at irregular levels, was associated with better weight loss maintenance for consecutive years, suggesting that for this population lower levels of physical activity than the recommended for the normal weight population might be beneficial. Less weight regain allows to maintain good levels of quality of life and sleep quality and, in turn, less sedentary behavior is associated with lower weight regain. We did not obtain a relationship between metabolic syndrome and physical activity, or weight regain, contrary to the literature consulted.
Keywords: Physical Activity, Bariatric Surgery, Weight Gain, Quality of Life, Metabolic Risk Factors, Sleep Quality

Changes in Physical Activity and Well-Being Among Cancer Survivors During the COVID-19 Pandemic

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Purpose: Regular physical activity (PA) participation (≥150 minutes per week of moderate-to-vigorous PA; MVPA) has been shown to improve the well-being of cancer survivors. The COVID-19 pandemic restrictions have created challenges for PA participation and exacerbated existing discrepancies in the well-being among cancer survivors. The purpose of this study was to examine the associations between changes in PA and well-being in cancer survivors during the COVID-19 pandemic.

Methods: An online, cross-sectional survey was administered globally to cancer survivors (≥18 years of age). The 20-Item Short Form Survey (SF-20) and a modified Godin Leisure Time Exercise Questionnaire were used to assess self-reported well-being and PA, respectively. Cancer survivors were categorized as 'non-exercisers (i.e., consistently not meeting guidelines)', 'adopters (i.e., meeting guidelines during COVID-19, but not prior to)', 'relapsers (i.e., meeting guidelines prior to, but not during COVID-19)', and 'maintainers (i.e., meeting guidelines prior to and during COVID-19)'. An analysis of covariance was used to identify significant differences in well-being across the MVPA categories. Domains of the SF-20 (physical functioning, role functioning, social functioning, pain and health perception) were analyzed separately.

Results: Cancer survivors (N=493; Mage = 48.7 ± 15.5 years) were primarily females (70.4%), diagnosed with breast cancer (28.8%), gynecologic cancer (11.6%) or skin cancer (9.2%) and were 87.1 ± 81.6 months since diagnosis. Cancer survivors predominantly resided in the United Kingdom (37.5%), United States (22.7%) and Canada (21.3%). There were no significant changes in mental health (p=.21) or social functioning (p=.62) between MVPA groups. Non-exercisers had significant declines in physical functioning compared with adopters (p<.001), relapsers (p<.01) and maintainers (p<.001). Non-exercisers had significant declines in role functioning compared to adopters (p<.01), relapsers (p<.01) and maintainers (p<.001). Non-exercisers had significant declines in health perception compared to adopters (p<.01) and maintainers (p<.01). Non-exercisers had significantly more pain than adopters (p<.001). Adopters had significantly less pain than relapsers (p<.01) and maintainers (p<.01).

Conclusion: Reductions in MVPA during the COVID-19 pandemic significantly impacted well-being in cancer survivors, particularly among non-exercising groups. Health promotion efforts should focus on increasing MVPA among cancer survivors to improve physical functioning, role functioning, pain, and health perception.

The Effects of a 12-week Exercise Intervention on Cognitive Impairment in Cancer Survivors

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Introduction: An increasing number of Canadians are living with the late and long-term side effects of cancer treatment. Of these side-effects, cognitive impairment (CI), known colloquially as chemobrain, is particularly intrusive, impacting survivors' daily functioning, quality of life, and psychosocial wellbeing. Exercise has been suggested to reduce CI in cancer survivors, however, the state of research examining exercise's effects on CI consist mainly of randomized-control trials, limiting the transferability of findings to larger, uncontrolled populations of cancer survivors.

Purpose: The purpose of this study was to investigate the effects of a 12-week mixed modal exercise intervention on CI in a heterogeneous sample of cancer survivors in real-world settings.

Methods: This study was a secondary data analysis of data collected from the Activating Cancer Communities Exercise Strategy for Survivors (ACCESS) program. Post-intervention changes in perceived CI and fatigue (known correlate of CI) were assessed using the Functional Assessment of Cancer Therapy – Cognitive (FACT-Cog) and FACT-Fatigue. Perceived cognitive ability (PCA) and perceived cognitive impairment (PCI) subscales of the FACT-Cog were used to draw conclusions regarding CI. Changes in physical activity (PA) were measured using the Leisure Score Index (LSI) as measured by the Godin-Shephard Leisure-Time Physical Activity Questionnaire. Total PA and moderate-to-vigorous LSI scores were calculated, FACT-Cog was analyzed using Wilcoxon Signed Rank Test, and fatigue and PA were assessed using a paired-samples t-test. Effect sizes were presented for all data.

Results: Both total LSI and MVPA improved significantly ($p < 0.05$, h2=0.22). Fatigue also improved significantly ($p = 0.00$, h2==0.49). Changes in FACT-Cog measures did not yield statistically significant results ($p > 0.05$), however effect sizes were large (r=0.55 and 0.51 for PCI and PCA, respectively). Improvements in fatigue as measured by FACT-F were statistically significant ($p = 0.00$).

Conclusions: After a 12-week individualized exercise intervention, CI in this sample improved with large effect sizes, in addition to significant improvements in fatigue and PA levels. Given the pragmatic nature of study and future studies, findings can be applied to cancer survivors with various diagnoses, aiming to decrease their CI symptoms. Large effect sizes advocate that future research be conducted with larger heterogeneous samples of survivors

Multiphase optimization strategy approach to evaluating physical activity interventions in breast cancer survivors: Results from the Physical Activity in Cancer Survivors (PACES) trial

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Multiple intervention strategies have been found to be effective for increasing physical activity among breast cancer survivors. However, implementation and dissemination of physical activity interventions into real-world settings requires development of optimized interventions to ensure effective and efficient delivery. The purpose of this analysis is to concurrently evaluate effects of four intervention strategies for increasing physical activity in breast cancer survivors.

Methods: The PACES trial implemented a full-factorial randomized design based on the Multiphase Optimization Strategy framework, which aims to identify effective and efficient intervention strategies. 337 breast cancer survivors were randomized to receive a combination of four intervention strategies: 1) supervised exercise sessions, 2) facility membership, 3) Active Living Every Day, and 4) Fitbit. Physical activity outcomes were measured at baseline, 3 months, and 6 months with an Actigraph GT3X+ worn on the hip. Normal linear mixed models with separate intercepts for each subject were fit in the SAS 9.4 Mixed procedure. Each model consisted of the baseline covariates (age, sex, race, ethnicity, baseline weight, and baseline physical activity), a categorical time variable, and four categorical intervention variables each intervention along with and two-way interaction terms across all interventions.

Results/findings: Using repeated measures analysis, we found that participants who received supervised exercise sessions engaged in more moderate-to-vigorous physical activity (MVPA) ($F = 4.3$, $p = 0.041$) compared to participants who did not receive supervised exercise sessions. The effects of the three other intervention components were not significant, nor were there any significant interaction effects. Supervised exercise sessions also resulted in greater light-intensity PA ($F=4.5$, $p = 0.035$), while those that received ALED engaged in less light-intensity physical activity ($F=6.7$, $p = 0.011$).

Conclusion: While all intervention strategies increased MVPA and light PA in breast cancer survivors, supervised exercise sessions resulted in significantly greater increases in MVPA and light PA . Of note, these sessions were provided only during the first 6 weeks of the intervention and effects remained significant at 6 months. Results of this trial could inform future implementation efforts to ensure effective and efficient delivery of physical activity programs for breast cancer survivors.

O.1.06 - Physical activity and nutrition tools and practices in early care and educational setting

Room 153

May 19, 2022, 2:35 PM - 4:05 PM

Identification and evaluation of food provision measurement tools used in childcare and primary school settings: a systematic review

Mrs. Audrey Elford[1], Ms. Cherice Gwee[2], Ms. Maliney Veal[2], Dr. Rati Jani[3], Mrs. Ros Sambell[4], Ms. Shabnam Kashef[5], Dr. Penelope Love[1]

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: In Australia, about 50% of children aged 2-5 years spend significant hours per week in early childhood education and care (ECEC), whilst almost all children aged 6-11years spend five days a week in primary schools. These settings are therefore important food environments to influence children's food intake, however there is heterogeneity in the tools used to measure food provision in these settings. Our systematic review aimed to identify, evaluate, and make recommendations for the standardisation of service level food provision measurement tools in ECEC and primary schools.

Methods: This review followed the Preferred Reporting Items for Systematic Reviews (PRISMA). Included studies were those published in English between 2003-2020 that implemented, validated or developed service level food provision measurement tools within ECEC or primary school. Two reviewers undertook data screening, critical appraisal and extraction, with cross checking by a third reviewer and verified by all authors. The Academy of Nutrition and Dietetics Quality Criteria Checklist (QCC) was used to critically appraise each study.

Results/findings: Eighty-one eligible studies were included – 46 in ECEC and 35 in primary schools. Seven food provision measurement tools were identified, namely: 1) Menu review; 2) Observation; 3) Weighed food protocol; 4) Questionnaire/survey; 5) Digital photography 6) Quick menu audit and 7) Web-based menu assessment. An evidence-based evaluation was conducted for each tool. The weighed food protocol was found to be the most popular and accurate measurement tool however future research is recommended to validate this tool for service level measurement. The quick menu audit was a validated and cost-effective tool used in primary school settings where food was available for purchase from a canteen. The web-based menu assessment tool showed promise as a self-report measurement tool in ECEC and primary schools.

Conclusions: A weighed food protocol, validated for service level food provision, appears to offer a standardised method for food provision measurement within ECEC and primary school settings. The potential use of a web-based menu assessment tool as a self-report measurement tool should also be explored.

Are there differences between boys and girls when combining physical activity level and sedentary behavior components? A systematic review

Ms. Gabrielli Mello[1], Ms. Cecília Bertuol[1], Dr. Giseli Minatto[1], Dr. Valter Cordeiro Barbosa Filho[2], Dr. Kelly Silva[1]
[1]Federal University of Santa Catarina, Florianópolis, Brazil, [2]Federal Institute of Education, Science and Technology of Ceara, Ceara, Brazil

SIG - Primary Choice: N. Other
Age Category: Children 0-18 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The interaction of physical activity (PA) and sedentary behavior (SB) may differ according to sex and may play an important role on health-related outcomes. This systematic review (Prospero CRD42018094826) aimed to identify clusters of PA and SB among boys and girls.

Method: An electronic database search was performed PubMed, Web of Science, LILACS, Scopus, PsycINFO. Eligibility criteria were: (1) studies with children and/or adolescents (aged 0–19 years); (2) analyzed PA, and SB by applying data-based cluster procedures. Cluster characteristics were extracted in accordance to authors' descriptions. All the screening process and synthesis of data and methodological quality of the studies were made by two independent reviewers and a third reviewer was consulted for the consensus of disagreements.

Results: Searches identified a total of 11,910 articles, which 18 were eligible. Ten and twelve cluster types were identified to girls and boys, respectively. Most girls were in cluster characterized by "Low PA High/Low SB", follow by "Low PA Low SB" and "Low PA High SB". However, most of boys were at clusters types "High PA Low SB", follow by "High PA High SB" and "High PA moderate SB". Girls have been allocated in profiles with lower levels of PA with high time in SB related to socializing components (e.g., siting talking to a friend) compared to boys. On the other hand, boys have been in clusters characterized by high levels of PA and SB related to using computer and playing videogame.

Conclusion: Clusters between girls and boys differ considering PA levels and SB components. Our results support the need of intervention programs targeting more than one behavior at the same time and suggest that should be considered strategies to the type of screen rather than only use-time

Nutrition Practices of Family Childcare Providers and Children's Diet: Do Children Have Better Diet Quality if Providers Meet Nutrition-related Best Practices?

Ms. Qianxia Jiang[1], Dr. Patricia Risica[2], Dr. Alison Tovar[3], Dr. Kristen Cooksey Stowers[1], Dr. Kim Gans[1,2]
[1]University of Connecticut, Storrs, USA, [2]Brown University, Providence, USA, [3]University of Rhode Island, Kingston, USA

SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Childcare settings play an important role in shaping young children's eating behaviors. However, less research has focused on family childcare homes (FCCHs) than centers. This analysis examines whether 2-5-year-old children that are cared for in FCCHs have better diet quality if their provider adheres to best practices for nutrition.

Methods: We analyzed baseline two-day observation data collected using the Environment and Policy Assessment and Observation measure from a cluster-randomized trial. Following the observation, 26 nutrition best practices were dichotomized into met vs. not met, based on the Nutrition and Physical Activity Self-Assessment for Child Care. Multilevel linear regression models assessed the association between providers meeting nutrition best practices and children's diet quality (Healthy Eating Index (HEI-2015 total and subscores). Each model was clustered by FCCH, controlling for provider ethnicity and income level.

Results: FCCH providers (n=120) were all female, with over half identifying as Latinx (67.5%). Participating children (n=370) were 51% female, 58% Latinx. We found that a higher overall nutrition best practices score was associated with higher child diet quality (ß=1.05, 95%CI =[0.12, 1.99], p<.05). Providers who met the following two best practices had children with higher total HEI scores compared to those who did not meet these practices: allowing/teaching children to serve themselves (ß =27.52, 95%CI =[21.02, 34.02], p<.001); and talking with children informally about nutrition (ß =7.76, 95%CI =[3.29, 12.23], p<.001). In addition, meeting best practices related to serving certain foods or beverages was associated with higher related HEI sub-scores for the following: total fruit (ß =.59, 95%CI =[.05, 1.13], p<.05), whole fruit (ß =.73, 95%CI =[.20, 1.26], p<.01), whole grain (ß =2.47, 95%CI =[.52, 4.42], p<.05), refined grain (ß =2.47 95%CI =[.45, 6.02], p<.01), and added sugar (ß =3.24, 95%CI =[.45,6.02], p<.05).

Conclusion: Overall, children cared for in FCCHs where providers met certain nutrition best practices had better diet quality. Future interventions and policies should help to support FCCH providers in meeting nutrition best practices to achieve better nutrition environments in FCCHs and to improve children's diet quality.

Battling the obesity epidemic with a school-based intervention: Long-term effects of a quasi-experimental study

Dr. Maartje Willeboordse[1], Dr. Nina H.M. Bartelink[2], Prof. Patricia van Assema[2], Prof. Stef Kremers[3], Prof. Hans H.C.M. Savelberg[4], Miss Lisanne Vonk[5,6], **Miss Marla T.H. Hahnraths[1]**, Miss Marije Oosterhoff[7], Prof. Constant P. van Schayck[1], Dr. Bjorn Winkens[8], Prof. Maria W.J. Jansen[5,6], **Miss Bo H.W. van Engelen[1]**

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SIG - Primary Choice: F. Early care and education
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: School-based health-promoting interventions are increasingly seen as an effective population strategy to improve health and prevent obesity. Evidence on the long-term effectiveness of school-based interventions is scarce. This study investigates the four-year effectiveness of the school-based Healthy Primary School of the Future (HPSF) intervention on children's body mass index z-score (BMIz), and on secondary outcomes waist circumference (WC), and dietary and physical activity (PA) behaviours.

Methods: This study has a quasi-experimental design with four intervention schools, i.e., two full HPSFs (focus: diet and PA), two partial HPSFs (focus: PA), and four control schools. Children (aged 4-12 years) attending the eight participating schools were invited to enrol in the study between 2015 and 2019, the study had an open cohort. Annual measurements consisted of children's anthropometry (weight, height, and WC), dietary behaviours (e.g., lunch intake, fruit, vegetable, and water consumption) and PA levels (accelerometers). Two-level linear mixed-model analyses were used to analyse intervention effects on continuous outcome measures, General Estimating Equations (GEE) were used for the binary outcome variable (lunch intake).

Findings: Between 2015 and 2019, 2236 children enrolled. The average exposure to the school condition was 2.66 (SD 1.33) years, 900 participants were exposed for the full four years (40.3%). After four years of intervention, both full (estimated intervention effect B=-0.17, p=0.000) and partial HPSF (B=-0.16, p=0.001) resulted in significant changes in children's BMIz compared to control schools. BMIz in full and partial HPSFs remained unchanged, whereas BMIz in control schools increased significantly over time. WC changed in favour

of both full (B=-1.46, p=0.001) and partial HPSFs (B=-1.56, p=0.000). In full HPSFs, almost all dietary behaviours changed significantly in the short term compared to control schools. In the long term, only consumption of water (B=0.54, p=0.000) and dairy (Odds Ratio=1.65, p=0.037) remained significant compared to control schools. In both full and partial HPSFs, changes in PA behaviours were mostly absent.

Conclusions: This school-based health-promoting intervention is effective in bringing unfavourable changes in body composition to a halt in both the short and long term. It provides policy makers with robust evidence to sustainably implement these interventions in school-based routine.

Impact of ¡Míranos! on Parent-Reported Physical Activity, Dietary Intake, Screen time, Sleep at Home in Low-Income Latino Preschool Children

Dr. Sarah Ullevig[1], Prof. Deborah Parra-Medina[2], Dr. Yuanyuan Liang[3], Dr. Jeffery Howard[1], Dr. Erica Sosa[1], Ms. Vanessa Estrada[1], Dr. Vanessa Errisuriz[2], Ms. Shiyu Li[4], **Dr. Zenong Yin[1]**

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Purpose: Establishing healthy energy balance-related behaviors (EBRBs) at home in preschool aged children from low-income families is needed to curb the childhood obesity epidemic. We examined the effect of an 8-month multicomponent intervention on the changes of EBRBs in preschool children.

Methods: Twelve Head Start centers were randomly assigned to one of three treatment arms: center-based intervention (CBI), center-based plus home-based intervention (CBI+HBI), or control. Parents of three-year-old children completed questionnaires before and after the 8-month intervention on child's EBRBs at home. Adult-facilitated physical activity (PA) was measured by an index based on the level of the children's participation in PA at home with an adult or facilitated by an adult. Fruit, vegetable, and added sugar intake were measured by food frequency questionnaire, and sleep and screen time were measured by seven-day logs. Linear mixed effects model was used to examine the effect of each treatment (CBI and CBI+HBI) compared to control on changes in PA, intake of fruit, vegetable, and added sugar, sleep and screen time from baseline to posttest.

Results: A total of 325 surveys were completed by parents (n=101 CBI, n=101 CBI+HBI, and n=123 control) at baseline. Children from CBI+HBI reported increased adult-facilitated PA (+0.44, SE=0.12, p<0.05) and fruit and vegetable intake (+0.67 cups, SE=0.31, p<0.05) and both CBI (-0.67 tsp, SE=0.31, p<0.05) and CBI+HBI (-0.60 tsp, SE=0.29, p<0.05) groups reported decreases in added sugar from sugar sweetened beverages at home. CBI (+0.16 hrs, SE=0.09, p=0.006) and CBI+HBI (+0.02 hrs, SE=0.09, p<0.001) groups had lower increases in children's average weekday screen time as compared to control. Children in the CBI+HBI had increased their daily sleep time during weekdays (+0.28 hrs, SE=0.09, p=0.04) and the week (+0.25 hrs, SE=0.10, p=0.009), while children in the CBI increased sleep time over the week (+0.10 hrs, SE=09, p=0.03) compared to the children in the control group.

Conclusions: Improvement in EBRBs can be strengthened by modifications of childcare policies and staff practice, enhancement of PA and health education programs, and parental engagement. Future studies should investigate equity-related contextual factors that influence the impact of obesity prevention in health-disparity populations.

O.1.07 - School nutrition and physical activity: Social and physical environmental influences

Room 154

May 19, 2022, 2:35 PM - 4:05 PM

Strategies to Improve School Meal Consumption: A Systematic Review

Dr. Juliana Cohen[1, 2], Dr. Amelie Hecht[3], Dr. Erin Hager[4], Dr. Lindsey Turner[5], Ms. Kara Burkholder[6], Dr. Marlene Schwartz[6,7]

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: School meals can play an integral role in improving children's diets and addressing health disparities, and initiatives/policies to increase consumption have the potential to ensure students benefit from the healthy school foods available. This systematic review evaluated studies examining initiatives, interventions, and policies to increase school meal consumption.

Methods: Following PRISMA guidelines, this review was conducted using four databases, and eligible studies were quantitative research articles (peer-reviewed publications or official government reports) evaluating interventions, initiatives, and policies to influence school meal consumption conducted within U.S. elementary, middle, and/or high schools during the academic year. A total of 96 studies were included in the review.

Results/findings: The research evidence supports the following strategies to increase school meal consumption: (1) offering students more menu choices; (2) adapting recipes to improve the palatability and/or cultural appropriateness of foods; (3) providing pre-sliced fruits; (4) rewarding students who try fruits and vegetables; (5) enabling students to have sufficient time to eat with longer (~30 minute) lunch periods; (6) having recess before lunch; and (7) limiting students' access to competitive foods during the school day. Research findings were mixed when examining the impact of nutrition education and/or offering taste tests to students, although multiple benefits for nutrition education outside the cafeteria were documented. There is some evidence that choice architecture (i.e., "Smarter Lunchroom") techniques increase the proportion of students who select targeted meal components; however, there is not evidence that these techniques alone increase consumption. There were limited studies of the impact of increasing portion sizes; serving vegetables before other meal components; and strengthening local district and/or school wellness policies, suggesting that further research is necessary. Additionally, longer-term studies are needed to understand the impact of policies that limit students' access to flavored milk. Several studies found increases in students' meal consumption following the Healthy Hunger-Free Kids Act (HHFKA) and concerns regarding an increase in food waste following the HHFKA were not supported.

Conclusions: Overall, there are a range of effective strategies to increase school meal consumption that can be implemented by schools, districts, and policymakers at the local, state, and federal levels.

Schools Participating in the Community Eligibility Provision Reach More Students Eligible for Pandemic-EBT Benefits

Dr. Punam Ohri-Vachaspati[1], **Dr. Francesco Acciai[1]**, Ms. Montserrat Ganderats-Fuentes[1], Dr. Michael Yedidia[2]
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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: All

Objective: School closures due to the COVID-19 pandemic caused food insecurity among school-age children to increase, especially among students who relied on free or reduced-price meals (FRPM) on a daily basis. In response, the US congress approved the provision of Pandemic Electronic Benefits Transfer (P-EBT) for families of students receiving FRPM, which allowed state agencies to provide nutritional aid to households who had lost access to FRPM in schools due to school closures. The goal of this paper was to examine the association between schools' participation in the Community Eligibility Provision (CEP) and reach of P-EBT benefits for eligible students.

Methods: The sample included 105 K-12 public schools located in four low-income New Jersey (NJ) cities. Data were collected on schools' CEP status, school demographics, and on P-EBT card distribution using publicly available data sources. We used a generalized linear model with logit link, binomial family, and robust standard errors to predict the percentage of students receiving PEBT for each school. The main predictors were CEP status (yes/no) and the percentage of students eligible for FRPM.

Results: Across all levels of free- and reduced-price meal (FRPM) eligibility (range 50-100%), a significantly lower proportion of students from non-CEP schools received P-EBT benefits. The magnitude of the gap between the receipt of P-EBT benefits among CEP and non-CEP schools narrowed as the proportion of FRPM increased but remained significant at all levels of eligibility. For instance, when FRPM eligibility was 60%, the percentage of students receiving PEBT was 96% in CEP schools but only 54% in non-CEP schools. And when FRPM eligibility was 90%, the percentage of students receiving PEBT was 98% in CEP schools versus 87% in non-CEP schools.

Conclusions. CEP schools reached more children eligible for P-EBT benefits than did non-CEP schools at similar levels of FRPM eligibility. The success of relying upon CEP designation in achieving the goals of the P-EBT program suggests the potential value of cost-benefit analyses of policies expanding CEP eligibility criteria to increase the effectiveness of federal meals programs, including emergency interventions, and to strengthen the food safety net for the nation's children.

Routes Matter: The Role of the Community Food Environment in the Relationship Between Walking to School and Child Body Mass Index

Dr. Emily Melnick[1], Dr. Robin DeWeese[1], Dr. Francesco Acciai[1], Dr. Punam Ohri-Vachaspati[1]
[1]*Arizona State University, Phoenix, USA*

SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Children who engage in active commuting to school (ACS) typically engage in higher daily levels of physical activity compared to those who do not walk or bike to school. However, in spite of the established benefits of increased levels of physical activity, research examining the association between ACS and child body mass index has produced mixed findings. A possible explanation is that ACS potentially exposes children to obesogenic food environments along their route. We examined whether the food environment surrounding children's homes moderated the association between ACS and child body mass index z-scores (zBMI).

Methods: We utilized cross-sectional data from a household survey distributed in 2016 within four low-income cities in New Jersey (n = 584). We used geocoded addresses for the child's home and for four types of food outlets (i.e., limited-service (fast food) restaurants, convenience stores, small grocery stores, and supermarkets) to characterize the food environment within 0.25 miles of the child's home. Multivariate regression analyses with interactions between elements of the food environment and ACS status (yes/no) were used to model child zBMI and examine whether the association between ACS and zBMI is moderated by the healthfulness of the food environment.

Results/findings: The association between ACS and child zBMI was moderated by the number of limited-service restaurants (β for non-active commuters = -0.10, β for active commuters = 0.16, *P*-value for difference = .003) and the presence of a small grocery store (β for non-active commuters = -0.36, β for active commuters = 0.54, *P*-value for difference = .03) within 0.25 miles of the child's home. Accordingly, among children who actively commuted to school, each additional limited-service restaurant within 0.25 miles of their home was associated with a predicted 0.16 increase in zBMI (*P*=.008). Exposure to convenience stores and supermarkets did not moderate the association between ACS and child zBMI.

Conclusions: These findings suggest that unhealthy food environments may detrimentally impact children who actively commute to school. Policy and intervention efforts to support ACS should also encourage healthy food environments around schools as well as healthy shopping behaviors and healthy eating habits among school children.

Awareness of and participation in school food programs among youth from six countries: findings from the 2019 International Food Policy Study

Ms. Karen Hock[1], Dr. Simón Barquera[2], Dr. Camila Corvalán[3], Dr. Samantha Goodman[1], Dr. Gary Sacks[4], Dr. Lana Vanderlee[5], Ms. Christine White[1], Prof. Martin White[6], Dr. David Hammond[1]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: School-based meal programs may promote healthy dietary intake among youth; however, limited data exist regarding the impact of income-targeted programs across countries, particularly among food insecure youth. The purpose of this study was to examine self-reported awareness of and participation in free school meal programs, and associations with dietary intake among youth from six countries with differing national school meal policies. This study had three primary hypotheses: 1) awareness of and participation in meal programs will be highest in countries with the most comprehensive policies (the United States (US) and Chile); 2) students with greater food insecurity experiences will be more likely to report meal program awareness; and 3) lunch program participation will be associated with higher fruit and vegetable, and lower 'less healthy' food intake during school lunch.

Methods: Data were collected through the 2019 International Food Policy Study Youth Survey, a cross-sectional survey of 10,565 youth aged 10-17 from Australia, Canada, Chile, Mexico, the United Kingdom (UK), and the US. Regression models examined: 1) country differences in breakfast and lunch program awareness and participation; and 2) associations between lunch program participation and intake of fruit and vegetables, and 'less healthy' foods during the previous school lunch day.

Results/findings: Free breakfast and lunch program awareness and participation varied widely across countries. Approximately half of US and Chilean students participated in lunch programs compared to one fifth of students in the UK, and approximately 5% in Australia, Canada, and Mexico (p<0.001 for all contrasts). More than two thirds of US and Chilean youth with the highest food insecurity level participated in lunch programs, compared to 45% in the UK, 27% in Canada, and 20% or less in Australia and Mexico. Across countries, youth reporting lunch program participation were more likely to report fruit and vegetable intake during their previous school lunch (p<0.001), and higher intake of 'less healthy' food in all countries except the US and Chile.

Conclusions: More comprehensive national policies were associated with greater participation in school meal programs, particularly among youth at greatest risk of food insecurity, as well as healthier dietary intake from school lunch.

Exploring the combined influence of the social and physical food environments on adolescent food choice: a qualitative study

Miss Sarah Shaw[1,2], Dr. Sarah Muir[1], Dr. Sofia Strommer[1,2], Dr. Sarah Crozier[1,3], Prof. Cyrus Cooper[1,2], Dr. Dianna Smith[4], Prof. Mary Barker[1,2], Dr. Christina Vogel[1,2,3]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Background: Adolescence is a time when individuals experience increased independence from household influences and begin to make more of their own food decisions outside the home. Adolescence is also a period when individuals develop an increasing reliance on peer influences. Social influences and physical food environment determinants of adolescents' food choices have been described previously, but little is known about the way these factors interrelate. With some governments taking action to improve the healthfulness of food environments, such as banning takeaways near schools, it is timely to understand what interplay there is between social and physical food environmental factors in influencing adolescents' independent food purchasing decisions.

Methods: This qualitative study conducted online focus groups made up of friends aged between 11-18 years attending secondary school or college in England. Forty-two participants took part in 13 online focus groups. Data were transcribed verbatim and analysed using reflexive thematic analysis.

Results: Adolescents described how substantial interaction between factors from their social and physical food environments played an important role in their independent food choices. Data were analysed under six thematic headings. Adolescents often described the social circumstances which accompanied eating as being more important than the food itself, but food outlets provide space for this social interaction. They also wanted cheap, filling food and often sought out multi-buy deals and reduced-price promotions that are most common on unhealthy foods. Having limited opportunities to make their own food choices, adolescents didn't want to waste these buying unappealing 'healthy' foods. When with their friends, making their own food choices was a chance to treat themselves, mostly to unhealthy foods. Easy-to-access, chain food outlets were preferred as they offered recognisable, accepted brands, and minimised the effort needed to choose their food, which was important when with their friends.

Conclusions: Purchasing unhealthy food is one way adolescents assert their autonomy and socialise with friends. Healthy manipulations to food environments may reduce the social desirability of unhealthy foods

among adolescents. Greater understanding of how such changes align or conflict with adolescents' values is required to develop interventions and policies effective for young people.

O.1.08 - Environmental and social influences on physical activity and health

Room 155

May 19, 2022, 2:35 PM - 4:05 PM

Evaluating community-based programmes for health promotion: a novel approach considering the complexity perspective

Ms. Irma Huiberts[1, 2], Dr. Amika Singh[2, 3], Prof. Frank van Lenthe[4, 5], Prof. Mai Chinapaw[1], Dr. Dorine Collard[2]

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: for the past decade, community-based programmes have been a popular strategy for health promotion regarding physical activity and dietary behaviour. The implementation of these programmes is a complex process, characterized by (a) objectives that vary locally, (b) adaptions to the programme over time in response to a community's shifting needs, challenges and opportunities, (c) emergent outcomes, and (d) non-linear causality. This poses several challenges for evaluation, as commonly used evaluation designs mainly focus on predetermined programme components and outcomes. Such a traditional evaluation approach may overlook necessary but unanticipated programme developments or outcomes and provide limited opportunity to learn from these. The aim of this study was to develop a novel evaluation approach that considers the complexity perspective, in order to evaluate a large community-based programme for childhood obesity prevention in the Netherlands.

Methods and results: we reviewed theoretical and methodological literature regarding community-based health promotion, complexity theory and evaluation in order to develop an evaluation approach that considers complexity. The developed evaluation approach focusses on elements of the complex and adaptive implementation process of community-based health promotion. These include the local programme theory, implementation, adaption, the influence of context and feedback loops, and intended as well as emergent and unintended outcomes. By studying each of these elements in practice using innovative qualitative methods, including Ripple Effects Mapping and the Critical Event Card tool, we aim to learn about principles that guide effective obesity prevention across community contexts. Practice-based knowledge can subsequently be validated in other contexts. The results of the evaluation will provide insight in how community-based health promotion programmes impact communities, and which mechanisms underly success or failure.

Conclusions: the proposed evaluation approach aims to retrospectively take into account complexity of a programme that was implemented and developed in practice. Since considering complexity in evaluation is a relatively new challenge in public health, we believe it is essential to share and deliberate on innovative evaluation approaches and methods.

Upgrades to existing physical activity environments improve children's activity levels

Dr. Robin DeWeese[1], Ms. Kristen Lloyd[2], Dr. Francesco Acciai[1], Dr. David Tulloch[2], Dr. Punam Ohri-Vachaspati[1], Dr. Michael Yedidia[2]
[1]Arizona State University, Phoenix, USA, [2]Rutgers University, New Brunswick, USA

SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: Physical activity (PA) is associated with positive health outcomes over the entire life course. Many population-based interventions to promote PA focus on implementing incremental changes to existing facilities and improvements of existing infrastructure (e.g., improved bike lanes, renovated sidewalks, or complete streets). While prominent among existing interventions and less costly than building new facilities, rigorous assessment of their impact on PA outcomes is lacking. The purpose of this study was to determine if upgrades to existing PA facilities/infrastructure are associated with increases in children's PA.

Methods: Two randomly sampled cohorts of 3- to 15-year-old children (n=599) living in four low-income New Jersey cities were followed during 2- to 5-year periods from 2009 through 2017 using telephone surveys. Data were collected on children's PA at two time points from each cohort; data on changes to existing PA facilities were collected yearly from 2009-2017 using Open Public Records Act requests, publicly available data sources, and interviews with key stakeholders. PA changes were categorized into six domains (PA facility, park, trail, complete street, sidewalk, or bike lane), and changes coded as new opportunity, renovated opportunity, or amenity. PA outcome was measured as change in the number of days per week in which the child engaged in at least 60 minutes of PA, trichotomized as: decrease, no change, or increase. Ordered logistic regression was used, controlling for child age, sex, race; parent's nativity status (native-born vs foreign-born); household poverty level; and PA at time 1.

Results: Response rates were 49% and 36% for time 1 and 2, respectively. Exposure to an additional new or renovated PA opportunity within a mile of a child's home within 18 months prior to time 2 resulted in 14% greater odds (p=0.020) of a child increasing the number of days they accumulated at least 60 minutes of PA. Similarly, each upgrade to a street increased those odds by 74% (p=0.017).

Conclusions: Incremental improvements to the PA environment near children's homes increase children's daily PA. Improving PA infrastructure in cities will improve children's health and prevent childhood obesity.

Impacts of new cycle infrastructure on cycling levels in two French cities: A natural experimental study

Ms. Christina Xiao[1], Mr. Stephen Sharp[1], Dr. Esther van Sluijs[1], Dr. David Ogilvie[1], Dr. Jenna Panter[1]
[1]MRC Epidemiology Unit, University of Cambridge, Cambridge, United Kingdom

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity
Purpose: Cities globally have started to seriously invest in sustainable forms of transportation. Using routinely collected city-level data, we aimed to evaluate whether constructing cycling infrastructure in Paris and Lyon affected cycling activity along new routes.

Methods: Routinely-collected daily cycle count data were acquired for the cities of Paris and Lyon, from which 18 newly-built cycling infrastructure improvement projects were identified with pre-post data. A comparison street was chosen if it shared a parallel pre-intervention trend, the same six-month pre-post monitoring periods as the intervention street, and if it was located > 2 km from the intervention street. For streets without a full year of data (n=3), all available data were used. Difference-in-difference (DiD) analysis was performed for all streets. For streets with at least one year of data, interrupted time series (ITS) analysis was conducted to corroborate DiD results. In addition, sensitivity analyses were conducted which examined whether the choice of control streets, follow-up period, and a potential intervention lag effect of one-month could impact results.

Results/findings: There was some variation in effects between locations: significant net increases in cycling counts were observed in 9/18 streets (e.g. Boulevard Voltaire, 894 counts/day; 95% CI: 357, 1431). No significant effects were found for the other half of streets, particularly streets assessed for only one month post-intervention (3/18). In general, DiD outcomes did not differ between methods for choosing control groups. ITS results were consistent with DiD results in terms of direction of effect, but changes in level and trend change were found to be largely non-significant. Results from the sensitivity analyses did not substantially differ from those of the main analyses.

Conclusions: Infrastructural improvements were found to be effective for larger arterial streets and those with longer follow-up periods. Further research should investigate why improvements were more effective at increasing cycling levels in certain streets than others

Explaining the impacts of cycle infrastructure interventions on cycling levels: An exploratory analysis to understand the form and function of new infrastructure

Ms. Christina Xiao[1], Dr. Esther van Sluijs[1], Dr. Richard Patterson[1], Dr. Jenna Panter[1]
[1]MRC Epidemiology Unit, University of Cambridge, Cambridge, United Kingdom

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: This exploratory study aimed to assess how variations in intervention form (e.g., cycle infrastructure length, number of traffic lanes) and function (e.g., access, safety, space) can contribute to the effectiveness of new cycle infrastructure interventions on levels of cycling.

Methods: Data from a previous natural experimental study evaluating 15 new cycle infrastructure improvements in Paris and Lyon were used for this analysis. The outcome was the difference in daily cycle counts, measured using automatic cycle counters, between intervention streets and control streets. To assess form and function, we performed a virtual street audit using Google Street View to assess changes to 14 individual street features and derived a function score based on 7 components. We performed separate analyses using an induced smoothed least absolute shrinkage and selection operator (LASSO) regression to identify the most relevant form or function variables associated with changes in cycle counts. Analyses were adjusted by city, intervention location (i.e., central v. outer city), baseline levels of cycling, and follow-up period length.

Results/findings: For every 1 SD increase in cycle lane length, we observed an increase of 83 cycle counts per day (95% CI 32, 134). For features related to motorized vehicles, removing car parking was associated with an increase of 197 counts (108, 285), while removing traffic lanes was associated with an increase of 154 counts (58, 249). The only significant negative association was adding a public transport stop, with a change of -83 counts (-158, -8). Functions positively associated with a change in cycle counts were safety (75, 95% CI 8, 141) and space (72, 95% CI 10, 135). No other intervention features or functions were significantly associated with cycle counts.

Conclusions: Using routinely collected data, a novel virtual street audit to assess street-level changes, and LASSO regression, this study found that specific intervention features such as length and removing space for cars and functions such as increasing safety may be more important than others in influencing changes to cycling behaviour. There is a need to understand whether these findings may be generalizable to other contexts.

The impact of urban canal improvements on canal usage, physical activity and other wellbeing-promoting behaviours: a natural experimental study

Dr. Jack Benton[1], Dr. Sarah Cotterill[1], Dr. Jamie Anderson[1], Miss Vanessa Macintyre[1], Dr. Matthew Gittins[1], Dr. Matthew Dennis[1], Prof. David French[1]
[1]University of Manchester, Manchester, United Kingdom

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: There is a dearth of robust natural experimental studies of urban green space interventions on physical activity and wellbeing. The aim of this study was to examine the impact of new walking infrastructure and other green space improvements along an urban canal in Greater Manchester (UK) on canal usage, physical activity and other wellbeing-promoting behaviours.

Methods: Two comparison canal sites were matched to the intervention canal site using eight correlates of physical activity at the neighbourhood (e.g. population density) and site (e.g. lighting) levels. The outcome measures were the total number of adults using the canal, physical activity and two other wellbeing-promoting behaviours (social interactions and taking notice of the environment), assessed using a behaviour observation tool at baseline, 7, 12 (primary outcome) and 24 months. Canal sites were then compared using negative binomial regression models and Mann-Whitney U tests. A process evaluation assessed potential displacement of activity from an existing canal path using intercept surveys and observations.

Results: The total number of adults observed using the improved canal path increased more than the comparison sites at 12 months post-baseline (incidence rate ratio (IRR) 2.10). There were similar observed increases at 7 months (IRR 1.67) and 24 months (IRR 2.42). There were significant increases at the intervention path in walking behaviour at all three follow-ups, and vigorous physical activity at 7 and 24 months. There were also notable increases in social interactions at 12 months and 24 months at the intervention path, with over twice as many social interactions compared to baseline. The process evaluation suggested that there was some displacement of activity, but the intervention also encouraged existing users to use the canal more often.

Conclusions: Urban canals are promising settings for interventions to encourage green space usage and potentially increase physical activity and other wellbeing-promoting behaviours. Interventions that improve access to green corridors along canals and provide separate routes for different physical activities may be particularly effective. More robust natural experimental studies like this are now needed to better inform policy and practice recommendations on the effectiveness of a wider range of urban green space interventions.

S.1.01 - Addressing lifestyle patterns and health in early life: From observation to intervention

Room 150

May 19, 2022, 4:20 PM - 5:35 PM

Purpose:
Understanding how lifestyle patterns early in life are influenced by perinatal factors and exert a synergic effect on health is crucial to inform future interventions in the first 1000 days. This symposium will focus on key lessons from two observational and one interventional studies, to inform both the development and evaluation of multi-behavioral interventions.

Rationale:
Energy balance-related behaviors (EBRBs) are established early in life, and have been associated with risk of obesity in children. Although often studied separately, EBRBs combine into lifestyle patterns, which could exponentiate detrimental or beneficial effects on health. Yet, beyond obesity risk, little is known about their influence on psycho-social health. From a health promotion perspective, a deeper understanding of the perinatal determinants of such lifestyle patterns is required. Emerging interventions have adapted a multi-behavior approach to prevent childhood obesity but their overall effectiveness on change across multiple behaviors remains largely unexplored.

Objectives:
The objectives are to:
• Assess associations of lifestyle patterns at preschool age with subsequent BMI and psycho-social health.
• Investigate the influence of perinatal factors on lifestyle patterns at preschool age.
• Quantify the overall impact of an early childhood multi-behavioral intervention on these patterns.
• Provide guidance for future directions in this research area.

Summary:

This session will bring together speakers from 3 continents presenting complementary perspectives on lifestyle patterns in early childhood, from observation to intervention.

Format:
Introduction and rationale. Dr Sandrine Lioret, Université de Paris, Centre for Research in Epidemiology and Statistics (CRESS), Inserm, Inrae, Paris, France (10 minutes)

Characterization of lifestyle patterns from toddlerhood to preschool age and their associations with prenatal and early life factors
Dr Airu Chia, National University of Singapore, Saw Swee Hock School of Public Health, Singapore (12 + 3 minutes)

Lifestyle patterns in early childhood and subsequent psycho-social and physical health: an outcome-wide analysis from the EDEN mother-child cohort
Ms Alexandra Descarpentrie, Université de Paris, CRESS, Inserm, Inrae, France (12 + 3 minutes for questions)

Quantifying the overall impact of an early childhood multi-behavioral lifestyle intervention: results from the Melbourne InFANT program
Dr Miaobing Zheng, Deakin University, Institute for Physical Activity and Nutrition Research, Geelong, Victoria, Australia (12 + 3 minutes)

Discussant – key lessons and future directions for research and practice. Assistant Prof. Mary F-F Chong, National University of Singapore, Saw Swee Hock School of Public Health, Singapore (10 minutes)

Open for questions and general discussion, Moderated by chair, Dr Sandrine Lioret (10 minutes)

Characterization of lifestyle patterns from toddlerhood to preschool age and their associations with prenatal and early life factors

Dr. Airu Chia[1], Dr. Ci Jie Chua[1], Dr. Jia Ying Toh[2], Dr. Padmapriya Natarajan[1,3], Associate Professor Carla Lança[4], Miss Alexandra Descarpentrie[5], Dr. Sandrine Lioret[5], Dr. Jonathan Bernard[2,5], Prof. Falk Müller-Riemenschneider[1], Prof. Seang-Mei Saw[1,4,6], Prof. Keith Godfrey[7], Prof. Lynette Shek[8], Prof. Kok Hian Tan[6,9], Prof. Yap Seng Chong[2,3], Prof. Johan G Eriksson[3,4,10,11], Assistant Professor Mary F-F Chong[1,2]

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Purpose: Lifestyle patterns emerge early in life but the extent to which these patterns are stable from toddlerhood to preschool age is poorly known. In a multi-ethnic Asian cohort, we aim to derive multi-time point lifestyle patterns from ages 2-5 years and examine early life predictors of these patterns.

Methods: Child's diet, outdoor play, and screen time were collected using questionnaires at age 2 and 5 years. Prospective principal component analysis was used to derive lifestyle patterns. We categorized 30 predictors into four groups — sociodemographic, pre-conception, pregnancy, and postnatal —and examined their associations with lifestyle patterns by four-stage hierarchical linear regression analyses.

Results: Of 406 children, two patterns emerged consistently over time: "healthy" (fruits, vegetables, outdoor, and low screen time) and "less healthy" (discretionary consumption and high screen time). The significant predictors for "healthy" pattern were Chinese and Indian ethnicity, higher maternal education, higher pre-pregnancy physical activity, lower pre-pregnancy screen time, non-working mothers during pregnancy, and longer breastfeeding duration. The significant predictors for "less healthy" pattern were Malay ethnicity, poor sleep quality during pregnancy, less healthy maternal diet during pregnancy, mothers who were generally more concerned about their child hunger, and mothers who were less likely to feed their child on schedule in the first 2 years of life.

Conclusion: Two lifestyle patterns were characterized over toddlerhood and preschool age. Multiple predictors from pre-conception and throughout the first 1000 days of life were identified, suggesting potential targets for early intervention and health promotion activities.

Lifestyle patterns in early childhood and subsequent psycho-social and physical health: an outcome-wide analysis from the EDEN mother-child cohort.

Miss Alexandra Descarpentrie[1], Dr. Jonathan Bernard[1,2], Dr. Stéphanie Vandentorren[3,4], Prof. Maria Melchior[5], Prof. Cédric Galéra[6,7,8], Dr. Airu Chia[9], Assistant Professor Mary Chong[2,9], Prof. Marie-Aline Charles[1], Dr. Barbara Heude[1], Dr. Sandrine Lioret[1]

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Purposes: This study aimed at examining prospective associations between lifestyle patterns in early childhood and not only weight status but also socio-emotional development.

Methods: The sample consisted of 876 children from the French EDEN mother-child cohort. Three different lifestyle patterns were considered at 5 years: "Discretionary Consumption, Low Vegetables, High Screen" in girls and "Discretionary Consumption, High Screen, Low Sleep" in boys (unhealthy); "Fish, Dairy products, Fruits & Vegetables, Low Screen" in both sexes (healthy); "Sugar Sweetened Beverages, High Screen, Outdoor Play, Walking, Low Sleep" in girls and "Dairy products, High Screen, Outdoor Play, Walking, High Sleep" in boys (mixed). At 8 years, socioemotional development was parent-assessed by The Strengths and Difficulties Questionnaire. Height and weight reported by parents from children's health booklets or measured, were used to generate BMI z-scores (WHO standards). Using an outcome-wide approach, for each outcome and sex, associations were investigated controlling for a wide array of factors including: sociodemographic characteristics, early life factors, and prior values of exposures and outcomes.

Results: In boys, the 5-year healthy pattern was positively associated with prosocial behaviors (β=0.25, 95% CI:0.06 to 0.46) and inversely related to symptoms of hyperactivity-inattention (β=-0.32, 95% CI: -0.62 to -0.02) three years later. However, there was no evidence of associations between any of the lifestyle patterns studied and BMI z-scores. We found no significant associations in girls.

Conclusions: Independently of previous health status and background variables, the combination of a diverse and nutrient-rich diet with less screen time in 5-years-olds was prospectively associated with better socio-emotional and behavioral development. This study thus complements the existing literature on lifestyle

patterns and physical health and suggests that promoting optimal EBRBs through multi-behavioral interventions, beyond obesity prevention, could be valuable to support holistic wellness.

Quantifying the overall impact of an early childhood multi-behavioral lifestyle intervention: results from the Melbourne InFANT program

Dr. Miaobing Zheng[1], Dr. Kylie Hesketh[1], Sarah McNaughton[1], Prof. Jo Salmon[1], Prof. David Crawford[1], Associate Professor Adrian Cameron[2], Dr. Airu Chia[3], Prof. Karen Campbell[1]

[1]Deakin University, Institute for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Geelong, Australia, [2]Deakin University, Institute for Health Transformation, Global Obesity Centre (GLOBE), Geelong, Australia, [3]Université de Paris, Centre for Research in Epidemiology and Statistics (CRESS), Inserm, Inrae, Paris, France

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: All

Purposes: The overall impact of interventions targeting multiple behaviors remains largely unexplored. This study adapted an integrative lifestyle pattern analysis approach to assess the overall effectiveness of an early childhood intervention on change across multiple behaviors.

Methods: The Melbourne INFANT program was a 15-month cluster-randomized controlled trial involving 4-month-old infants and their parents at baseline in 2008 (n=542). The intervention included six education sessions helping parents to promote a healthy diet, physical activity, and limit sedentary behavior in their infants. Participants were followed-up twice post-intervention, at ages 3.6 in 2011and 5 years in 2013, to assess sustained effects of the intervention. Previous principal component analyses identified two lifestyle patterns from dietary intake, outdoor time and television viewing time. Random effect linear regression models were conducted to assess the impact of the intervention on lifestyle patterns.

Results: The intervention group had a lower "Discretionary consumption and TV" lifestyle pattern score than the control group at all time points with adjusted mean difference: -0.29, 95%CI -0.49, -0.09 P=0.004 post-intervention at age 1.5 years; -0.29, 95%CI -0.54, -0.04 P=0.02 at the first follow-up (age 3.6 years); and -0.21, 95%CI -0.43, 0.01 P=0.06 at the second follow-up (age 5.0 years). No evidence of between-group differences was found for the "Fruit, vegetables and outdoor" lifestyle pattern score.

Conclusion: This early childhood intervention designed to promote change in more than one obesity related behavior was effective in improving correlated unhealthy lifestyle behaviors. Lifestyle pattern analysis is a useful and interpretable approach for evaluating multi-behavioral interventions

S.1.08 - Citizen science to advance behavioral change science: Empowering adolescents to create change

Room 151

May 19, 2022, 4:20 PM - 5:35 PM

Purpose:
This symposium aims to give an introduction to a citizen science project that aims to empower adolescents to use science to improve their lifestyles.

Rationale:
Health is relatively under-represented in citizen science, even though it is a diverse and promising domain. Citizen science may be a way to actively involve citizens in research projects to develop innovative interventions. The SOCIENTIZE consortium defined citizen science as "(…) the general public engagement in scientific research activities when citizens actively contribute to science either with their intellectual effort or surrounding knowledge or with their tools and resources". Public participation can differ in citizen science projects from collecting data (e.g., crowdsourcing citizens) to more intensive collaboration where citizens are involved in almost all parts of the research project (e.g., extreme citizen science).

Objectives of the symposium: 1) to learn from the experiences of a citizen science project aiming to empower adolescents from lower socioeconomic status communities in Europe;

2) to bring together expertise on citizen science across disciplines to inform behavioural nutrition and physical activity research;

3) to discuss challenges and opportunities in citizen science projects.

Summary:
In this symposium, on behalf of the SEEDS Consortium, Claire Murray from the European Citizen Science Association will give a short introduction into citizen science. The introduction will be followed by three presentations that cover different elements of the Science Engagement to Empower aDolescentS (SEEDS) project. This EU Horizon 2020 funded

project aims to empower teenagers from lower socioeconomic status communities in healthy lifestyle decisions as well as science, technology, engineering, and maths (STEM) interest through citizen science.

Annemieke Wargers (Erasmus Medical Center Rotterdam, the Netherlands) will introduce the study design of the SEEDS project.

Famke Mölenberg (Erasmus Medical Center Rotterdam, the Netherlands) will then describe the methods and results of focus group discussions with adolescents and stakeholders to identify barriers and facilitators related to healthy and active living.

Christopher Elphick (University of Exeter, United Kingdom), will then outline the Makeathon events where adolescents and stakeholders collectively develop intervention ideas.

This session will then conclude with a panel and audience discussion led by Claire Murray, exploring the opportunities and challenges of citizen science projects.

Citizen science to improve healthy and active living among adolescents in four European countries: A protocol of the randomized controlled trial of the Science Engagement to Empower aDolescentS (SEEDS) project

Miss Annemieke Wargers[1], Miss Judit Queral Añó[2], Dr. Famke Mölenberg[1], Dr. Wilma Jansen[1,3]
[1]Erasmus University Medical Center, Rotterdam, Netherlands, [2]Institut d'Investigació Sanitària Pere Virgili, Reus, Spain, [3]City of Rotterdam, Rotterdam, Netherlands

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Background: Overweight and obesity, and its high prevalence among adolescents from lower socioeconomic status communities, is a major public health problem. Moreover, the lack of interest in science, technology, engineering, and maths (STEM), specifically for adolescents living in lower socioeconomic status neighorhoods, represent a challenge. As adolescents can be considered the experts of their own behaviour, it is important to work together in designing and implementing interventions. Citizen science is a way to engage young people in the design and delivery of interventions, however, very few studies engaged adolescents on the topics of health.

The Science Engagement to Empower aDolescentS (SEEDS) project aims to engage and empower adolescents from lower socioeconomic status neighbourhoods in designing interventions to promote healthy and active lifestyles, and to seed interest in STEM.

Methods: The SEEDS project will run in four countries (Greece, the Netherlands, Spain and the United Kingdom) and will be evaluated by means of a cluster randomised control trial (RCT). Six to eight high-schools from lower socioeconomic status neighbourhoods will be recruited in each country, and adolescents aged 13 to 15 years are our target population. Schools will be randomised into intervention and control schools. In each country, 15 adolescents from the intervention schools called ambassadors will be recruited. Ambassadors will be engaged throughout the project. Focus groups with ambassadors and stakeholders will concentrate on healthy and active living and STEM interest. Supported by stakeholders, ambassadors and their peers will co-create an intervention inspired by the issues raised in the focus groups during a Makeathon event. The resultant intervention will be implemented in intervention high-schools. The impact of these interventions will be evaluated. In total, we aim to recruit 1,440 adolescents who will complete questionnaires related to healthy and active living and STEM interest in baseline (November 2021) and after the six months (June 2022).

Results: The SEEDS study aims to advance in the field of behavioural science by collaborating with adolescents from lower socioeconomic status communities, and empowering them to make a change towards a healthy and active lifestyle. Results of the SEEDS project are expected by the end of 2022.

Factors influencing healthy and active living in adolescence: Findings from focus group discussions with adolescents and stakeholders in four European countries

Dr. Dimitris Vlachopoulos, Dr. Famke Mölenberg[1], Miss Annemieke Wargers[1], Dr. Christopher Elphick[2], Dr. Wilma Jansen[1,3]

[1]*Erasmus University Medical Center, Rotterdam, Netherlands,* [2]*Children's Health and Exercise Research Centre Exeter University, Exeter, United Kingdom,* [3]*City of Rotterdam, Rotterdam, Netherlands*

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Background: The Science Engagement to Empower aDolescentS (SEEDS) project aims at engaging and empowering adolescents from lower socioeconomic status neighbourhoods in designing interventions to promote healthy and active lifestyles, and to seed interest in science, technology, engineering, and maths (STEM). This study explored adolescents' and stakeholders' views on barriers and facilitators of determinants related to increasing physical activity and reduce sedentary time during school hours, and promote healthy snacking within and outside school hours. Furthermore, the aim of the focus group with student- ambassadors from intervention schools was to identify the behaviour they want to address during an intervention. The aim of the focus group with stakeholders was to reflect on the barriers and facilitators that adolescents have specified, to indicate the feasibility of changing those behaviours during a six-month intervention, and to identify ways stakeholders could help overcome those barriers.

Methods: High-schools in lower socioeconomic status neighbourhoods were recruited and randomised into intervention and control schools in Greece, the Netherlands, Spain and the United Kingdom. A qualitative study using focus group discussions within the framework of the Theory of Planned Behaviour was employed. From June to September 2021, eight focus groups were conducted with 36 adolescents aged 13 to 15 years from intervention high-schools. We also conducted six focus groups with 28 stakeholders. Depending on the key behaviours adolescents wanted to address during the intervention phase, stakeholders were invited to participate in focus group sessions. The Quadruple Helix model was used to invite stakeholders from the government, community, business, and academia. Focus groups with ambassadors and stakeholders had an average duration of 68 min. All focus groups were held in the native language, audio-recorded, transcribed and translated into English. Focus group discussions will be thematically analysed using NVivo software.

Results: During the conference, we will reflect on the main outcomes of the focus groups. The results of the focus groups are already being used to inform the intervention phase of the SEEDS project.

SEEDS Makeathons: Co-creation events for adolescents and stakeholders to develop interventions

Dr. Christopher Elphick[1], Dr. Dimitris Vlachopoulos[1], Prof. Craig Williams[1], **Dr. Claire Murray[2]**
[1]Children's Health and Exercise Research Centre Exeter University, Exeter, United Kingdom, [2]European Citizen Science Association, Berlin, Germany

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Background: The Science Engagement to Empower aDolescentS (SEEDS) project aims at engaging and empowering adolescents from deprived neighbourhoods in designing interventions to promote healthy and active lifestyles. Within the SEEDS project, Makeathon events will be organised where people from different backgrounds together will work on interventions that meet adolescent's needs. The experiences adolescents gain through participation in a Makeathon may also seed interest in science, technology, engineering, and maths (STEM), contributing towards an improvement in STEM interest amongst adolescents.

Methods: A published Makeathon protocol has been adapted for the SEEDS Makeathon. COVID-19 protocols have been developed, in case that Makeathons need to take place online. Participating ambassadors were trained in preparation of the Makeathon. In each country, Makeathons were centred around two behaviour change challenges formed by the input from the focus groups; Q1) What experiment would you create to improve snacking and drinking in your school? Q2) What experiment would you create to be more physically active and sit less during the school day? In each Makeathon, teams of student-ambassadors from intervention high-schools aged 13 to 15 years, their peers and stakeholders will create, develop and test interventions. Makeathons will have an average duration of 2.5 hours to 4 hours. At the end of the event, all ideas will be pitched and the group will think of pros and cons. This will support the group to collectively identify the Makeathon interventions that they feel are the strongest. A researcher will record the discussion, to capture outcomes of the events.

Outcomes of the Makeathons will define the interventions and concepts, the number of associated activities, and the ways in which the activities should be implemented. A final decision on what intervention to implement will be discussed in an online exchange and considered collectively by ambassadors of each country, stakeholders and the SEEDS Consortium to identify which interventions will be implemented in each country.

Results: Makeathon events will be run in November 2021, and experiences and outcomes will be discussed during the conference.

S.1.09 - Applying innovative experimental methods to evaluate front-of-package nutrition labels

Room 152

May 19, 2022, 4:20 PM - 5:35 PM

Purpose:
The aim of this symposium is to discuss the application of innovative methodologies to evaluate the impact of front-of-package food labels.

Rationale:
Policies are urgently to reduce added consumption of ultraprocessed products. Front-of-package labeling, including warnings and symbols, is a promising approach for reducing purchases and consumption of products. Randomized experiments can be a useful tool for informing labeling policies before they are implemented. However, novel methods are needed to better replicate real-world exposure and objectively measure responses and behavior in ecologically valid settings.

Objectives:
This symposium's objectives include:

Showcase a range of innovative and interdisciplinary experimental methods that can be applied to evaluate food labeling
Discuss the advantages and disadvantages of employing a variety of experimental methods to design and evaluate policies before they are implemented
Summarize recent research on front-of-package warning labels

Summary:
Dr. Marissa Hall (US) will introduce the symposium, give a brief overview of front-of-package labeling, and explain the need for innovative experimental methods.
Dr. Gastón Ares (Uruguay) will discuss the application of neuroscience techniques, including eye tracking, to evaluate front-of-package nutrition labels.

Dr. Rachel Acton (Canada) will present findings from an in person experimental marketplace study to test multiple labeling schemes compared to a control.

Dr. Lindsey Smith Taillie (US) will present data from two naturalistic experimental store laboratories, one in person and one online, used to evaluate front-of-package warnings.

Dr. Alejandra Jáuregui(Mexico) will facilitate a structured discussion.

Format:

 Introduction by Dr. Marissa Hall (10 min)

Speakers, each with 10 minutes to present and 5 minutes of questions: Dr. Gastón Ares (15 min), Dr. Rachel Acton (15 min), Dr. Lindsey Smith Taillie (15 min)

Structured discussion between the presenters, audience, chair, and discussant, facilitated by Dr. Alejandra Jáuregui (20 min)

Interaction:

Interaction in the online symposium will be facilitated by both the discussant and the chair.

What can consumer neuroscience add to the evaluation of front-of-package nutrition labels?

Dr. Gastón Ares[1], Mr. Leandro Machín[1], Dr. Lucía Antúnez[1], Associate Professor Ana Giménez[1], Mrs. María Curutchet[2]
[1]Universidad de la República, Montevideo, Uruguay, [2]Instituto Nacional de Alimentación, Montevideo, Uruguay

May 19, 2022, 4:20 PM - 5:35 PM

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Nutrition

Purpose: Neuroscience, defined as the convergence of neuroscience and consumer psychology, has the potential to allow a more in-depth understanding of consumer behavior by providing direct information about how information is processed. In this context, the aim of the present work is to showcase the contributions of this interdisciplinary field of study to the evaluation of front-of-package nutrition labels (FOPNL).

Methods: Neuroscience tools were a key component of the research conducted to support the design of the Uruguayan FOPNL regulation. Nine studies involving a total of 787 participants were carried out to assess attentional capture and use of different FOPNL using visual search and eye-tracking. The studies involved the evaluation of food labels on computer screens, choice experiments, as well as a real purchase situation in a supermarket.

Results: Visual search enabled the evaluation of the effect of graphic design on the attentional capture and processing time of FOPNL schemes. The inclusion of Interpretational elements and salience from the background, determined by color and size, significantly reduced the time needed by participants to find and process FOPNL. Regarding eye-tracking, results from the study conducted in a real supermarket confirmed that consumers do not rely on when making their food purchases. Under experimental settings, eye-tracking showed that FOPNL were attended by participants to assess the healthfulness of food labels and to make their choices.

Conclusions: Results from the nine studies provided key insights for the design of the Uruguayan FOPNL regulation. Neuroscience tools contributed to the understanding of how consumers perceive, process, and react to front-of-package nutrition labels, providing key information to the design and evaluation of the Uruguayan FOPNL policy.

Using experimental marketplace methods and 'real' purchase tasks to examine the impacts of front-of-package nutrition labelling on the nutrient content of beverage and snack food purchases: an experiment with Canadian adolescents and adults

Dr. Rachel B. Acton[1], Dr. Amanda C. Jones[2], Dr. Sharon I. Kirkpatrick[1], Dr. Christina A. Roberto[3], Dr. David Hammond[1]

[1]*School of Public Health Sciences, University of Waterloo, Waterloo, Ontario, Canada, [2]Department of Public Health, University of Otago Wellington, Dunedin, New Zealand, [3]Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PN, USA*

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Nutrition

Purpose: Front-of-package (FOP) nutrition labelling is increasingly recommended to improve dietary intake. However, there is relatively little data on the impacts of FOP labels on real purchases. This study used an experimental method with real money and real products to simulate the relative impact of different FOP labelling systems on the nutrient content of beverage and snack food purchases.

Methods: An in-person randomized trial in an experimental marketplace was conducted with 3,584 Canadians aged 13 years+. Participants received $5 and viewed images of 20 beverages and 20 snack foods available for purchase. Participants were randomized to one of five FOP label conditions (no label; 'high in'; multiple traffic light (MTL); health star rating (HSR); nutrition grade) and completed purchasing tasks for beverages and snack foods. Participants received the product and change from one of the purchasing tasks.

Results: Participants who were shown products with the 'high in' symbol purchased less sugar (− 2.5 g), saturated fat (− 0.09 g), and calories (− 12.6 kcal) in the beverage tasks, and less sodium (− 13.5 mg) and calories (− 8.9 kcal) in the snack food tasks compared to those who saw no FOP label. In the snack food tasks, participants in the MTL condition purchased less sodium (− 15.1 mg) and fewer calories (− 11.4 kcal), and those in the HSR condition purchased fewer calories (− 8.0 kcal) versus control. Analyses examining the positive nutrient density of snack food purchases found that participants purchased foods with higher fibre density when they were assigned to see the MTL (+0.4 g/100 kcal) or HSR labels (+0.3 g/100 kcal), compared to no label. There were no significant differences in purchasing of protein or calcium for any of the labels versus control.

Conclusions: This study demonstrated the usefulness of experimental marketplace methods for evaluating FOP labelling policy when real-world evidence is unavailable or impractical to collect. The results suggest that nutrient-specific FOP 'high in' labels may be more effective than other summary labelling systems at

reducing consumption of targeted nutrients, and may do so without compromising intake of positive nutrients such as protein, calcium and fibre.

The tale of two stores: Using online and in-person experimental food stores to develop and test front-of-package labeling policies

Dr. Lindsey Smith Taillie[1], Dr. Pasquale Rummo[2], Dr. Anna H. Grummon[3, 4], Dr. Lindsay Jaacks[5], Dr. Marissa G. Hall[1]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, [2]NYU Grossman School of Medicine, New York, NY, USA, [3]Harvard TH Chan School of Public Health, Cambridge, MA, USA, [4]Harvard Medical School and Harvard Pilgrim Health Care Institute, Cambridge, MA, USA, [5]The University of Edinburgh, Edinburgh, Scotland, United Kingdom

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Nutrition

Purpose: Most experimental studies of front-of-package labels (FOPLs) have relied on simplistic choice experiments or artificial settings that do not reflect the complexity of the real-world food environment where consumers make choices. The objective is to showcase experimental data from two naturalistic food stores we have developed—one in-person and one online—to demonstrate how these stores can be used to test the impact of FOPLs on food purchasing behaviors.

Methods: In Study 1, focused on reducing sugary drinks, we constructed a naturalistic experimental convenience store located in North Carolina, stocked with beverages and snacks. Parents (n=325) were randomly assigned to a pictorial health warning arm (sugary drinks displayed pictorial health warnings) or a control arm (sugary drinks displayed a control label) and purchased a drink for their child. In Study 2, focused on reducing red meat, we constructed an online supermarket stocked with >20,000 products. Adults (n= 3,485) were randomly assigned to warning arm (products with red meat displayed health and environmental warnings) or a control arm (no label) and shopped for a list of 10 items.

Results: In Study 1, pictorial health warnings led to a 17 percentage point reduction in parents' purchases of sugary drinks for their children (p=.003). The impact of warnings did not differ by any of 13 participant characteristics examined (p>.05). Pictorial warnings led to lower intentions to give sugary drinks to their child, greater thinking about the harms of sugary drinks, and lower perceived healthfulness of sugary drinks, among other reactions (all p<.05). In Study 2, data collection is underway. We will report whether warnings reduced purchases of red meat products. We will also present data on the validity and feasibility of using both stores.

Conclusions: Naturalistic experimental food stores are useful for studying the FOPL impact on food purchasing behaviors, a critical outcome for informing policy.

S.1.10 - How does a day look like among patients with diabetes? Exploring physical activity, sedentary behavior and sleep across a 24-hour day

Room 153

May 19, 2022, 4:20 PM - 5:35 PM

Purpose:
To explore the potential of the novel 24-hour movement behavior (24h-MBs) perspective for the management and prevention of disease progression in diabetes patients.

Rationale:
Worldwide, 422 million people have diabetes, which is one person out of 11. The two most common diabetes types are type 1 and type 2 diabetes mellitus (T1DM; T2DM) both with different pathogenesis. However, both are of high risk for development of complications which in turn can impact quality of life. Both aspects can be countered by investing in a healthy lifestyle. Recent literature suggests to step away from the narrow focus on physical activity (PA) and to broaden it to all activities performed in one day, including sedentary behavior (SB) and sleep. This is the so-called 24h-MBs perspective, which is a novel approach in health promotion research but yet unexplored in T1DM and T2DM patients.

Objectives:
1. To compare the 24h-MBs among patients with T1DM, T2DM, and participants with normal glucose levels (NGL);
2. To describe and discuss the associations between the 24h-MBs and personal, psychosocial, glycemic, and cardiometabolic parameters in T2DM patients;
3. To provoke discussion on disease-specific needs (T1DM versus T2DM) within the 24h-MBs perspective and how to link this with existing guidelines.

Summary:
First, results of a systematic review on 24h-MBs among T1DM adolescents and their impact on glycemic control and psychosocial factors will be discussed. In addition, insights into the 24h-MBs between adults with

T2DM and adults with NGL in relation to their personal and cardiometabolic correlates will be provided. Preliminary results showed significantly more SB and less MVPA within the T2DM group. Finally, new understandings on the sleep behavior among T2DM adults are provided, where results suggest a negative association between insomnia and metabolic parameters.

Format:
1. A mixed methods systematic review of 24-hour movement behaviors (physical activity, sedentary behavior and sleep) impact on adolescents with type 1 diabetes physiological and psychosocial adaptation (presenter: Mhairi Patience)
2. Move, sit, sleep, repeat: 24-hour movement behaviors among adults with type 2 diabetes mellitus. (presenter: Iris Willems)
3. The prevalence of insomnia and the association with metabolic outcomes in people with type 2 diabetes: The Hoorn Diabetes Care System Cohort. (presenter: Lenka Groeneveld)

Chair: Prof. Marieke De Craemer
Discussant: Prof. Rutters

Interaction:
The discussant will summarize the main message of each presentation and will act as moderator of the discussion which will be supported with real-time interactions and message walls.

Move, sit, sleep, repeat: 24-hour movement behaviors among adults with type 2 diabetes mellitus

Miss Iris Willems[1,3], Dr. Anouk Tanghe[1], Dr. Vera Verbestel[1], Dr. Bruno Lapauw[1,2], Prof. Patrick Calders[1], Prof. Marieke De Craemer[1, 3]

[1]Ghent University, Ghent, Belgium, [2]Ghent University Hospital, Ghent, Belgium, [3]Research Foundation Flanders, Brussels, Belgium

SIG - Primary Choice: M. Disease prevention and management
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: A healthy lifestyle is associated with beneficial health effects in managing type 2 diabetes mellitus (T2DM). Important lifestyle behaviors, i.e. sleep, sedentary behavior (SB), and physical activity (PA), impact T2DM disease-specific characteristics. These behaviors are often investigated separately. A recent shift in research emphasizes the importance of considering these behaviors as part of a 24-hour day. Therefore, the aim of this study is to explore these 24-hour movement behaviors (24h-MBs) in T2DM adults.

Methods: This study currently includes data of 10 T2DM adults (mean age: 66.9y, 60% men; mean years T2DM: 9.2y) and 23 adults with normal glucose levels(NGL) (mean age: 59.35y, 40% men). Participants' 24h-MBs were measured by actigraphy (Actigraph wGT3X+). All 24h-MBs were analyzed between adults with T2DM and NGL on an average day and on weekdays and weekend days separately. Independent Sample T-tests, Mann-Whitney U Tests, and One Sample T-tests were conducted.

Results: Means for 24h-MBs on an average day in T2DM adults were 635.26 (±76.61) min/SB; 275.7 (±63.05) minutes of light PA (min/LPA); 9.51 (±9.24) minutes of moderate to vigorous PA (min/MVPA); 6475.76 (±2366.39) step counts; 96.87% (±0.97) sleep efficiency; 478.29 (±26.21) minutes Total Sleep Time (min/TST); 12.55 (±4.29) minutes Wake After Sleep Onset (min/WASO). Means for the NGL adults were 586.55 (±68.54); 314.48 (±70.49); 18.41 (±13.70); 8048.16 (±2804.57); 95.70 (±2.11); 468.45 (±40.82); 18.24 (±9.04), respectively. On an average day, T2DM adults spent significantly less time in min/MVPA and min/WASO compared to NGL adults (p=0.042; p=0.023). On an average weekend day, T2DM adults spent significantly more time in min/SB and less time in min/LPA compared to NGL adults (p=0.004; p=0.009). Both groups did not meet the current 24h-MB guidelines of 150 min of MVPA/week (both p<0.001) and a maximum of 8 hours of SB/day (both p<0.001). Meeting the sleep guideline did not significant differ.

Conclusion: These preliminary results showed high levels of min/SB and low levels of min/MVPA in both groups, which were more pronounced in the T2DM group. Recruitment is ongoing which will result in additional analyses in a larger sample. Personal, cardiometabolic and environmental correlates will be explored in the following months.

The prevalence of insomnia and the association with metabolic outcomes in people with type 2 diabetes: the Hoorn Diabetes Care System cohort

Miss Lenka Groeneveld[1], Dr. Nicole den Braver[1], Prof. Joline Beulens[1, 2], Dr. Amber van der Heijden[1], Dr. Annelie van de Reep[1], Miss Sharon Remmelzwaal[1], Prof. Annemieke van Straten[3], Prof. Petra Elders[1], Assistant Professor Femke Rutters[1]
[1]Amsterdam UMC, Amsterdam, Netherlands, [2]University Medical Centre Utrecht, Utrecht, Netherlands, [3]Free University Amsterdam, Amsterdam, Netherlands

SIG - Primary Choice: M. Disease prevention and management
Age Category: Older adults 65+ yrs
Subject Category: Sleep

Background: The aim of this study was to investigate the prevalence of insomnia (symptoms) in people with T2D and to assess the association with metabolic outcomes cross-sectionally and after one year follow-up, and assess the mediating role of lifestyle factors.

Methods: We used data of 1272 participants with T2D, 63.4% men and aged 68.7±9 years. Insomnia symptoms and insomnia were defined based on the Insomnia Severity Index combined with use of sleep medication. Metabolic outcomes included annual levels of HbA1c, fasting plasma glucose, LDL, HDL, triglycerides, blood pressure and BMI. Stratified for comorbidities, associations between (symptoms of) insomnia and (1-year change in) metabolic outcomes were assessed using linear regression analyses, adjusted for age, sex, diabetes duration and educational level. Mediation analyses were conducted for physical activity, smoking and alcohol intake as mediators.

Results: The prevalence of insomnia symptoms and insomnia was 21.6% and 13.6% respectively. In people with T2D and comorbidities (n=759), insomnia symptoms were associated with higher levels of glucose 0.43 mmol/l (0.03:0.82) and lower levels of LDL -0.18 mmol/l (-0.36:-0.00), compared to no insomnia. No association was observed in people without comorbidities (n=513). Over 1 year, in people with comorbidities insomnia symptoms were associated with an increase in HbA1c of 0.12% (-0.03:0.3) as well as a decrease in HDL levels of -0.04 mmol/l (-0.06:-0.01), compared to no insomnia. Additionally, in people with T2D and comorbidities, insomnia was associated with an increase in triglyceride levels of 0.08 mmol/l (0.01:0.14), compared to no insomnia. No statistically significant associations were observed for the other metabolic outcomes and no mediation by lifestyle factors.

Conclusions: Overall, our study showed that about a third of people with T2D experience insomnia (symptoms) and it being associated with small but deleterious (changes in) metabolic outcomes, especially in those with comorbidities

S.1.11 - A review of the National Strategy for the Prevention and Control of Obesity in South Africa, 2015-2020 and the development of the new National Obesity Strategy, 2022-2027,

Room 154

May 19, 2022, 4:20 PM - 5:35 PM

Purpose:
The Department of Health of South Africa (SA) commissioned the review of the 2015-2020 National Strategy for the Prevention and Control of Obesity in SA (NSPCOSA) and the development of a new National Obesity Strategy for 2022-2027. The purpose is to present the process and outcomes of the review.
Rationale: The prevalence of obesity in SA is higher than in most low- and middle -income countries and comparable to the prevalence in high-income countries. Health care systems are faced with the increasing double burden of malnutrition in the COVID19 context, necessitating national actions to prevent and control obesity in SA.

Objectives:
To present the steps in the review process: the scoping review to establish how national obesity strategies have been successfully implemented, and success factors applicable to the SA context; the stakeholder engagement to assess if the NSPCOSA 2015-2020 achieved its stated goals and objectives, how successes could be strengthened and how challenges could be managed to achieve the revised goals.

Summary:
The review process and the development of the revised strategy will be presented. The aim of the NSPCOSA is to "empower the population of SA to make healthy choices in an enabling environment that promotes healthy eating and physically active lifestyles for the prevention and control of obesity." Individual contributions will outline the goals, objectives and related actions of the 2015-2020 strategy, the stakeholder engagement process, analysis of the responses and development of the revised strategy, with revised goals, objectives, actions and responsible agents.

Format:

- Prof HS Kruger, Chair. Co-authors: T Puoane, MA Monyeki, JA Lubbe, MM Bopape, I Edoka: Introduction of the previous strategy, formulation of an aim and research questions for the NSPCOSA review, theory of change, stakeholder mapping and groups. 15 min
- Prof T Puoane, Co-authors: HS Kruger, MA Monyeki, JA Lubbe, MM Bopape, I Edoka: Stakeholder engagement based on rapid review and responses from focus group discussion and questionnaires. 20min
- Prof MA Monyeki, Co-authors: HS Kruger, T Puoane, JA Lubbe, MM Bopape, I Edoka: Stakeholder responses synthesis, formulation of goals, objectives and actions, stakeholder workshops, management meetings and drafting the review. 20 min
- Ms Chelsea Stefanska, Discussant: A brief overview of the main issues and general discussion of the topic with the audience and presenters and introducing evidence that is consistent with the speakers' findings. 20 min

Interaction: The Chair will introduce the symposium and speakers and will manage questions from the audience. The Discussant will enhance the symposium by providing an overview and invite comments and sharing of experience from country strategy reviews, focused on healthy eating and physical activity.

The review of the 2015-2020 National Strategy for the Prevention and Control of Obesity in South Africa: Aim and research questions and stakeholder mapping

Prof. Salome Kruger[1], Prof. Thandi Puoane[2], Prof. Makama Andries Monyeki[1]
[1]North-West University, Potchefstroom, South Africa, [2]University of the Western Cape, Cape Town, South Africa

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition
Purpose: To develop methods to assess if the 2015-2020 National Strategy for the Prevention and Control of Obesity in South Africa had the desired outcomes.

Methods: A review team, consisting of six South African experts from fields related to Public Health, Nutrition, Physical Activity and Health Economics were commissioned by the national Department of health to review the 2015-2020 National Strategy for the Prevention and Control of Obesity in South Africa. The review team was supported by a National Advisory Team from national Departments related to Health, as well as country representatives from international health related agencies. They appointed a project coordinator and two international experts to provide technical and scientific support. The review team met regularly with the advisory and support teams, and provided feedback on the review process. A scoping review of international best practices implemented in national obesity management strategies was conducted. Potential stakeholder groups were identified based on the scoping review and the review of responsible agents proposed in the 2015-2020 strategy. A theory of change and methods for the review were developed to state what the strategy set out to achieve, the vision and the mission and how the objectives could be achieved.

Results: The research questions were if the National Strategy for the Prevention and Control of Obesity in South Africa achieved its goals and objectives, how these can be strengthened and what needs to be changed. Eleven stakeholder groups were identified, including different levels of implementers from government, academic and research institutions, professional societies, medical aid schemes, health professionals, community influencers, local food outlet managers and people living with obesity. In-depth online questionnaires with structured responses and open questions, and a focus group discussion guide were developed to explore stakeholder perceptions of the drivers and outcomes of the strategy. Questions for each group of stakeholders were formulated by the review team and international experts based on the Obesity Strategy (2015-2020), according to the proposed roles of each group of stakeholders.

Conclusions: Methods to review the strategy focussed on the advancement of behavioural nutrition and physical activity of South Africans through broad stakeholder engagement.

The review of the 2015-2020 National Strategy for the Prevention and Control of Obesity in South Africa: Stakeholder engagement and responses from focus group discussion and questionnaires

Prof. Thandi Puoane[1], Prof. Salome Kruger[2], Prof. Makama Andries Monyeki[2]
[1]University of the Western Cape, Cape Town, South Africa, [2]North-West University, Potchefstroom, South Africa

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition
Purpose: To assess if the national strategy for the prevention and control of obesity in South Africa (2015-2020) had the desired outcomes.

The research questions were to establish if the national strategy for the prevention and control of obesity in South Africa (2015-2020) achieved its goals and objectives, how these can be strengthened and what needs to be changed.

Methods: A purposeful sampling strategy was adopted to capture a breadth of perceptions from stakeholders involved in the implementation of the 2015-2020 strategy. Eleven groups of stakeholders were identified based on information from a desktop review of international best practices implemented in national obesity strategies and stakeholder groups involved in the 2015-2020 strategy. In-depth, semi-structured, one-to-one interviews, online questionnaires with structured and open questions, and focus group discussions (FGDs) were used to explore stakeholder perceptions of the outcomes of the implementation of the strategy. Quantitative responses from the questionnaires were analysed as frequencies, enabling identification of the dominant responses, as well as minority perceptions. Qualitative responses to open ended questions were analysed using thematic analysis. The FGD data and 384 questionnaire responses were synthesised in relation to the research questions.

Results: Few successes and several challenges related to the implementation of the strategy were identified by stakeholders. Successes included implementation of sugar tax on sugar-sweetened beverages and early child health campaigns. Challenges were used to develop goals and objectives that will be used to update the next strategy. Stakeholders recommended that the strategy must be based on evidence-based research and that responsibility to achieve the goals of the NSPCOSA should be allocated to specific agents. Stakeholders requested to be involved during initial planning of the revised strategy. Recommendations included to enforce front-of-pack labelling of foods, improve education and communication, and regulate advertising of unhealthy foods and drinks to children. A monitoring and evaluation framework is recommended to improve implementation and monitor progress.

Conclusions: Responses shared by the stakeholders indicated few successes and highlighted challenges that hampered implementation of actions related to behavioural nutrition and physical activity in the 2015-2020 National Strategy for the Prevention and Control of Obesity in South Africa.

The review of the 2015-2020 National Strategy for the Prevention and Control of Obesity in South Africa: Including stakeholder's viewpoints in a revised strategy

Prof. Makama Andries Monyeki[1], Prof. Salome Kruger[1], Prof. Thandi Puoane[2]
[1]North-West University, Potchefstroom, South Africa, [2]University of the Western Cape, Cape Town, South Africa

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition
Purpose: To review if the National Strategy for the Prevention and Control of Obesity in South Africa (2015-2020) based on stakeholder responses and a scoping review of international best practices is fit for the purpose.

The research questions were how the National Strategy for the Prevention and Control of Obesity in South Africa (2015-2020) can be revised based on evidence from a scoping review and stakeholder responses.

Methods: Responses from a purposeful sample of stakeholders involved in the implementation of the 2015-2020 strategy and evidence from a scoping review of international best practices implemented in national obesity strategies were analysed. Dominant responses, as well as minority perceptions were identified. Qualitative responses to open ended questions were analysed using thematic analysis. The focus group discussions data and 384 questionnaire responses were synthesised in relation to the research questions. The scoping review identified international best practices in terms of national obesity management strategies. Stakeholders were involved during initial planning in workshops and interviews, to validate responses and allocate responsibility to achieve the goals of the revised strategy.

Results: The success factors identified were included as ongoing actions in the revised strategy. The themes derived from challenges were used to develop goals and objectives for the updated new strategy. Evidence from the scoping review indicated that front-of-pack labelling of foods is useful to identify healthy food and unhealthy options and to communicate nutrition information to consumers. Training of health care workers, banning sale of unhealthy foods and sugar-sweetened beverages in schools, or product reformulation to improve the nutrient content of ultra-processed foods were also successful interventions. Recommendations to enforce front-of-pack labelling, improve education and communication, to regulate advertising of unhealthy foods and drinks to children, as well as improved access to safe environments for physical activity were included. A monitoring and evaluation framework was proposed to improve implementation and monitor progress.

Conclusions: Experiences shared by the stakeholders and evidence from a scoping review were used to revise the Obesity Strategy for the Prevention and Control of Obesity South Africa and to develop improved implementation of actions related to behavioural nutrition and physical activity.

S.1.12 - Changes in the food environment through childhood and adolescence: Towards sustainable approaches that promote healthy dietary behaviours into adulthood

Room 155

May 19, 2022, 4:20 PM - 5:35 PM

Purpose:
To discuss relevant environmental factors influencing dietary behaviors during the transition from childhood to adolescence, including insights on successful intervention approaches and policy actions tackling these factors to promote dietary behaviours.

Rationale:
The transition from childhood to adolescence is characterized by physical, social and cognitive changes. Eating behaviors tend to become more unhealthy during this transition. Unhealthy dietary patterns established in childhood may track into adulthood, with lifelong negative consequences. Several environmental factors impact young people's dietary behaviours. Children's food choices and weight status can be improved in school environments where healthy lunches are implemented. Yet, as children transition into adolescence and their food environment changes from primary to secondary school, they have more autonomy and freedom to make their own food decisions. Also, increased exposure to social media may impact eating behaviors due to sophisticated and unhealthy online food promotions. Better insight into these environmental factors could help promote healthy food choice decision-making of youth in the long term.

Objectives:
- To understand the effectiveness and implementation processes of a school lunch intervention that aims to optimize children's dietary behaviors, and its implications for school policies
- To understand how the transition from primary to secondary school affects healthy eating behaviors of preadolescents
- To gain insight into the extent and nature of social media food promotions targeted to adolescents, and to what extent they recognize and appreciate them.

Summary:

The topic and structure of the session will be introduced by the Chair. The first presenter will elaborate on a successful school-based program and its policy implications. Next, two presenters will elaborate on food-related environmental factors playing a role in children's transition towards secondary school, and implications of adolescents' exposure to social media food promotions.

Format:

- 5-minute introduction by Chair
- 15-minute presentation by Onno van Schayck
- 5-minute discussion
- 15-minute presentation by Roselinde van Nee
- 5-minute discussion
- 15-minute presentation by Daphne van der Bend
- 5-minute discussion
- 10-minute reflection with presenters, concluding remarks by discussant

Interaction:

Attendees of the online symposium can interact through questions and polls. After each presentation there will be a 5-minute discussion with questions from the audience. At last, the discussant will critically reflect on the presentations with the presenters, and end with concluding remarks.

Battling the obesity epidemic with a school-based intervention: Long-term effects of a quasi-experimental study.

Dr. Maartje Willeboordse[1], Dr. Nina Bartelink[1], Dr. Patricia van Assema[1], Prof. Stef Kremers[1], Prof. Hans Savelberg[1], Miss Marla Hahnraths[1], Miss Lisanne Vonk[1,2], Miss Marije Oosterhoff[3], **Prof. Onno van Schayck[1]**, Dr. Bjorn Winkens[1], Prof. Maria Jansen[1,2]

[1]*Maastricht University, Maastricht, Netherlands*, [2]*Academic Collaborative Centre for Public Health Limburg, Heerlen, Netherlands*, [3]*Maastricht University Medical Centre, Maastricht, Netherlands*

SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Healthy dietary habits learned at a young age often track into adulthood, with a potential to induce life-long effects on overweight and related chronic conditions. School-based health-promoting interventions are increasingly seen as effective strategies to improve health and prevent obesity, but evidence on long-term effectiveness is scarce. The effects of long-term exposure to the Healthy Primary School of the Future (HPSF) on children's dietary and weight-related outcomes are presented and implications will be discussed.

Methods: The study has a quasi-experimental design with four intervention schools, i.e., two full HPSFs (focus: diet and physical activity), two partial HPSFs (focus: physical activity), and four control schools. Primary school children (aged 4-12 years) attending the eight participating schools were invited to enroll in the study between 2015 and 2019. Children's body mass index z-score (BMIz), waist circumference (WC) and dietary behaviors (child- and parent-reported questionnaires) were measured annually.

Results: Between 2015 and 2019, 2236 children enrolled. The average exposure to the school condition was 2·66 (SD 1·33) years, and 900 participants were exposed for the full four years (40·3%). After four years of intervention, both full (estimated intervention effect (B)=-0·17 (95%CI -0·27 to - 0·08) p=0·000) and partial HPSF (B=-0·16 (95%CI-0·25 to -0·06) p=0·001) resulted in significant changes in children's BMIz compared to control schools. Likewise, WC changed in favor of both full and partial HPSFs. In full HPSFs, almost all dietary behaviors changed significantly in the short term. In the long term, only consumption of water and dairy remained significant compared to control schools.

Conclusions: The HPSF is effective in bringing unfavorable changes in children's body composition to a halt in both the short and long term. This offers policy makers robust evidence to sustainably implement the program in school-based routine. Providing healthy school lunches is feasible as long as parents, children and schools are involved in implementation. Complementing this with a continuum of dietary approaches targeting multiple aspects of children's social, cultural, economic and physical environment throughout childhood, adolescence and towards adulthood, will optimize the impact on population health.

Longitudinal changes in healthy intake from primary to secondary school

Miss Roselinde van Nee[1], Dr. Ellen van Kleef[1], Prof. Hans van Trijp[1]
[1]Wageningen University & Research, Wageningen, Netherlands

SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: As children move into adolescence, their eating habits tend to become more unhealthy. Changes in the school environment may explain this negative impact on healthy eating habits. In particular the primary-secondary school transition could influence eating habits due to changes in the social and physical environment. This study examines how the transition from primary to secondary school impacts preadolescents' food choices by using a Self-Determination Theory (SDT) perspective.

Methods: In this longitudinal study, Dutch preadolescents were followed from their last year of primary school (T1) into their first year of secondary school (T2). A questionnaire was distributed, which was completed by 142 preadolescents with a mean age of 12.18 (SD = .43) at T1 (June 2019) and 66 preadolescents at T2 (March 2020). Due to corona, secondary schools were closed and further data collection was cancelled as the questionnaire was mainly focused on eating behaviors at school. More specifically, the questionnaire included measures on snack and beverage intake at school, food-related autonomy, competence to eat healthily, healthy eating motivation and school environmental and eating characteristics. A healthy intake ratio was calculated to indicate the relative healthiness of snack and beverage consumption within preadolescents' total consumption. Descriptive statistics, correlations and linear mixed-effects models were conducted.

Results: Preliminary results from linear mixed-effects model analyses show that preadolescents' healthy snack and beverage intake at school decreased when they transitioned from primary to secondary school (β = -7.31, SE = 2.84, 95% CI [-12.88, -1.73], p = .01). On average, 62.9% of preadolescents' total snack and beverage intake at school consisted of healthy options at T1. At T2, 57.8% of their total intake was healthy. In addition, competence to eat healthily was associated with increased healthy intake ratio over time (β = 2.27, SE = 0.66, 95% CI [0.97, 3.57], p < .001). Healthy eating motivation and food-related autonomy were not associated with changes in preadolescents' healthy intake ratio over time.

Conclusion: The transition from primary to secondary school negatively affects preadolescents' healthy intake at school. Healthy intake decisions at school environments could be supported by targeting SDT needs.

An analysis of adolescents' exposure to and evaluation of food promotions on social media platforms.

Miss Daphne van der Bend[1,2], Miss Tammie Jakstas[1], Dr. Ellen van Kleef[2], Dr. Vanessa Shrewsbury[1], Dr. Tamara Bucher[1]
[1]*University of Newcastle, Newcastle, Australia,* [2]*Wageningen University & Research, Wageningen, Netherlands*

SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Traditional food marketing, mostly involving advertisement of nutrient poor and energy dense foods, has the effect of enhancing attitudes, preferences and increased intake of marketed foods in adolescents, with detrimental consequences for health. While the use of social media applications in adolescents has proliferated, little is known about the content of food promotions within these applications. The aim of this study was to investigate adolescents' exposure to and evaluation of social media food promotions (SMFP).

Methods: Australian adolescents aged 13-16 years joined a one-on-one Zoom meeting with the researcher, on the device they normally use to access social media. Participants shared their screen and visited up to three of their favourite social media platforms while the researcher indicated SMFP examples, for 10 minutes each platform. Next, the participants answered questions about their awareness and appreciation of SMFP. Screenshots of food promotions were de-identified and analysed.

Results: The study included 35 adolescents aged 14.4 (±1.2) years (boys: n=18; girls: n=17). Instagram, Snapchat and YouTube were their most favourite social media platforms. During a total of 1000 minutes of viewing time, 1903 posts containing unbranded (n=1292) and branded (n=611) food content were identified. Participants viewed a median rate (IQR) of 13.0 (7-21) SMFP per 10 minutes, with 7.0 (3.3-12.3) SMFP containing a majority of non-core foods. A majority (67%) was embedded in celebrity influencer or entertaining content (e.g. vlogs, cooking videos, streamed TV content). More than half of participants (60%) said to have sometimes, rarely or never recognized the viewed food promotions themselves, and participants largely remembered non-core foods or (fast food) brands (77%). Almost half (49%) of participants liked SMFP, while only 6% disliked them.

Conclusions: This study contributes to a relatively unexplored research area. The outcomes show adolescents' SMFP exposure mostly concerns unhealthy foods, shown in advertisements and other food-related posts, which are integrated into a wide variety of entertainment that is largely appreciated by adolescents. The results emphasize the need for more research on SMFP, with particular focus on the impact on adolescent dietary behaviours, and clearer definitions and stricter regulations regarding adolescent-targeted social media food marketing.

D2S.2.04 - Participatory research methods: Where is the science?

Room 156

May 20, 2022, 8:00 AM – 9:30 AM

Prof. Sebastien Chastin, Glasgow Caledonian University

We will organize a debate about critical issues raised by participatory research methodologies in the form of a mock trial. Participatory methods are becoming more prevalent in research with methodologies such as citizen science, co-creation, or group model building in system thinking. As the use of participatory methods in health research proliferates, it becomes increasingly necessary to consider how the value of participatory methods should be assessed. This debate will discusses the problem posed by the novelty and diversity of participatory approaches and considers the question of what criteria are appropriate for assessing the validity of a participatory approach. These present a challenge in the way we understand evidence. Participatory methods provide contextually and locally rich evidence but how can this be generalisable, scaled or transported to other settings. Proponent of participatory methods point to the democratic values of participatory methods and their efficacy in developing solutions that work locally. Opponents question whether these methods are scientific and provide trust worthy evidence that can be useful.

S.2.13 - Movement behaviours in infants and toddlers: Exploring associations with health, measurement, and prevalence

Room 150

May 20, 2022, 8:30 AM - 9:45 AM

Purpose:
To highlight the importance of movement behaviours (i.e. physical activity, sedentary time and sleep) in infants and toddlers (0-3 years), by discussing: associations between movement behaviours and health outcomes, how best to measure these behaviours, and current adherence to movement guidelines, across a range of low, middle, and high income countries.

Rationale:
International guidelines provide recommendations for infant and toddler 24-hour movement behaviours including: tummy time for infants <12 months; minimising time restrained, sedentary and in front of screens (whilst encouraging reading); and the importance of adequate, consistent sleep. However, relatively little is known about the health benefits of movement behaviors, optimal measures, particularly for surveillance, and adherence to guidelines in this age-group. Grounded within the Behavioural Epidemiology Framework, this symposium will address these gaps.

Objectives:
This symposium aims to: 1) describe the associations between movement behaviours and health and developmental outcomes in 0-3-year-olds; 2) evaluate measurement methods currently available and parental preferences thereof; and 3) describe current levels of movement behaviours in infants and toddlers, including guideline adherence, in North America, Europe, Australia and South Africa. It also aims to provoke discussion about current adherence, and how we might encourage young children to meet 24-hour movement guidelines internationally.

Summary:

An introduction will outline the increasing interest in movement behaviours in 0-3-year-olds and international recommendations. This will be followed by the three presentations, which will then be summarised by the discussant. The discussant will consider research evidence from LMICs, setting this symposium in a global context, and facilitate an audience discussion about how to integrate and expand upon current evidence to advance this relatively nascent research field. The symposium will end by reflecting on how we might encourage improved movement behaviours in very young children globally.

Format:

The chair, Dr Kathryn Hesketh, will introduce the symposium (5 minutes), which will be followed by three ten-minute presentations, each with a further five minutes allocated for questions/ clarification. These will be delivered by: Dr Lyndel Hewitt; Dr Xanne Janssen and Prof Valerie Carson. The discussant, Dr Alessandra Prioreschi will summarise and lead the subsequent audience discussion (approximately 25 minutes).

Interaction:

The majority of presenters currently intend to attend in person, but will make a decision closer to the conference. The Chair will facilitate the equal inclusion of in-person and online attendees, taking questions from both in-person and online attendees and repeatings comments, discussion points, and answers from attendees where needed.

Tummy Time and Infant Health Outcomes: A Systematic Review.

Dr Lyndel Hewitt[1,2], Ms. Erin Kerr[3], Prof. Anthony Okely[2,3], Dr. Rebecca Stanley[2,3]
[1]*Illawarra Shoalhaven Local Health District, Wollongong, Australia,* [2]*Illawarra Health and Medical Research Institute,, Wollongong, Australia,* [3]*Early Start, University of Wollongong, Wollongong, Australia*

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Physical Activity

Purpose: The World Health Organization recommends tummy time for infants due to the benefits of improved motor development and reduced likelihood of plagiocephaly. As uptake of these recommendations are poor, the association of tummy time with other health outcomes requires further investigation. The aim of this study was to review existing evidence regarding the association of tummy time with a broad range of health outcomes.

Methods: Electronic databases were searched up to April 2019 (and an update will be conducted in January 2022). Peer-reviewed English-language articles were included if they investigated a population of healthy infants (0 to 12 months); used an observational or experimental study design containing an objective or subjective measure of tummy time; and examined associations with a health outcome (adiposity, motor development, psychosocial health, cognitive development, fitness, cardiometabolic health, or risks/harms). Two reviewers independently extracted data and assessed study quality.

Results: Sixteen articles representing 4237 participants from 8 countries were identified in 2019. Tummy time was positively associated with: gross motor and total development, a reduction in the BMI-z score, prevention of brachycephaly, and the ability to move while prone, supine, crawling, and rolling. An indeterminate association was found for social and cognitive domains, plagiocephaly, walking, standing, and sitting. No association was found for fine motor development and communication. Most studies were observational in design and lacked the robustness of a randomized controlled trial. High selection and performance bias were also present. Updated results, including studies identified in 2022, will be discussed.

Conclusions: These findings guide the prioritization of interventions aimed at assisting parents meet the global and national physical activity guidelines in young children.

Measuring 24-hour movement behaviours in children under 18 months: prevalence and parental preferences

Dr. Xanne Janssen[1], **Dr. Kathryn Hesketh[2]**
[1]University of Strathclyde, Glasgow, United Kingdom, [2]MRC Epidemiology Unit, Cambridge University, Cambridge, United Kingdom

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Despite many countries issuing 24-hour movement guidance for under 5s, no country to date has an appropriate national surveillance system to assess physical activity in infants and toddlers (0-3 years). Having valid and reliable methods to assess movement behaviours, and the time children spend therein, is therefore vital. Importantly, methods must also be feasible and acceptable to parents for them to be widely used. This study therefore explored possible questionnaire measures, and sought to understand parental preferences relating to measurement, of 24-hour movement behaviours in a sample of UK 0-18 month olds.

Methods: A UK-wide exploratory cross-sectional study was conducted in July 2020 and June 2021, with participants recruited via social media. Participants were eligible to participate if they were a UK resident, aged $\geq$18 years, and a parent or caregiver of a child aged 0-18 months old. Participants were asked to complete an online questionnaire, including questions about time spent in various activities, and preferences for activity monitor placement (i.e. hip, ankle, wrist or thigh). Prevalence and preference data were described and differences between age groups tested using independent measures ANOVA and chi-square tests.

Results: A total of 167 parents (child mean age: 9.6 months, 52.1% boys) provided data. On average, children spent 24.2 minutes/day in tummy time, 17 min/day in front of screens, 131.6 minutes/day restrained, and slept 13.1 hours/day. While no significant differences were found between age groups, trends of increasing tummy time, screen time and time spent restrained up to 8-11.9 months were seen; sleep decreased with age. For all age groups, most parents (65.5%) reported a preference for their child wearing an ankle monitor, and were least likely to let their child wear a thigh or hip monitor (70.1% and 57.5%, respectively).

Conclusions: This study highlights the potential of questionnaire-based measures to be used in surveillance to assess movement behaviours in under 2s. For device-based measures, parents have very clear preferences for monitor placement. This may in turn influence the likelihood of parents allowing their child to participate in studies, and should be considered by researchers.

Adherence to Canadian 24-Hour Movement Guidelines among infants and longitudinal associations with development

Dr. Valerie Carson[1], Dr. Zhiguang Zhang[1], Ms. Madison Predy[1], Dr. Lesley Pritchard[1], Dr. Kylie Hesketh[2]
[1]*University of Alberta, Edmonton, Canada*, [2]*Deakin University, Geelong, Australia*

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: To examine: 1) longitudinal adherence to the Canadian 24-Hour Movement Guidelines in a sample of infants and 2) longitudinal associations between adherence to the guidelines and development.

Methods: Participants were 250 parent-infant dyads from the Early Movers project in Edmonton, Alberta. At 2, 4, and 6 months of age, physical activity, sedentary behaviour, sleep, and development were measured with a parental questionnaire that included items from the Ages & Stages Questionnaire (ASQ-3). Parents also reported the dates six major gross motor milestones were acquired during the first 18 months of life according to World Health Organization criteria. In a subsample (n=93), movement behaviours were also measured with a time-use diary at 2, 4, and 6 months and gross motor development was measured by a physiotherapist using the Alberta Infant Motor Scale (AIMS) at 6 months. Guideline adherence was defined as: 1) ≥30 minutes/day of tummy time, 2) no screen time, some reading time, no restrained bouts >1 hour (time-use diary only), and 3) 14-17 hours (2 months) or 12-16 hours (4 and 6 months) of sleep per 24-hour period. Generalized estimating equations were conducted as well as linear mixed models and linear regression models that adjusted for demographic characteristics.

Results: Few infants met the guidelines at all time-points (questionnaire: 2%; time-use diary: 0%). Infants that met a recommendation at 2 months, compared to those that did not, were 1.8-8.2 times more likely to meet that recommendation at subsequent time-points. Meeting more recommendations across time-points, according to both measures, was associated with a higher mean ASQ-3 gross motor score. Each additional time-point of tummy time recommendation adherence (questionnaire-measured) was associated with a 5-11-day earlier acquisition of independent sitting, crawling, and independent standing milestones. In the sub-sample, each additional time-point of guideline adherence was associated with a 16% higher AIMS score at 6 months.

Conclusions: Guideline adherence was low across the first 6 months of infancy. Overall, meeting more recommendations over this period appeared important for gross motor development. Parents and caregivers should be targeted as early as possible with guideline dissemination and activation strategies to promote healthy infant development.

S.2.14 - Prevention and management of non-alcoholic fatty liver disease with lifestyle behaviors

Room 153

May 20, 2022, 8:30 AM - 9:45 AM

Purpose:
The purpose of this symposium is to share background information on non-alcoholic fatty liver disease (NAFLD), the association of lifestyle behaviors with this condition and with progressive forms of the disease, and behavioral lifestyle interventions targeted at the management of NAFLD with weight loss, dietary improvements, and physical activity.

Rationale:
NAFLD is now the leading form of chronic liver disease, an increasingly important underlying etiology for liver cancer, and the fastest growing indication for liver transplantation. The estimated prevalence of the condition across the world is 25%. The burden in sub-populations, such as Hispanic/Latinos in the U.S., is even higher. There is a lack of awareness of this condition- of its pervasiveness and of the potential to intervene with lifestyle behavior change.

Objectives:
This multi-disciplinary panel will share background information on NAFLD, the association of lifestyle behaviors with NAFLD and fibrosis, and results from qualitative analyses and behavioral lifestyle interventions for the management of NAFLD in diverse populations.

Summary:
Dr. Natalia Heredia will provide an overview of the problem of NAFLD, the association of lifestyle behaviors with NAFLD and how behavioral lifestyle interventions can help manage NAFLD and prevent adverse liver outcomes. She will then share work on physical activity and diet as risk factors for NAFLD and fibrosis in a representative sample of U.S. adults. Dr. David O. Garcia will discuss initial steps towards tailoring an intervention approach for NAFLD prevention and treatment in Mexican-origin men, and describe effective

community-engaged approaches in this population. Drs. Leah Avery and Kate Hallsworth will present findings of a pilot study assessing the feasibility and acceptability of a very-low calorie diet (VLCD) as a management approach for patients with advanced NAFLD. Factors associated with uptake and adherence to VLCD will be presented to facilitate discussion around how VLCD can be integrated into routine care pathways. Each talk will highlight the critical importance of physical activity and nutrition in both the prevention and management of NAFLD. Dr. Alkhouri will provide interpretations and applications from a translational perspective and how these findings can apply in diverse settings.

Format:
Natalia Heredia, PhD, MPH (Texas, USA, 10-minute introductions and brief overview; 15-minute presentation); David O. Garcia (Arizona, USA, 15-minute presentation); Leah Avery, C.Psychol, PhD and Kate Hallsworth, PhD (England, UK, 15-minute presentation); Naim Alkhouri (Arizona, USA, 20-minute moderated cross-cutting discussion)

Interaction: 20-minute moderated general discussion, based largely on audience questions.

Association of lifestyle behaviors with non-alcoholic fatty liver disease and advanced fibrosis detected by transient elastography in U.S adults.

Dr. Natalia Heredia[1], Dr. Xiaotao Zhang[2], Dr. Maya Balakrishnan[3], Dr. Jessica Hwang[2], Dr. Aaron Thrift[3]
[1]The University of Texas Health Science Center at Houston (UTHealth) School of Public Health, Houston, USA, [2]The University of Texas MD Anderson Cancer Center, Houston, USA, [3]Baylor College of Medicine, Houston, USA

SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose. Non-alcoholic fatty liver disease (NAFLD) is a highly prevalent liver disease in U.S. adults. Physical activity and dietary behaviors have established protective associations with NAFLD and its severity; however, the associations of these lifestyle behaviors with NAFLD has not been well characterized in a representative sample of U.S. adults using imaging. The purpose of this study was to assess the association of lifestyle behaviors with NAFLD and advanced fibrosis as ascertained by vibration controlled transient elastography (VCTE; FibroScan®) with controlled attenuation in U.S. adults.

Methods. This cross-sectional analysis uses data from 2017–2018 National Health and Nutrition Examination Survey (NHANES). NAFLD was defined as controlled attenuation parameter (CAP)≥285 dB/m, and advanced fibrosis as liver stiffness measurements ≥8.6 kPa. Multivariate-adjusted logistic regression models assessed associations of physical activity and sedentary behavior (Global Physical Activity Questionnaire), as well as diet quality (Healthy Eating Index [HEI]-2015) and total energy intake (24-hour recall) with NAFLD and advanced fibrosis.

Results. The overall prevalence of NAFLD was 35.6%, while the prevalence of advanced fibrosis among those with NAFLD was 5.6%. We found that higher levels of physical activity and high diet quality were associated with lower risk of NAFLD. Compared to those reporting on average <4.67 metabolic equivalent (MET) hours/week of physical activity, participants reporting 4.67 – 60 MET hours of physical activity/week) had 65% lower risk of NAFLD (Adjusted OR=0.65, 95%CI 0.42, 0.99) and those reporting (≥60 MET hours/week had 65% lower risk of advanced fibrosis (Adjusted OR=0.35, 95%CI 0.16, 0.75). High diet quality (HEI-2015) was associated with a 40% lower risk of NAFLD (Adjusted OR=0.60, 95% CI 0.44, 0.84), as compared to those who reported low diet quality. As compared to adults with both low HEI-2015 and high total energy intake, those with combined highest levels of HEI and lowest total energy intake had 82% lower risk of advanced fibrosis.

Conclusions. In this population-based study, increased physical activity and high diet quality were associated with NAFLD and advanced fibrosis. Public health and medical professionals need to concentrate efforts on lifestyle behavior change in U.S. adults who are at high risk for serious liver disease.

A Qualitative Analysis of Mexican-origin Men's Knowledge and Cultural Attitudes Towards Non-Alcoholic Fatty Liver Disease and Interest in Risk Reduction

Dr. David Garcia[1], Mr. Edgar Villavicencio[1], Dr. Rebecca Crocker[1]
[1]*The University of Arizona Mel & Enid Zuckerman College of Public Health, Tucson, USA*

SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose. The purpose of this qualitative research was to assess Mexican-origin men's knowledge and cultural attitudes toward NAFLD and their interest in risk reduction.

Methods. Semi-structured interviews were conducted with 11 Spanish speaking Mexican-origin men who were considered high-risk of having NAFLD according to vibration controlled transient elastography (VCTE; FibroScan®) continuous attenuation parameter (CAP) scores (≥280). Audio recordings of these interviews were transcribed and interpreted in their respective language to facilitate data analysis using NVivo 12. A thematic codebook was developed, from which the research team identified emerging themes.

Results. Findings demonstrated limited knowledge about NAFLD and in general about chronic liver disease among Mexican-origin men. Cultural attitudes appeared to both enhance and mitigate their perceived risk for NAFLD. Interviews also revealed high levels of interest in reducing NAFLD risk, with family and loved ones acting as the main motivators for engagement in healthier lifestyle behaviors. This high-risk population was interested in the potential of family-based lifestyle interventions.

Conclusion: This qualitative study suggests that the development of a NAFLD-specific intervention approach for Mexican-origin men may be feasible and should consider a familial and cultural context centered in improving lifestyle health behaviors.

Assessing feasibility and factors associated with uptake and adherence to a very low-calorie diet to achieve 10% weight loss in adults with advanced non-alcoholic fatty liver disease

Dr. Leah Avery[1, 2], **Dr. Kate Hallsworth**[2, 3], Dr. Jadine Scragg[2, 3, 4], Dr. Guy Taylor[2], Dr. Sophie Cassidy[2,5], Mrs. Laura Haigh[3], Dr. Marie Boyle[3], Dr. Quentin Anstee[2,3], Dr. Stuart McPherson[2, 3]

[1]Teesside University, Middlesbrough, United Kingdom, [2]Newcastle University, Newcastle upon Tyne, United Kingdom, [3]Newcastle NIHR Biomedical Research Centre, Newcastle Upon Tyne, United Kingdom, [4]University of Oxford, Oxford, United Kingdom, [5]University of Sydney, Sydney, Australia

SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Clinical guidelines recommend weight loss to manage non-alcoholic fatty liver disease (NAFLD), however many find dietary behavior change to initiate and sustain weight loss a significant challenge. We aimed to determine whether a very low-calorie diet (VLCD) is an acceptable and feasible approach to achieve and maintain 10% weight loss in adults with clinically significant NAFLD. Following completion of the 8-12 week VLCD, we interviewed participants to identify factors associated with uptake and adherence.

Methods: 23/30 participants who were enrolled in a pilot study of the VLCD (~800 kcal/day) took part in a semi-structured qualitative interview. Interviews were audio recorded, transcribed verbatim and thematically analyzed.

Results: 30 adults agreed to participate in the pilot study and 27 (90%) completed the VLCD intervention. 20 (67%) were retained at 9-month follow-up. The VLCD was acceptable and feasible to deliver. 34% of participants achieved and sustained 10% weight loss, 51% achieved 7% weight loss, and 68% achieved 5% weight loss. Five main themes were identified from post-intervention semi-structured interviews. A desire to achieve rapid weight loss to improve liver health and prevent disease progression was the most salient facilitator to uptake. Early and significant weight loss; accountability to clinicians; personalized feedback and the desire to receive positive reinforcement from a consultant were facilitators to adherence. Practical and emotional support from friends and family members were important for self-regulation. Irregular working patterns that prevented attendance at appointments were barriers to adherence and completion of the intervention.

Conclusions: A VLCD offers an acceptable and feasible treatment option for NAFLD to enable a sustainable 10% weight loss that can improve liver health, cardiovascular risk, and quality of life. Uptake and adherence rely on early and rapid weight loss. Personalized feedback and positive reinforcement in the clinical setting, combined with ongoing social and practical support from friends and family members is important for self-

regulation. Findings highlight the importance of intensive behavioral support during the early stages of dietary behavior change using a VLCD approach.

S.2.15 - Comparing designs for resilient whole community physical activity systems for children: Wellscapes rural community randomized trial Wave One effectiveness and implementation outcomes

Room 152

May 20, 2022, 8:30 AM - 9:45 AM

Purpose:
This symposium will illustrate the processes of building and coordinating resilient whole community physical activity (PA) systems. We will introduce whole community PA systems, how to coordinate PA systems utilizing feedback process control system theory, and the PA outcomes produced through reporting Wave One results from Wellscapes, an NCI-funded Type 3–Hybrid Implementation-Effectiveness rural community randomized trial (ClinicalTrials.gov Identifier: NCT03380143).

Rationale:
Resilient whole community PA systems have the capacity to sustain and enhance PA outcomes in response to disturbances through adaptation and transformation of structural arrangements among agents. The whole community child PA system of agents (e.g., organizations, adults, and children) can be observed as a landscape of place-based group settings (e.g., school classrooms, after school programs, youth clubs, and youth sport team settings) and setting leader routine PA practices. This symposium draws from feedback control systems design principles with sensor, controller, and implementer functions to compare whole community PA coordination systems. Collective Impact (CI) hierarchical arrangement and alignment among stakeholders were planned to emerge through facilitating a community level monocentric control system (coalition) that engaged organizational leaders (implementers) in accountability through monitoring/feedback (sensor) of progress on a common agenda, program delivery plan, and surveillance of population PA outcomes. Wellscapes heterarchical arrangement among stakeholders was planned to emerge through facilitating a polycentric control system (community hub) that engaged organizational and adult setting leaders in stewardship through monitoring/feedback of provision of community group PA settings and setting routine PA

practices. Our central hypothesis was Wellscapes should improve in effectiveness-implementation outcomes compared to CI by fostering resilience through providing a diversity of community PA options and setting PA practices.

Objectives:
1) Description of resilience as process control system theory functions and their implementation in Wellscapes and CI conditions.
2) Description of the community-level data monitoring and feedback intervention and PA outcomes in Wellscapes and CI conditions.
3) Description of the setting-level data and feedback system intervention and PA outcomes in Wellscapes and CI conditions.

Summary: Dr. Dzewaltowski will define a resilient whole community PA system and the implementation-effectiveness community randomized trial study design (10 minutes). Next, three presentations provide results comparing community coordination system architectures: (1) community hub capacity building process (15 minutes), (2) community monitoring and feedback system (15 minutes), (3) setting monitoring and feedback system (15 minutes). The discussant, Dr. Schlechter, will comment on the presentation (5 minutes) and moderate a discussion (15 minutes).

Differences in control systems for a whole community physical activity intervention in two randomized rural communities engaging in an Investigate-Design-Practice-Reflect (IDPR) iterative improvement process to build community resilience.

Dr. Marisa Rosen[1], **Dr. Regina Idoate**[1], Ms. Mary Von Seggern[1], Dr. Debra Kellstedt[2], Dr. Brandon Grimm[1], Dr. Athena Ramos[1], Ms. Ann Essay[1], Dr. David Dzewaltowski[1]
[1]University of Nebraska Medical Center, Omaha, USA, [2]Texas A&M University, College Station, USA

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: The feedback control system includes a flow of information through sensor, controller, and implementer processes. This study compares control system theory functions in two distinct stakeholder community groups aiming to improve community population physical activity through a locally-driven rapid improvement cycle, Investigate-Design-Practice-Reflect (IDPR).

Methods: In Wave 1, two rural communities were randomized to one of two data feedback systems, the Wellscapes (WS) or Collective Impact (CI) condition. One community engaged in a locally-driven IDPR cycle within the WS model while the other community engaged in the IDPR cycle within the CI model. The IDPR cycle is an iterative, data-driven decision-making process allowing communities to rapidly process and feed back information into the system to achieve a population health outcome. We recorded and observed four stakeholder meetings in each of the two communities (n=8) and conducted and transcribed stakeholder interviews from each community (n=2). Three researchers analyzed the interviews using a deductive-inductive, framework analysis approach to examine data by three core elements of a control systems framework: sensors, controllers and implementer. One researcher qualitatively analyzed and coded stakeholder meeting observations data. All data was later compared and triangulated.

Results: Observations of stakeholder group meetings and interviews with meeting members from the two community groups revealed differences in sensors, controllers, and implementers in each community. We identified one overarching theme: WS stakeholders made decisions from a polycentric perspective, while the CI stakeholders made decisions from various monocentric perspectives as evidenced by flow of information (e.g., community data reports, video observations, stakeholder stories) through feedback loops to drive stakeholders' decision making. Three sub themes emerged identifying differences between WS and CI sensors (summary data vs. data points), controllers (employed vs. volunteer), and implementers (collective vs. individual).

Conclusions: Manipulation of the control system resulted in differences in the flow of information, The WS stakeholders thought about the IDPR cycle from a holistic, big picture and systems change approach, while the

CI stakeholders' approach focused on program implementation to achieve a specific outcome. IDPR presents a way to communicate process control theory functions in communities with different architectural structures.

Establishing a whole community data monitoring and feedback system to investigate population-level youth physical activity behavior

Dr. Michaela Schenkelberg[1], Ms. Ann Essay[4], Ms. Mary Von Seggern[4], Dr. Marisa Rosen[4], Dr. Chelsey Schlecter[5], Dr. Greg Welk[2], Dr. Richard Rosenkranz[3], Dr. Philip Dixon[2], Dr. David Dzewaltowski[4]
[1]University of Nebraska-Omaha, Omaha, USA, [2]Iowa State University, Ames, USA, [3]Kansas State University, Manhattan, USA, [4]University of Nebraska Medical Center, Omaha, USA, [5]University of Utah, Salt Lake City, USA

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Community monitoring and feedback systems provide stakeholders with timely and relevant population data to inform local decision-making around youth health behaviors. This presentation will describe the process of establishing and implementing data monitoring and feedback systems in two rural communities for investigating population-level youth physical activity (PA).

Methods: Two rural communities were randomized to the Wellscapes (WS) or Collective Impact (CI) condition. The research team collaborated with local health departments and school systems to establish data monitoring systems and data sharing agreements (DSA). Stakeholders completed training to learn how to implement the online youth PA surveillance instrument, Youth Activity Profile (YAP), and use community data. Communities adopted PA surveillance as standard educational practice, and all 3rd–6th graders (Fall 2018, n = 465; Fall 2019, n = 501) were eligible to complete the YAP. Students' self-reported in-school, out-of-school, and weekend PA behaviors were used in a calibrated algorithm to estimate group-level PA. The research team provided community-specific aggregate data reports of YAP outcomes to stakeholders as part of the "Investigate" phase of the Investigate-Design-Practice-Reflect cycle. The WS community received detailed, time-segmented (i.e., in- and out-of-school, weekend) feedback about time spent in moderate-to-vigorous physical activity (MVPA). In contrast, the CI community received an overall estimate of time spent in MVPA. Mixed model ANOVAs examined MVPA by community and season (Fall 2018, Fall 2019).

Results: YAP response rates ranged from 86.1% to 95.4%, depending on the community and season. Baseline overall MVPA for WS and CI communities was 81.7±1.1 min/day and 74.0±1.1 min/day, respectively. From Fall 2018 to Fall 2019, youth in the WS community reported a significantly greater change in in-school MVPA compared to the CI community (p = 0.007). In-school MVPA increased from 29.7±0.2 min/day to 31.0±0.2 min/day (p <0.05) in the WS community, but there was no difference in the CI community. No differences were observed in overall, out-of-school, and weekend MVPA outcomes in both communities.

Conclusions: Community data monitoring and feedback systems are essential elements of resilient communities. These systems provide locally relevant population-level data in a timely manner to inform decision-making around improving youth PA outcomes.

A local data feedback system for group setting physical activity outcomes for children

Ms. Ann Essay[1], Ms. Mary Von Seggern[1], Dr. Michaela Schenkelberg[3], Dr. Marisa Rosen[1], Dr. Regina Idoate[1], Dr. Chelsey Schlechter[2], Dr. Richard Rosenkranz[4], Dr. Philip Dixon[5], Dr. David Dzewaltowski[1]

[1]University of Nebraska Medical Center, Omaha, USA, [2]University of Utah, Salt Lake City, USA, [3]University of Nebraska-Omaha, Omaha, USA, [4]Kansas State University, Manhattan, USA, [5]Iowa State University, Ames, USA

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Children spend a large proportion of time in adult-organized group settings (e.g., classrooms, youth clubs), and leader practices implemented within these settings drive the social structure that produces physical activity (PA). Communities need setting-level data feedback to achieve community resilience and PA outcomes. This presentation will describe the setting-level data collection and feedback system intervention and outcomes of the Wellscapes (WS) Project.

Methods: During Fall 2018 and Fall 2019, we video-recorded organized group settings (n=44) and meetings (n=130) and simultaneously collected accelerometer data for attending children. Meetings were time-segmented into smaller units (i.e., sessions). Sessions were coded for purpose (e.g., academic, PA) and matched with children's accelerometer data. The number and duration of sessions with a PA purpose and mean percentage of time (%time) in moderate-to-vigorous PA (MVPA) were assessed for each meeting. Mixed effects models examined changes in number and duration of implemented PA sessions and MVPA outcomes. Communities were randomized to a WS or Collective Impact (CI) feedback condition. All communities received quarterly data reports providing descriptive data on setting %time in MVPA. The WS condition also received specific group type (e.g., school grade, sport type) MVPA outcomes and setting implementation data on number of PA sessions.

Results: Across all community settings, the number of implemented PA sessions did not differ from Fall 2018 to Fall 2019. A significant community-by-season interaction (p=0.04) for the school setting showed the WS condition had a greater increase in duration (minutes) of implemented PA sessions (6.5±1.6 to 16.2±4.1) than the CI condition (20.7±5.2 to 18.0±4.5). WS had a greater increase (p=0.03) in school setting %time in MVPA (3.2±0.6% to 6.3±1.1%) than the CI condition (4.9±0.9% to 4.6±08%). The data reports provided to each condition were used as part of the Investigate-Design-Practice-Reflect cycle.

Conclusions: Setting-level data feedback within the WS condition may have contributed to greater implementation of PA sessions and effectiveness in improving school MVPA compared to PA outcome data alone in the CI condition. Setting-level data feedback on leader practices and PA outcomes may inform community data-driven decision-making for improving youth PA.

S.2.16 - Public open spaces for older adults' physical activity and mental health

Room 151

May 20, 2022, 8:30 AM - 9:45 AM

Purpose:
This symposium aims to present and discuss research examining the role of public open spaces (POS) for promoting physical activity and mental health among older adults. This will be achieved by presenting the development of a framework and results from empirical studies in countries with different POS characteristics and cultures (i.e. China and Belgium).

Rationale:
Using POS may benefit older adults' mental health through increased levels of physical activity or other mechanisms (e.g., stress recovery). While older adults' physical activity levels and mental health may especially benefit from active POS use, older adults are underrepresented among the users of particular POS (i.e. parks). Insights into how POS relate to older adults' physical activity levels and mental health are necessary to develop interventions aimed at maximizing physical activity in POS and mental health among older adults.

Objectives:
1. To initiate reflection and discussion about the pathways between (characteristics of) POS, physical activity and mental health.
2. To showcase recent research on the relationships between POS and physical activity / mental health among older adults in China and Belgium.

Summary:

The first presentation will present a framework for studying the relationships between POS, physical activity and mental health among older adults. The second presentation will focus on the longitudinal relationships between GIS-derived park availability and accelerometer-measured levels of light-intensity and moderate-to-vigorous intensity physical activity among Belgian older adults. The third presentation will present a study on the relationship of green space derived from remote sensing data and street view images with mental health among Chinese older adults.

Format:
- 5': Introduction by the chair Delfien Van Dyck (live)
- 15': Jelle Van Cauwenberg (live): The development of a framework for studying the relationships between public open spaces, acute mental states, physical activity and mental health among older adults.
- 15': Louise Poppe (live): Park availability and physical activity among older adults: a longitudinal study
- 15': Yafei Yue (online): Urban greenspace and mental health in Chinese older adults: associations across different greenspace measures and mediating effects of environmental perceptions.
- 25': Discussion led by Jenny Veitch (live or online)

Interaction:

The live and online audience will be encouraged to ask questions during the discussion. The online audience will be invited to ask questions via the chat box function, which will be summarized and presented by the discussant. Interaction and discussion will be stimulated by questions prepared in advance by the presenters and discussant.

The development of a framework for studying the relationships between public open spaces, acute mental states, physical activity and mental health among older adults

Dr. Jelle Van Cauwenberg[1,4], Miss Noortje Jacobs[1], Dr. Louise Poppe[1,4], Dr. Jenny Veitch[2], Prof. Delfien Van Dyck[1], Prof. Benedicte Deforche[1,3]

[1]*Ghent University, Ghent, Belgium,* [2]*Deakin University, Melbourne, Belgium,* [3]*Vrije Universiteit Brussel, Brussels, Belgium,* [4]*Research Foundation Flanders, Brussels, Belgium*

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: The potential mediating role of acute mental states (emotions and stress) has been largely ignored when studying the relations between physical and social environmental characteristics of public open spaces (POS) (e.g. streets, parks) and older adults' physical activity levels or long-term mental health outcomes. We aim to develop a framework describing the pathways between objective and subjective environmental characteristics of POS, acute mental states while using the POS, (active) use of POS and mental health among older adults.

Methods: We performed a scoping review to develop a preliminary version of the framework. This framework will be further developed based on (1) systematic reviews of reviews, (2) a qualitative study using walk-along interviews and (3) expert input. Systematic reviews of reviews will be performed for the different relations included in the framework (e.g., POS characteristics and acute mental states in the POS, POS characteristics and (active) use of POS). to assess the strength of evidence for these relationships and identify research gaps. Given that our scoping review showed that there is limited research on what acute emotional states older adults experience while walking through POS and how these are influenced by POS characteristics, a qualitative study using walk-along interviews will be performed to identify how POS characteristics influence acute emotional states among Belgian older adults. Finally, the framework will be presented to experts in the relevant research areas to provide feedback.

Results: The study will result in a framework describing the potential pathways between objective and subjective environmental characteristics of POS, acute mental states when visiting a POS, (active) use of POS and mental health outcomes. Research gaps will be identified.

Conclusions: The framework will identify potential moderators, mediators and confounders of the included relationships and will inform future studies on this topic. It will provide an overview for the following two studies presented in this symposium.

Park availability and physical activity among older adults: a longitudinal study

Dr. Louise Poppe[1], Prof. Benedicte Deforche[1], Dr. Jelle Van Cauwenberg[1], Dr. Ruben Brondeel[1], Dr. Lieze Mertens[1], Prof. Nico Van de Weghe[1], Ms. Sien Benoit[1], Associate Prof. Jenny Veitch[2], Prof. Delfien Van Dyck[1]
[1]Ghent University, Ghent, Belgium, [2]Deakin University, Ghent, Australia

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Public parks are an accessible setting to promote older adults' activity levels. However, research investigating the association between park availability and older adults' physical activity levels using objective methods is scarce and mainly cross-sectional. The aim of this study was to examine the cross-sectional and longitudinal associations between the number of parks near home and levels of physical activity among older adults.

Methods: At baseline, 431 older adults (mean age: 74.3 years, 54% women) participated in the study. Three years later, 147 participants (mean age: 72.4 years, 52% women) of this original sample took part in the follow-up. Participants' levels of light physical activity (LPA) and moderate-to-vigorous physical activity (MVPA) were assessed using accelerometry. The number of public parks around participants' residence was calculated using Geographic Information System (GIS) technology. Generalized linear mixed models were fitted to assess the cross-sectional and longitudinal associations between the number of parks near home and participants' levels of LPA and MVPA.

Results: At baseline, a higher number of parks near home predicted higher levels of MVPA, especially among the youngest segment of older adults ($B(SE) = -0.20(0.07)$, $p = .01$). Longitudinally, a three-way interaction between the number of parks in the buffer, time (i.e. baseline vs. follow-up) and participants' age was detected for LPA ($B(SE) = -1.74(0.66)$, $p = .01$) as well as MVPA ($expB(SE) = -0.02(0.01)$, $p = .02$). Among the younger-old, having more parks near home predicted a slower (LPA) or equal (MVPA) decline in physical activity in comparison with having less parks near home. However, older participants having more parks nearby showed a stronger decline in their levels of LPA and MVPA than older participants having less parks nearby.

Conclusions: The results of this study highlight the relevance of ensuring that (1) parks are not removed in existing developments and (2) sufficient attention is given to the number of parks in new developments. However, more research examining the park-related needs of the older-old is needed to unleash the potential beneficial effects of having many parks nearby for this target group.

Urban greenspace and mental health in Chinese older adults: associations across different greenspace measures and mediating effects of environmental perceptions

Mr. Yafei Yue[1,2], Prof. Delfien Van Dyck[1]
[1]Department of Movement and Sports Sciences, Faculty of Medicine and Health Sciences, Ghent University, Gent, Belgium, [2]Research Section of Environmental Health, School of Architecture and Fine Arts, Dalian University of Technology, Dalian, China

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sleep

Background: Greenspace may promote older adults' mental health by relieving stress and restoring concentration to a certain extent. However, there are apparent differences in the relationship between greenspace and mental health, when greenspace is measured from diverse perspectives (e.g., greenery coverage, street view greenery and greenery in parks). Until now, the nature and direction of these associations in older adults are unclear. The aim of this study was to examine and contrast the effects of Normalized Difference Vegetation Index (NDVI), green coverage, streetscape greenspace and park coverage on older adults' mental health. Also, we explored the moderating effects of individual socio-demographics and neighborhood-level greenspace on older adults' mental health.

Methods: Data among 879 respondents aged 60 or older were collected in Dalian, China using spatial stratified random sampling. The older adults' mental health indicator involved place-related, emotional and evaluable well-being. Greenspace exposure was described through overhead-view, streetscape view and spatial distribution of parks. A machine learning approach was implemented to extract streetscape trees and grasses from the downloaded images. Multilevel regression models were used for data analyses.

Results: NDVI, greenery coverage rate, street view grasses rate and parks coverage rate are positively correlated with older adults' mental health, and the associations of exposure metrics measured by the over-head view were stronger than those measured by street view. Street view grasses have a stronger association with older adults' mental health than street view trees. For socio-demographics, the slope in the relationship between NDVI and mental health among 70s-80s is higher than other elderly groups. And mental health of older adults with low-income was relatively more related to street view grass than other age groups.

Conclusions: Our findings indicate that all greenery measures capture different aspects of natural environments and may contribute to older adults' mental health by means of different mechanisms. Also, age and income may be an effect modifier of green space affecting mental health due to various opportunities and motivations to access greenspace, and intensity of moderating effect varies at diverse greenery metrics.

S.2.18 - Measuring policy actions for healthy and sustainable food and physical activity environments

Room 155

May 20, 2022, 8:30 AM - 9:45 AM

Purpose:
This symposium will present the learnings from the 'Policy Evaluation Network' (PEN) on physical activity (PA) and food policy implementation and evaluation, and put the results into perspective.

Rationale:
Public policies are increasingly recognized as important upstream component of PA and dietary behaviours as they have the potential to influence whole populations. To enable monitoring and benchmarking public policies that are related to PA and dietary behaviours, standardized assessment of these policies is required. However, the systematic evaluation, benchmarking and monitoring of public policies that promote healthy environments is challenging and remains in its infancy. Therefore, guidance is needed on how to effectively monitor policy interventions for accountability and impact.

Objectives:
This symposium will present research on food and PA policy monitoring and evaluation in Europe, examining monitoring and benchmarking tools for usefulness and potential to address health and sustainability issues. Findings presented will demonstrate how 'Environment Policy Index' (EPI) tools can assess and compare the extent of implementation of national government policies and actions, for creating healthy environments against international best practice, while also aiding in identifying and prioritizing implementation gaps.

Summary:
The Food- and PA- EPIs will enable national and international monitoring, benchmarking and comparisons of public sector policies. Through highlighting implementation gaps, findings will assist in holding governments accountable in their role in creating healthy environments.

Format:

Chair: Dr. Jeroen Lakerveld, Amsterdam UMC, VU University Amsterdam, Amsterdam Public Health Research Institute, The Netherlands.

Presenter 1: Professor Wolfgang Ahrens, University of Bremen, Leibniz Institute for Prevention Research and Epidemiology -BIPS, Germany.
'An overview of the 'Policy Evaluation Network' and it's approach to addressing food and physical activity policy challenges for sustainability and health.'

Presenter 2: Dr. Janas Harrington, University College Cork, Ireland.
'How can policies be improved to create healthier food environments in Europe? Application of the Healthy Food Environment Policy Index (Food-EPI) in the EU and in five European countries.'

Presenter 3: Professor Catherine Woods, University of Limerick, Ireland / Joanna Zukowska, Gdansk University of Technology, Poland.
'Monitoring and benchmarking government policies and actions to improve the healthiness of PA environments: The Healthy Physical Activity Environment Policy Index (PA-EPI).'

Discussant: Professor Rebecca Lee, Arizona State University, will critique the evidence with respect to its potential/usefulness in addressing PA and food policy evaluation and accountability.

Interaction:

Participants will be invited to partake in an open discussion to critique the evidence presented.

An overview of the 'Policy Evaluation Network' and it's approach to addressing food and physical activity policy challenges for sustainability and health.

Prof. Wolfgang Ahrens
[1]University of Bremen, Leibniz Institute for Prevention Research and Epidemiology – BIPS, Breman, Germany

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition

Purpose: PEN is a multi-disciplinary research network within the Joint Programming Initiative on a Healthy Diet for a Healthy Life (JPI HDHL). Its vision is to provide Europe with tools to identify, evaluate and benchmark public policies designed to directly or indirectly address physical activity (PA), unhealthy diets and sedentary behaviour while also accounting for health inequalities.

Methods: In consultation with policymakers and experts in policy development, implementation and evaluation, PEN has undertaken to (1) assess policy potential for influencing food and PA environments, (2) foster a pan-European monitoring and surveillance system, (3) model policy impact at the population level, (4) evaluate policy implementation processes, and (5) provide recommendations to ensure that equity and diversity perspectives are reflected in policies across Europe.

Results: PEN has concluded its third year and despite COVID-19 impediments, significant work has been achieved, including:

- Publication of the EU Healthy Food Environment Policy Index (Food-EPI)
- Publication of a 4-country comparison of PA policy.
- Development of an open access searchable catalogue of existing monitoring and surveillance datasets (see: www.jpi-pen.eu).
- Development of a shared terminology (PEN glossary).
- Established the PEN Early Career Network.
- Enhanced collaboration with the CO-CREATE, STOP and Best-ReMaP projects. This will maximise the impact of each project through joint work.

Conclusion: PEN aims to (1) adapt and implement a Food-EPI and develop a Physical Activity Environment Policy Index (PA-EPI) in selected European countries, (2) map health and health behaviour indicators needed to evaluate the outcome of policy interventions to the data already provided by existing surveillance/ monitoring systems and establish an expert platform to further develop these systems, (3) review, critically assess and refine quantitative methods for the evaluation of the impact of public policies, identify key factors, barriers and facilitators of effective policy interventions and to provide tools to assess the successful implementation of policies, (4) summarise the requirements for policy interventions to reach vulnerable

groups, including lower socio-economic groups and ethnic minority populations, and (5) provide an in-depth assessment of policy impact and implementation.

How can policies be improved to create healthier food environments in Europe? Application of the Healthy Food Environment Policy Index (Food-EPI) in the EU and in five European countries.

Prof. Maartje Poelman[1], Dr. Carlijn Kamphuis[2], Ms. Sanne Djojosoeparto[2], Ms. Anne Lene Løvhaug[3], Prof. Liv Elin Torheim[3], Dr. Gun Roos[3], Dr. Peter von Philipsborn[4], Ms. Karin Geffert[4], Dr. Antje Hebestreit[5], Ms. Clarissa Leydon[6], Associate Professor Piotr Romaniuk[7], Dr. Aleksandra Luszczynska[8], Dr. Stefanie Vandevijvere[9], **Prof. Janas Harrington[6]**

[1]Wageningen University, Wageningen, Netherlands, [2]Utrecht University, Utrecht, Netherlands, [3]OsloMet – Oslo Metropolitan University, Oslo, Norway, [4]LMU Munich, Munich, Germany, [5]Leibniz Institute for Prevention Research and Epidemiology – BIPS, Breman, Germany, [6]University College Cork, Cork, Ireland, [7]School of Health Sciences, Bytom / Medical University of Silesia, Katowice, Katowice, Poland, [8]Department of Psychology, SWPS University of Social Sciences and Humanities, Wroclaw, Poland, [9]Department of Epidemiology and Public Health, Brussel, Belgium

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Background: Governmental policy and infrastructure support have the opportunity to improve food environments by implementing effective policies. The aim of the current study was to compare the extent of policy implementation to create healthy food environments by national governments across five European countries and by the European Union.

Methods: The Healthy Food Environment Policy Index (Food-EPI) aims to assess the extent of implementation of recommended food environment policies by governments compared with international best practices and prioritize actions to fill implementation gaps. The Food-EPI was applied in Ireland, Germany, the Netherlands, Norway and Poland, and the European Union. Expert panels (n=17-37) benchmarked the extent of implementation of 47 policy and infrastructure support good practice indicators by their government against best practices, using an evidence document verified by government officials. In addition, experts identified and prioritized actions to address implementation gaps. The proportion of indicators at "very low if any," "low," "medium," and "high" implementation, overall Food-EPI scores, priority action and top 5 recommendations were compared across countries and the EU.

Results: Norway (63%) had the highest rating of implementation on overall policy domain indicators whereas Germany (33%) and the Netherlands (34%) had the lowest rating of implementation compared to the other countries. However, all countries scored better on the implementation of infrastructure support than on the implementation of policies to create health-promoting capacity of food environments. Also in the EU, infrastructure support was evaluated of more strength than its direct policies improving food environments. Top 5 actions in all countries included recommendations with respect to food prices (e.g. taxation unhealthy foods) or food-provision (e.g. healthy food supply in public settings).

Conclusion: Most countries had predominantly 'low' to 'very low' implementation scores for policies which directly shape food environments. The results show that there is a need of a comprehensive policy package

covering multiple areas to improve food environments and public health nutrition and prevent obesity and diet-related non-communicable diseases.

A tool for monitoring and benchmarking government policies and actions to improve the healthiness of physical activity environments: The Physical Activity Environment Policy Index (PA-EPI).

Prof. Catherine Woods[1], Mr. Kevin Volf[1], Dr Liam Kelly[1], Dr. Blathin Casey[1], Prof. Peter Gelius[2], Dr. Sven Messing[2], Dr. Sarah Forberger[3], Dr. Jeroen Lakerveld[4, 5], Dr. Nicole den Braver[4, 5], **Prof. Joanna Zukowska**[6], Dr. Enrique García Bengoechea[1]

[1]*Department of Physical Education and Sport Sciences, University of Limerick, Limerick, Ireland, *[2]*Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany, *[3]*Leibniz Institute for Prevention Research and Epidemiology – BIPS, Bremen, Germany, *[4]*Amsterdam UMC, VU University Amsterdam, Amsterdam Public Health Research Institute, Amsterdam, Netherlands, *[5]*Upstream Team, Amsterdam UMC, VU University Amsterdam, Amsterdam, Netherlands, *[6]*Faculty of Civil and Environmental Engineering, Gdansk University of Technology, Gdansk, Poland*

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Background: Evidence suggests that research into policy effectiveness lags research that links physical activity to health, or that evaluates physical activity programme efficacy. To the best available knowledge, no project has linked existing physical activity policy statements with research that corroborates or discredits the effectiveness of these statements.

Purpose: To develop a Physical Activity Environment Policy Index (PA-EPI) with a view to assess a government's level of implementation of policies and infrastructure support against a set of good practice statements (GPS) or benchmarks.

Methods: Four stages included i) synthesizing evidence from several systematic literature reviews, ii) a grey literature review of major national or supranational grey literature, and consultation with both iii) academic and iv) policy experts with a remit for the promotion of PA. These data were used to provide an understanding of best evidence and international practices in PA policy, and based on the Food-EPI developed by INFORMAS, led to the development of the PA-EPI.

Results: The PA-EPI tool consists of two components, fifteen domains and fifty-two good practice indicators. The two components are the PA policies themselves and their Infrastructure Support. There are eight PA policy domains aligned with ISPAH's eight investments that work for PA, and seven infrastructure domains including leadership, funding and resources, monitoring and intelligence. The good practice indicators were deemed important for improving population levels of PA, feasible to implement in practice and easy to assess impact by international academics and by national level policymakers across four EU countries.

Conclusions: The PA-EPI tool allows for assessment of the extent of implementation of national government policies and actions, for creating healthy physical activity policy environments against international best

practice. It is useful for identifying the major implementation gaps and prioritize actions needed to address critical gaps in government policies and infrastructure support for implementation.

Keywords: Benchmarking; Good Practice Statements; Policy Evaluation Network; Physical Activity; Policy

KEYNOTE BY PROF. OLGA SARMIENTO

Inequality in physical activity from the region of Latin America

Ballroom

May 20, 2022, 9:55 AM - 10:55 AM

Latin America is one of the most violent and urbanized regions in the world, with large populations living in informal settlements and substantial social and spatial inequalities. Together, these social disadvantages manifest themselves in physical activity inequalities within and across cities. Amid social and gender inequalities, Latin America is also recognized as a major hub for innovation in recreation, urban transport, and mobility policies. These interventions provide culturally competent interventions to promote physical activity among vulnerable populations and women. During this presentation, I will show the evaluation through natural experiments and observational studies that use a mixed-methods approach of programs including the Ciclovías Recretivas, physical activity programs in Parks, and mass transit systems for the public transportation. These programs, out of the health sector have the potential to promote physical activity and impact the well-being of women, children, and older adults and their urban settings in the region of Latin America and could serve as examples for other regions in the world.

Coffee Break and Posters P2

May 20, 2022, 10:50 AM - 12:05 PM

P2.01 Food provision in childcare – is it environmentally sustainable?

Mrs. Audrey Elford[1], Dr. Alison Spence[1], Mrs. Amy Wakem[2], Prof. Karen Campbell[1], Dr. Penelope Love[1]
[1]Institute for Physical Activity and Nutrition, Deakin University, Melbourne, Australia, [2]Healthy Eating Advisory Service, Nutrition Australia, Melbourne, Australia

SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Consuming a nutritious diet in early childhood is essential for growth, development, and future health, and dietary practices also have significant environmental impacts. In developed countries, children aged 2-5 spend a significant amount of time in childcare where they are often provided with around 50% of their dietary intake during their day in this setting. Due to the number of children catered for, childcare centres provide a promising space to cultivate environmentally sustainable food practices that can influence the health of children as well as the planet.

Methods: This study is a descriptive exploratory study. A survey was sent out to all centres in the state of Victoria, Australia (concludes in December 2021). The survey explored environmentally sustainable food practices such as local food purchasing, seasonal food on the menus, regular vegetarian meals, the use of food from a vegetable garden for meals and previous food waste audits. A subgroup was invited for a weighed food and waste audit which has been tested in a pilot centre. This protocol weighs all food served to children for 1 day as well as all food wasted at service and plate waste level. Plans for food waste is also captured.

Results findings: Preliminary survey results found that 11% of centres had conducted a food waste audit in the past and 42% had a policy that included environmental sustainability. Pilot results indicated that whilst the menu was compliant with guidelines, 54% of morning tea, 27% of lunch and 25% of afternoon tea was wasted and most of the waste was serving waste (what was left in the serving bowl). Compost bins could not handle all the food waste which was therefore added to regular bins. Data collection concludes February 2022, and all findings will be analysed and presented at the conference.

Conclusions: This research will be the first study to assess environmentally sustainable food practices and food waste in childcare centres and how these may relate to compliance with dietary guidelines. The findings will help identify areas for support and future research.

P2.02 Future childcare educators as ambassadors for physical activity – Does an app-based quick assessment tool help?

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SIG - Primary Choice: F. Early care and education
Age Category: Young adults 19-24 yrs
Subject Category: Physical Activity

Purpose: Childcare centres have the potential to promote health-enhancing physical activity (PA) in children. During the project "QueB 2 – developing quality with and through physical activity" an app-based quick assessment tool was developed to identify needs for action. It includes seven different categories, inter alia, based on the national recommendations for PA. The aim of the project is to sensitize prospective educators to the issue of PA promotion by using the tool.

Methods: Vocational schools for early childhood education in one model region in Germany were contacted and provided with information about the quick assessment tool. In meetings with principals and/or teachers of each school the scope of application by the students was identified and the integration of the tool into the curriculum was planned. Virtual meetings with the students were held to reflect upon their experience after testing the tool in childcare centres.

Results: Six out of seven vocational schools were interested in cooperating. However, due to the COVID-19 pandemic further implementation took place in only three schools. Around 105 students tested the quick assessment tool in course of their vocational training in childcare centers and took part in reflective talks. 67 students completed a short reflecting questionnaire. About 90% of the students perceived the tool as useful, appreciated its clear structure, and expressed an increased awareness of the factors contributing to physical activity in childcare centres. Nevertheless, they asked for deeper analysis as well as more support to implement PA promotion activities.

Conclusions: Early childhood education students perceived the app-based quick assessment tool as useful to analyse the PA potential in childcare centres. Given the training status and lacking work experience, students seem to have only limited possibilities to exert influence on sustainable changes in childcare centres towards more PA. A conceivable solution could be anchoring the quick assessment tool in the schools' curricula to enhance acceptance and increase influence. To sustainably integrate the assessment tool, discussions with teachers and principals need to be held.

P2.03 Nutrition and Physical Activity Environmental Changes in Family Child Care Homes: Results from Healthy Start/Comienzos Sanos

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Purpose: This abstract describes changes in the nutrition and physical activity (PA) environments of 119 family child care homes (FCCH) that participated in the Healthy Start/Comienzos Sanos randomized trial.

Methods: FCCH were randomized to an 8-month multi-component nutrition and PA intervention (I) vs. a literacy intervention (C). Both groups received tailored feedback, tip sheets, videos, motivational coaching and support groups. Observers recorded data using the Environment and Policy Assessment and Observation (EPAO) tool while children were in FCCH during two days at baseline and 8-months. They recorded types and frequency of foods and beverages available, feeding practices, nutrition environment, provider PA practices, time spent in PA and screen time, indoor and outdoor PA environments and captured detailed notes about the FCCH environment and provider's behaviors. Nutrition scores included foods (12 items) and beverages (5) served, feeding environment (7) and practices (7). PA scores included PA time provided (3), indoor playtime (2), daily PA practices (3), PA education and professional development (2), sedentary time (3) and practices (2), outdoor play (2) and PA environment (4). Scores were calculated for baseline and 8-month first with each item for each day, then a total score was calculated for both days together. Items were then summed for each subscore and for the overall nutrition and PA scores at each timepoint. Changes in each subscore and overall score were calculated in linear models with the 8 month score regressed with the group (I v. C) as independent variables controlling for baseline values.

Results: FCCHs showed significantly better change than C FCCHs in all scores (foods provided (I: 0.12 v. C: -0.14, p=.001), food environment (0.24 v. 0.7, p=.014) and practices (0.05 v. -0.17, p=.007) except beverages; PA time provided (0.26 v. 0.16, p=.044), indoor playtime (0.58 v. -0.06, p=.006), daily PA practices (0.47 v. -0.32, p=.007) and a trend for PA education and professional development (0.44 v. 0.02, p=.068).

Conclusions: The Healthy Start intervention improved almost all aspects of FCCH nutrition and PA environments, indicating that FCCH environments can be feasibly measured as an objective research and changed by intervening with providers.

P2.04 Food Waste, Preference, and Cost: Perceived Barriers and Quality of Foods Served in Family Child-Care Homes

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Background: Family Child-Care Homes (FCCHs) are a setting where providers care for children at their own residence. FCCHs face unique challenges and have less stringent regulations. Children may not always receive optimal nutrition and have higher risk of obesity compared to other programs. FCCHs have reported some common barriers to increasing nutritional quality of meals and serving more fruits, vegetables, and whole grains- concern about wasting food, children's food preferences, and food costs. There is a lack of research on perception of barriers and meals quality in FCCHs. The objective of this study was to determine differences in meal quality between FCCHs who did/did not perceive these as barriers.

Methods: FCCHs (n=193) reported perceived barriers to serving healthy foods, the items to determine barriers were adopted from a previous study. To determine quality of food served, items related to foods and beverages served from the Nutrition and Physical Activity Self-Assessment for Child-Care (NAPSACC) were used with 1 (indicating lower quality) to 4 (indicating best practice). Means, standard deviations, and t-tests were conducted to determine differences in meal quality between FCCHs with and without reported perceived barriers. Adjusted alpha was 0.013 to reduce type 2 error risk.

Results: Concern about wasting food was the most prominent barrier (39%), followed by food preferences (35%), and food costs (28%). FCCHs perceiving food waste as a barrier had significantly lower scores for total food and beverage quality (p=0.006; d=0.42; 3.2 ± 0.3 vs 3.3 ± 0.3); served less fruits and vegetables (p=0.003; 3.1 ± 0.5 vs 3.3 ± 0.5). No statistically significant difference was found in meals quality among those providers with versus without perceived barrier of food preference or food costs.

Conclusion: Food waste is a significant barrier for FCCHs to serve healthy meals and snacks, especially fruits and vegetables. Meal quality did not differ for providers expressing barriers of children's food preference and costs, although food preferences may have an indirect effect on wasting food. More research is needed to understand the differences between the perception of these barriers in FCCHs and the quality of the foods and beverages served to children.

P2.05 Parental knowledge of existing children's activity guideline recommendations and proxy-report of infant, toddler and preschooler physical activity and screen viewing time in Singapore.

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Parental knowledge on physical activity (PA) and screen viewing time (SVT) recommendations for infants, toddlers and preschoolers have been less explored. We aimed to examine parental knowledge of existing PA and SVT guideline recommendations, and its association to proxy-reported child's PA and SVT in Singapore.

Method: Three hundred and forty caregivers of children ages 0-6 participated in a survey, and were assessed for awareness and self-reported knowledge of existing PA and SVT guideline recommendations for their child's specific age groups (infants, toddlers and preschoolers). Caregivers proxy reported their child's total PA which included light and energetic PA, and total SVT. Knowledge of guideline recommendations were assessed by questions, and based on their answers, parents were categorized into three groups for physical activity: accurate, underestimate, overestimate, and two groups for SVT: accurate and inaccurate. A Kruskal-Wallis H test, and a Mann-Whitney U test was used to determine statistically significant differences between the groups of parents and child's proxy reported PA and SVT.

Results/Findings: Amongst parents who reported awareness of children's PA and SVT recommendations, <50% correctly estimated these recommendations for each respective age group. The level of agreement between perceived awareness and actual knowledge was overall low, with Cohen's kappa values between 0.01-0.1. When assessed for knowledge, 28% of all parents accurately estimated recommendations for PA in infants, however, only 9% and 7% accurately estimated recommendations for toddlers and preschoolers, respectively. Overall, children of parents who underestimated their PA needs had the lowest levels of PA (p<0.05), compared to children of parents who were accurate or overestimated the recommendations. For SVT, 33% and 42% of parents accurately estimated SVT recommendations for infants and preschoolers, respectively, but only 14% accurately estimated recommendations for toddlers. Overall, children of parents who inaccurately estimated SVT allowance, had more SVT (p<0.05) compared to those whose parents who accurately estimated the recommendations.

Conclusion: Improving parents' knowledge of existing PA and SVT guidelines recommendations may lead to higher PA involvement and reduced SVT. This indicates a need for effective communication strategies to educate and inform parents, as important influencer of children's health behaviours.geogra

P2.06 The Impact of COVID-19 on A Statewide Dissemination and Implementation of Physical Activity and Nutrition Program in Head Starts

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Purpose: Funded by the New Mexico Human Services Department as a Supplemental Nutrition Assistance Program Education (SNAP-Ed) program, the University of New Mexico Prevention Research Center implements the Child Health Initiative for Lifelong Eating and Exercise (CHILE) Plus obesity prevention in Head Start centers, as a statewide *initiative*. The key component includes the implementation of nutrition and physical activity classroom curriculum that provides repeated opportunities to try new foods and to increase physical activity. Yong children's health behaviors at school might have changed since the COVID-19 physical restrictions have been implemented. This study investigated the impact of COVID-19 on (1) implementation of CHILE Plus and (2) preschool children's physical activity and eating behaviors throughout the school day.

Methods: All implementing agencies were required to report the progress on REDCap. We looked at (A) "number of enrolled children/class" (question1) and changes on children's health behaviors (question 2), including (B) "proportion of kids tasting during the nutrition lesson/day" and (C) "average number of minutes of structured physical activity/day". The COVID-19 timelines in New Mexico were broken down into: March 27th 2019 - March 27th 2020 (before outbreak), March 28th 2020 - April 5th 2021 (during: between school closed and schools given green-light to start hybrid model), and April 6th 2021 - December 1st 2021 (after: between back to school full time and time the abstract drafted). Descriptive statistics were used to describe the basic features.

Results/findings: A total of 43 Head Start centers (> 1000 preschool children) implemented CHILE Plus between March 27th 2019 and December 1st 2021. Before COVID-19, A was 14.69±0.12, B was 0.8353±0.09, and C was 54.53±1.06. During COVID-19, A was 7.11±0.34, B was 0.7658±0.06, and C was 53.36±0.87. After COVID-19, A was 10.10±0.77, B was 0.7921±0.03, and C was 62.88±1.21, respectively.

Conclusions: COVID-19 remarkably affects the implementation of CHILE Plus. Enrollment dropped in Head Starts and children demonstrated decreased physical activity and eating behaviors at school during the pandemic. Despite the promising trend (i.e., increased enrollment and health behaviors) after school reopen, innovative and safe implementing actions are still needed for this statewide initiative in the post-pandemic.

P2.08 Geographic patterns of applications to the Supplemental Nutrition Assistance Program (SNAP) in New Orleans, Louisiana in the immediate aftermath of the COVID-19 pandemic

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To examine how the COVID-19 pandemic affected food assistance need in New Orleans, Louisiana, a city heavily hit by the pandemic-triggered economic downturn, with high rates of poverty, and whose demographic majority consists of historically marginalized populations.

Methods: We obtained information on the number of applications to the Supplemental Nutrition Assistance Program (SNAP), the largest safety net program in the United States to address food insecurity, at the zip code level for New Orleans and surrounding areas (n=X) at two time points: March-May 2020 (immediate aftermath of the COVID-19 lockdown) and March-May 2019 (baseline). Percent change in SNAP application density (number of SNAP applications/total number of households) at the zip code level between the two time points of interest was estimated and correlated to sociodemographic information (% families living <130% of the federal poverty line (FPL) and % Black individuals) of included zip codes.

Results/findings: An increase in SNAP application density was observed in all zip codes analyzed, ranging from 25% to 360%. We found a significant positive correlation between density of SNAP applications in March-May 2019 and % families living <130% FPL (0.809, p-value<.0001) and % Black (0.526, p-value=0.028), meaning that density of SNAP applications was highest in the most disadvantaged zip codes. We also found significant negative correlations between the percent change in density of SNAP applications from March-May 2019 to March-May 2020 and % families living <130% FPL (-0.719, p-value<.0001) and % Black (-0.553, p-value=0.0015), suggesting more disadvantaged zip codes observed less dramatic changes in SNAP applications across the time periods of interest.

Conclusions: This study identified a universal increase in SNAP applications in New Orleans, Louisiana in the immediate aftermath of the COVID-19 pandemic, with the most disadvantaged zip codes – which had very high food assistance need at baseline – experiencing a comparatively lower increase in SNAP applications. These results highlight the staggering need for food assistance resulting from the COVID-19 pandemic, including in areas with historically low demand. Planning for future emergencies should take into account the likely appearance of new pockets of need for food assistance and other vital services.

P2.09 Walkability around the worksite and self-reported and accelerometer-measured physical activity

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: We explored associations of objectively-measured worksite neighborhood walkability (WNW) with self-reported and accelerometer-measured moderate-to-vigorous physical activity (MVPA) to address two aims. Aim 1: To determine the variance in MVPA explained by WNW. Aim 2: To examine potential moderators (e.g., age, sex) of the relationship between WNW and MVPA.

Methods: Healthy, inactive adults (N=512, mean 44 years, 59% female, 30% Non-White and/or Hispanic) employed outside of the home participated in the baseline phase of the WalkIT Arizona intervention in the Phoenix, Arizona, USA region. Six self-report measures of weekly PA minutes were collected: IPAQ Total Walking, NPAQ Total Walking, NPAQ Walking Inside Home Neighborhood, NPAQ Walking Outside Home Neighborhood, NPAQ Total Biking, and IPAQ Transportation Biking. Objective weekly MVPA minutes were obtained via participants' (n=472) use of a wrist-worn ActiGraph GT9X. Worksite (500-meter street-network buffers) and home (block-group level) neighborhood walkability indices were calculated using GIS-measured net residential density, intersection density, transit density, and land-use mix. Mixed effects negative binomial regression models were used to examine associations of WNW with MVPA, adjusting for home walkability and demographic covariates. Changes in Bayesian information criterion (BIC) and likelihood ratio tests were used to evaluate model fit and explained variance. Negative binomial models also included interaction terms to capture potential moderation of relationships between WNW and MVPA outcomes.

Results/findings: Aim 1: Results indicated that WNW was not directly related to any self-reported or accelerometer-measured PA outcomes after adjusting for covariates. Home neighborhood walkability improved fit in models predicting IPAQ (p=0.001) and NPAQ Total Walking (p=0.015). Aim 2: Sex (p=0.04) and the number of children in the household (p=0.006) independently moderated the relationship between WNW and accelerometer-measured MVPA. For women and individuals without children, worksite walkability was positively associated with accelerometer-measured MVPA, while it was unrelated for men (p=0.67) and individuals with one (p=0.29) or two (p=0.18) children in the home.

Conclusions: PA levels of certain subgroups were associated with WNW, notably women and individuals without children. Nuanced research into the worksite neighborhood and social characteristics offered insights into factors that may influence PA and how urban environments can be designed to promote PA.

P2.10 The impact of mass media campaigns on physical activity: a review of reviews through a policy lens

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: Mass media campaigns have been studied regarding their potential to raise awareness, change social norms, and improve population physical activity (PA). This review of reviews aims to summarize the evidence from published reviews on the effectiveness of mass media campaigns to promote PA, or PA-related determinants, and to identify policy-relevant recommendations related to successful PA campaigns. This will serve to inform the PA environment policy index (PA-EPI), a tool for monitoring and benchmarking government progress in implementing public policies.

Methods: An extensive literature search was performed on March 1st, 2021, including the databases Medline, Embase, Cinahl, SportDiscus, Web of Science, Scopus, and Cochrane. Reviews that evaluated the impact of campaigns on distal (e.g., PA) and/or proximal outcomes of PA(awareness, knowledge etc.) and that targeted the general population or subsets (socioeconomic subgroups or children) were included, those targeted at clinical populations were excluded. Quality of reviews was assessed using the AMSTAR-2 tool. Policy-relevant recommendations were systematically derived and synthesized, and formulated as good practice statements. A protocol was registered beforehand (ID: CRD42021249184).

Results: A total of 1,915 studies were identified, of which 22 reviews were included. Results indicate that the most consistent evidence was found for the effectiveness of mass media campaigns on proximal outcomes, while the evidence for distal outcomes was mixed. Interventions that were combined with other population initiatives were most effective. Some good practice statements could be derived with regards to mass media: 1) to achieve behaviour change, mass media is an important component of larger, multilevel, and multicomponent strategies, 2) mass media strategies should be coordinated and aligned at local and national

level, and should be sustained, monitored and resourced at these levels, 3) media should be targeted and tailored to reduce socioeconomic inequalities.

Conclusions: Mass media can play an important role in the promotion of PA. In general, the more distal the outcomes under study, the smaller and more inconsistent the evidence base for effectiveness. The policy-relevant recommendations identified were to combine mass media with other health initiatives, to coordinate, resource, sustain and monitor at local and national level, and to tailor strategies.

P2.11 Equitable Complete Streets Initiatives: What's Missing? What Needs to Happen?

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: Complete streets (CS) initiatives have the potential to create healthy, sustainable, and pedestrian-friendly communities. Smart Growth America defines these initiatives as a way to "prioritize safety, comfort, and access to destinations for all". Although there is an emphasis to create CS for all, there are many disparities seen among underserved populations (communities of color, low-income, LGBTQ+, youth, women). Literature has suggested that policies which implement strategies targeting specific diverse populations to be the most successful. The purpose of these three studies were to understand how many CS initiatives implement explicit verbiage regarding diverse populations, and to spatially explore the demographics of cities which have CS initiatives.

Methods: A comprehensive dataset was retrieved from the Smart Growth America website which included all (n=1563) CS initiatives from April 2021. Initiatives were searched for explicit verbiage regarding equity, low-income, racial/ethnic minorities, LGBTQ+, youth, women, disabled/aged populations. If there was explicit verbiage, the specific quote was be extracted for secondary analysis. Chi-squared tests were completed using SPSS. A comprehensive dataset of housing, demographic, and transportation from the Census of all cities with more than 50,000 population (n=843) was linked to city-level CS initiatives. Cities were mapped with Arc GIS. Geographically weighted regression (GWR) models were used to understand how various variables predict cities having a CS initiative.

Results/Findings: Less than 7% of all CS initiatives mentioned equity, low-income populations, racial/ethnic minorities, LGBTQ+ communities, or women throughout their initiative's literature, while youth and disabled populations were mentioned in >70%. GWR analyses suggested that lower percentages of black and Latino populations, higher levels of poverty, and median home value significantly ($p<0.05$) predicted a city to have a CS initiative.

Conclusions: CS initiatives have the potential to create livable and walkable communities for all, including underserved populations. In these studies, it was found that there was a lack of explicit verbiage throughout these initiatives. Various demographic and housing variables predicted a city having a CS initiative. With these initial studies regarding equitable CS practices, initiatives should attempt to introduce and advocate for targeting specific populations throughout their literature to increase their impact in these communities.

P2.12 The Texas Research-to-Policy (TX RPC) Collaboration Project Food Access and Food Insecurity Reports: Informing Legislators with State- and County-Level Data

Ms. Shelby Flores-Thorpe[1,2], Mrs. Kate Faris[1,2], Ms. Amelia Roebuck[1,2], Ms. Margaret Moore[1,2], Ms. Kathleen Manuel[1,2], Mrs. Tiffni Menendez[1,2], Dr. Alexandra van den Berg[1,2], Dr. Deanna Hoelscher[1,2]
[1]University of Texas Health Science Center, Austin, USA, [2]Michael & Susan Dell Center for Healthy Living, Austin, USA

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: The Texas Research-to-Policy (TX RPC) Collaboration Project is a non-partisan network that aims to accelerate the adoption of data-driven health policy through partnerships between policymakers and health researchers. Nutrition-related data and information are needed for policies related to food insecurity, including administration of the Supplemental Nutrition Assistance Program (SNAP) at the state level. This presentation details the process of developing nutrition-related resources for policymakers, and presents data from utilization of these policy tools.

Methods: The TX RPC Health Policy Resource reports were generated based on requests by Texas Legislators and their staff for the state legislative session in 2021. Reports were developed using an iterative approach that included drafting the main points, and review by content experts, community and advocacy advisory committee members, and university governmental relations staff. Use of the reports was determined by clicks on links sent through newsletters and webpage analytics

Results/Findings: Of the 21 legislators enrolled in TX RPC, 17 requested information related to food access, insecurity, and SNAP. Six Health Policy Resource reports were developed on the following topics: food insecurity during COVID-19, Double-Up Food Bucks, SNAP work requirements, SNAP vehicle value limits, SNAP utilization and eligibility in Texas by legislative district, and the interactive food access map by Texas legislative district. Findings from the food access map shows that among lower-income residents, access to grocery stores varied from 3.0%-23.3% across all Texas Senate Districts and ranged from 0.2%-34.6% among all Texas House Districts. These reports were imbedded into the TX RPC newsletters, with the interactive food access map having the highest newsletter link clicks among legislators and staff (14), compared to the SNAP utilization and eligibility report (2), and food insecurity (1). The highest webpage and unique page views (120) of the resources page (105) occurred in March 2021.

Conclusions: Providing timely information to state-level legislators is important to inform evidence-based policy; researchers can serve an important role in this process. Partnerships between researchers and

advocacy groups can also help to frame data for better usage. Characterizing data by congressional district can highlight disparities that can potentially lead to legislative action.

P2.13 Associations Between Micro- and Macro-Environmental Factors and Physical Activity Among Rural Children

Miss Amanda Folk[1], Dr. Eydie Kramer-Kostecka[1], Mr. Justin Clark[1], Mrs. Sarah Friend[1], Dr. Daheia Barr-Anderson[1], Dr. Jayne Fulkerson[1]
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SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

In the US, few children meet physical activity (PA) recommendations and rural youth disproportionately report inadequate PA levels. Different aspects of the environment, including micro- (e.g., home environment) and macro-level (e.g., built environment) factors, may be associated with rural children's PA.

Purpose: To determine which environmental factors explain variation in average daily moderate-to-vigorous PA (MVPA), vigorous PA (VPA), and total PA among rural children at both the micro- and macro-level.

Methods: Children (n=105; age=8.95±1.05 years; female=59%) who participated in the NU-HOME trial, a family-based childhood obesity prevention program implemented in rural Minnesota, provided objective PA data via accelerometry. Environmental variables were generated using parent report (survey data) and geospatial analysis (ArcGIS). Separate multiple regression models using block regression technique were used to determine the contribution of blocks to variation in MVPA, VPA, and total PA for micro- and macro-level models. Block 1 was comprised of sociodemographic factors (i.e., age, sex, and economic assistance). Block 2 represented physical components of the environment (micro models: indoor/outdoor PA equipment in the home; macro models: number of road intersections, sidewalk intersections, schools/parks/places of worship/recreation centers within a 1600m pedestrian network radius of the home). Block 3 included socioenvironmental variables (micro models: family PA, child PA support and self-efficacy; macro models: parent perceptions of neighborhood safety, access, and engagement).

Results: At the micro-level, explained variation in MVPA was improved by sociodemographic (R^2D=0.11; p=0.01) and physical (R^2D=0.06; p=0.03) components of the environment. Also at the micro-level, sociodemographic variables added to explained variation in VPA (R^2D=0.12, p=0.01), while the physical block of variables improved explained variation in total PA (R^2D=0.09, p=0.01). At the macro-level, explained variation in MVPA was also improved by sociodemographic (R^2D=0.14; p=<0.0001) and physical (R^2D=0.12; p=0.04) blocks. Sociodemographic variables also added to explained variation in VPA in macro-level models (R^2D=0.13, p=0.01); physical variables improved explained variation in total PA (R^2D=0.17, p=0.01) at the macro-level.

Conclusion: Findings suggest that expanding access to home and outdoor PA equipment and improving the quality of PA physical infrastructure in the community may be important strategies to mitigate rural youth inactivity.

P2.14 Development of a novel obesogenic environment index for the Netherlands

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Background: Studies on built environmental characteristics that drive overweight and obesity mostly focus on single exposures from the food or physical activity (PA) environments, whereas obesogenic environments are likely to consist of combined factors from both. This study aimed to compose and describe a comprehensive theory-based index to quantify obesogenicity for all administrative neighbourhoods in the Netherlands.

Methods: The Dutch Obesogenic Built Environment CharacterisTics (OBCT) index consists of 15 components related to the food (including density and healthiness of food outlets) and PA environments (including following constructs: sports facilities, walkability, drivability, and bikeability). For each neighbourhood (n=12,821), componental data were collected for (or closest to) 2016 from public and commercial sources, processed in a geographic information system, and z-standardized. The initial OBCT index was calculated as an average of componental z-scores across the food and PA environments. The score was normalized to range from 0 to 100 where higher scores indicated more obesogenic neighbourhoods. Besides descriptive statistics and visualization of OBCT index using maps, we also computed Spearman correlations between the index and respective environmental scores; and assessed whether the index was sensitive to outliers by Winsorizing components.

Results: The OBCT score for all neighbourhoods in 2016 in the Netherlands were right skewed with a median of 10.1 (IQR=2.76). The province of North Holland stood out, with Amsterdam having both the highest and the lowest scores. Obesogenicity was lower in more urban neighbourhoods, except for the highest urbanization degree (>2500 addresses/km2) where obesogenicity was highest. Obesogenic food environment tended to cluster around major cities while PA opportunities were depleted in rural areas. The overall OBCT index score was weakly correlated with the food environment (Spearman's ρ= -0.26, p-value<0.05) and moderately with the PA environment (ρ=0.65, p-value<0.05). 99th percentile Winsorization of the food component significantly reduced skewness and kurtosis of the index; resulting index has median of 38.01 (IQR=10.4).

Conclusions: The novel OBCT index and its comprehensive environmental scores are potentially useful tools to quantify obesogenicity of neighbourhoods. We plan to fine-tune the index using data-driven weights for the components before proceeding with further research with downstream outcomes and policy applications.

P2.15 Stocking and marketing of candy and confectionary products in high-income food stores settings, a systematic review

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: Food environment interventions are recently expanding in high income countries (HICs), defined by the World Bank Data; however, it is important to understand if implementing environmental strategies will promote purchasing behaviors. The aim of this review was to characterize the stocking and marketing practices used to sell candy and confectionery products in HICs food stores and identify effective ways to promote healthier food environments

Methods: The Preferred Reported items for Systematic Reviews and Meta-analysis guidelines (PRISMA) was used. Key words were informed by a research librarian and used to locate peer reviewed and original research (quantitative or qualitative) published since 1975 in 4 databases. The Marketing Mix and Choice Architecture (MMCA) framework was used to guide data extraction (e.g., place, profile, portion, pricing, promotion, priming or prompting, and proximity).

Results: Forty-one articles were included in the review. Studies were based in (some in multiple countries) New Zealand (n=4), Spain (n=1), USA (n=13), Denmark (n=2), Peru (n=1), Cosa Rica (n=1), Australia (n=10), Canada (n=2), Netherlands (n=3), Sweden (n=1), UK (n=7), Columbia (n=1), Brazil (n=1), Taiwan (n=1), and Italy (n=1). MMCA strategies were most used for sweet snacks and varied by store type (e.g., lower prices of candy and confectionary in grocery stores and greater promotions in convenience stores). Most studies used store assessments to measure nutritional quality/ profile (n=9), pricing (n=12), and promotional activities (n=23) in stores. A few used interviews/ surveys to assess consumers (n=5) or stores owners' perceptions and/ or interactions (n=4) with the marketed products.

Conclusion: Future research is needed to inform healthy retail interventions in HICs to promote food stores' environments using the MMCA framework and influence consumers' decisions to purchase healthier options.

P2.16 A Causal Loop Diagram of factors that influence motor skills in school-aged children

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Physically active children develop better motor skills. Children with good motor skills enjoy being physically activity more. When children enjoy being physically active, they will be physically active more frequently. And being physically active on a regular basis has a positive effect on their health, well-being and self-confidence. However, because of inequalities in family situation or neigbourhood were children grow up, not every child gets the opportunity to develop good motor skills. This inequality has only increased due to the corona pandemic resulting in closed schools and more time spent at home. Therefore, we want to gain insight into the complex interplay of personal and environmental factors that contribute to a healthy development of motor skills in children from a system dynamics perspective.

Methods: Literature related to development of motor skills in children was reviewed from a multidisciplinary point of view. We extracted the main determinants from literature by expert meetings and integrated these determinants into a systems dynamics tool: a Causal Loop Diagram (CLD). The CLD provides a visual image of the determinants related to motor skills and the coherence between determinants. In addition, the effect size and strength of the evidence are included in the CLD.

Results: We found key determinants for in different layers of the system, like challenge and variety of movement, parenting style and access to special services such as sportclubs. The CLD showed how these determinants were interrelated and the great coherence between different diciplines. In other words, the CLD shows a complex system around children which is only partially influenced to improve their motor skills.

Conclusion: This causal loop diagram provides leverages points to positively influence development of motor skills in children. Further work is required to use this as a blueprint for specific neighourhoods and provide insight in the specific local system. Subsequently, tailored intervention strategies can be developed in order to improve motor skills in children.

P2.17 A Systematic Review of Policies to Improve Food and Physical Activity Environments in Community Settings using the RE-AIM Framework.

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition

Purpose: Policy interventions may be effective for creating population-wide changes to nutrition and physical activity patterns if implemented and sustained. The aim of this review was to use the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework to examine food and physical activity policies implemented in community settings in the United States, that are accessible by all residents in the community with no restrictions focusing specifically on adoption, implementation, and maintenance.

Methods: The 2009 Preferred Reporting Items for Systematic Reviews and Meta-Analyses were used as a guide. PubMed, MEDLINE, PsycINFO, Agricola, and Google Scholar were searched using keywords informed by a library partner (e.g., ordinance, REAIM, food environment). Articles needed to focus on at least one AIM category. Two researchers completed the review of titles and abstracts and extracted data from each source, guided by RE-AIM. Meetings were used to gain consensus on discrepancies.

Results: Thirty-three articles published since 2000 were included. Nineteen (57.5%) reported on both food and physical activity policies and none of the studies considered all dimensions of RE-AIM. The number of studies focusing on each RE-AIM dimension were reach, n=2 (6.1%); effectiveness, n = 9 (27.2%); adoption, n= 12 (36.3%); implementation n= 26 (78.7%); maintenance, n=2 (6.1%). The majority either focused on results related to policy adoption or implementation or both, n= 32 (96.9%), and found that enforcement, accountability, findings, and evaluation were some of the most important factors for the adoption and implementation of food and physical activity policies. These results do not rule out the influence of other factors, but many studies n=14 (42.3%) suggested the important role of factors related to key stakeholders as they highly influence policy adoption and implementation.

Conclusions: The findings indicate that the development of implementation strategies (e.g., Strict enforcement) could improve policy adoption, implementation, and maintenance. This systematic review underscores the need for a focus on maintenance of policies, as this dimension was under-reported, and informs potential barriers and facilitators for food and physical activity policies to impact public health.

P2.18 Associations between food environment and nutritional quality of food purchases in French households: The Mont'Panier cross-sectional study

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: The purpose of this study was to assess whether the built food environment, measured by multiple indicators around home and in activity space, was associated with nutritional quality of food purchases.

Methods: This cross-sectional study included 462 households from a quota sampling survey conducted in the south of France (Montpellier metropolitan area). The revised Healthy Purchase Index was implemented in order to assess nutritional quality of food purchases. Food environment indicators (presence, number, relative density and proximity of food outlets) were calculated around home and in activity space (around home, work, other places of activity and along commuting journeys) using a geographical information system. Six different types of food outlets were studied: supermarkets, markets, greengrocers, bakeries, other specialized food stores (butcher's, fishmonger's and dairy stores) and small grocery stores. Associations between food environment and nutritional quality of food purchases were assessed using multilevel models, and geographically weighted regressions to account for spatial nonstationarity. Models were adjusted for households' socioeconomic and demographic characteristics.

Results: Nutritional quality of food purchases was positively associated with the number of greengrocers around home (1 vs 0: β=0.26, 95%CI= [0.01, 0.50]; >1 vs 0: β=0.28, 95%CI= [0.03, 0.52]), but negatively associated with the number of markets around home (1 vs 0: β=-0.20, 95%CI= [-0.40, 0.00]; >1 vs 0: β=-0.40, 95%CI= [-0.72, -0.08]), these associations varied across space in the studied area. For households with lower income, number of greengrocers in activity space was positively associated with nutritional quality of food purchases (1 vs 0: β=0.71, 95%CI= [0.13, 1.3]; >1 vs 0: β=0.67, 95%CI= [0.23, 1.1]).

Conclusions: Greengrocers might be an efficient food store type to promote healthier dietary behaviors. Further studies, in particular natural experiment studies designed to explore causality, should be conducted to assess the suggested effect of greengrocers on dietary behaviors. Consecutively such research may help guide public health policies to implement actions designed to improve the food environment, including actions that might contribute to decreased social inequalities in diet.

P2.19 A scoping review of online grocery retail: who's buying it, what are they buying, and what tactics are used to promote healthy or unhealthy purchases

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: All

Purpose. We sought to understand: the characteristics of online grocery shoppers, reasons for shopping online, barriers to shopping online, accessibility and availability of shopping online, types of food available in online grocery stores, and types of pricing, promotion, and placement strategies used to market foods and beverages in online grocery stores.

Methods. We searched PubMed, Scopus, Web of Science, Business Source Premiere, ACM Digital Library, Google Scholar, and USDA publications through June 2021. We included studies that collected empirical data on online grocery shopping and retailing. Two reviewers screened 787 titles and abstracts and 491 full texts, resulting in 121 relevant studies. Two reviewers then extracted information regarding online grocery retail use, availability, and equity.

Results/Findings. Preliminary results indicate that online grocery retail was of global interest for the last two decades across six continents, though most research was published after 2015. Availability of online grocery retail increased over our study time period, between 1999 and 2020, as internet access increased and more retailers developed online platforms. Longitudinal studies indicate that online grocery purchases greatly increased in 2020. Young and highly educated individuals are most likely to use online grocery retail, though older generations saw a greater uptick in use during the COVID-19 pandemic. Convenience/time savings, ease of use, the pandemic, and ability to compare products are common reasons for using online grocery retail. Some online retailers also offer more product options compared to brick-and-mortar stores. Barriers include delivery costs and delivery hours. Individuals may be less likely to purchase impulse items, particularly when shopping with children. Online retailers can change their product prices quickly to match competitors, often resulting in lower product prices. However, product price is also dependent on where consumers live and the business model the retailer follows.

Conclusions. Online grocery retail availability and use is increasing globally. Our review highlights that online grocery retail is convenient, time saving, possibly more affordable, but varies depending on where consumers

are located. These findings indicate that online grocery retail may be a beneficial resource and that future efforts should work to increase availability and decrease barriers to ensure equity.

P2.20 Understanding School-based Local Wellness Policy Implementation: Relationship Between the School District Implementation Stakeholders and Wellness Goals

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

This study examined the relationship between categories of stakeholders who are responsible for evaluating implementation of Texas school districts' local wellness policies (LWPs) and the number/types of wellness goals. School districts (n=111) in a Texas Public Health Service region were coded using a state-level LWP template and analyzed in STATA. LWP were coded based on their inclusion of template goals for nutrition promotion (n=4), nutrition education (n=5), physical activity (n=7), and other school-based activities (n=3) (such as promoting wellness for students and their families). Descriptive statistics and effect sizes were calculated, and number of selected goals within each category was investigated by the primary stakeholder responsible for evaluating implementation. Most LWP implementation evaluators were academic leaders (n=70, 63.0%); of those, 17 mentioned an additional designee evaluator. Other implementation stakeholders were health leaders (n=8, 7.20%), nutrition leaders (n=6, 5.40%), physical activity leaders (n=7, 6.31%), and non-leadership stakeholders (e.g., school health advisory council; n=4, 3.60%). Eleven LWPs had implementation evaluators in more than one category. Across all LWPs, the mean ± standard deviation number of goals were 2.16±0.72 for nutrition promotion, 2.41±0.95 for nutrition education, 4.1±1.93 for physical activity, and 2.54±0.86 for other school-based activities. When physical activity leadership was responsible for evaluating implementation, LWPs contained more goals for nutrition promotion (2.29±0.59 vs. 2.15±0.74; d=0.2), nutrition education (3.29±1.25 vs. 2.34±0.90; d=1.02), physical activity (5.86±1.25 vs. 3.97±1.90; d=1.01), and other school-based activities (3.14±0.69 vs. 2.49±0.86; d=0.77), compared to all other stakeholders. LWPs reported more goals when multiple stakeholders were responsible for implementation, but 25% of these districts included physical activity leadership. When a designee was listed with academic leadership, there were also more goals for nutrition promotion (2.36±0.50 vs. 2.13±0.77; d=0.32), nutrition education (2.64±1.03 vs. 2.30±0.91; d=0.36), physical activity (4.91±1.92 vs. 3.89±1.88; d=0.54), and other school-based activities (2.91±0.83 vs. 2.44±0.86; d=0.54), compared to those without a designee. Implementation evaluation teams that have more members and include context experts, particularly physical activity staff, have more goals across all LWP content areas. School should consider engaging multiple staff in the LWP evaluation process.

P2.21 A direct observation tool to measure shade, nature, and children's physical activity during recess: SOPLAY-SN

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Most physical activity (PA) during school occurs at recess; however, recess PA may be influenced by children's thermal comfort and interaction with nature. This cross-sectional study tests the reliability of adapting the validated System for Observing Play and Leisure Activity in Youth (SOPLAY) to include observations of shade and nature (SOPLAY-SN), and provides baseline results of PA, shade, and nature during recess.

Methods: Interactions with shade and nature were measured using momentary time sampling within designated target areas in two playgrounds (primary=ages 5-8, upper-grade=ages 9-12) at one elementary school in Phoenix, AZ, USA. SOPLAY-SN reliability was initially tested using recess video footage (n=48 scans). Next, in-person observations were conducted over four warm days (primary=29-34°C, upper-grade=32-36°C) in May 2021 (n=179 scans). Pairs of observers conducted simultaneous independent observations to determine agreement. Intraclass correlation coefficients (ICC) using one-way average measures random effects models were used to calculate inter-rater reliability. PA, shade, and nature mean counts and frequencies were calculated.

Results: Pilot reliability was acceptable (ICCs:0.60-0.92, average agreement=91% overall PA, 81% shade, 82% nature). In-person ICCs were good for sedentary (0.98, 95%CI:0.89-1.00), light (0.80, 95%CI:0.20-0.97) and vigorous (0.94, 95%CI:0.68-0.99) PA; shade (0.95, 95%CI 0.71-0.99); and nature (0.80, 95%CI:0.20-0.97). Inter-rater reliability and agreement were good (ICC 0.88, 95%CI:0.37-0.99 to 0.98, 95%CI:0.87-1.00; average agreement=86% overall PA, 88% shade, 90% nature).
Most (60.1%) primary children were in the shade with 64.2% of those observations under a covered play structure where 46.7% of children were sedentary. Overall, 10.63% of primary students were observed interacting with nature, with 90.2% of those children in grassy fields with trees. Among upper-grade children, 23.1% were observed in the shade with 53.3% of those observations in large grassy fields where 48.2% of play was light. Few (6.9%) upper-grade children were observed interacting with nature, with most (75.6%) in a grassy field with trees.

Conclusions: Findings suggest SOPLAY-SN is a reliable tool for assessing simultaneous observations of children's interactions with shade, nature, and PA. With most primary children observed under shade, yet few interacting with nature, elementary playgrounds may benefit from shade trees surrounding play equipment to encourage nature play.

P2.22 Beverage, fruit and vegetable consumption of Jamaican school children

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Curbing childhood obesity is an increasing public health challenge underscoring the need for targeted nutrition initiatives. Jamaican school children's consumption of beverages, fruits and vegetables (F&V) was assessed relative to WHO guidelines.

Method: A cross-sectional survey of Jamaican school children (aged 7-11 years) from 30 public and 6 private schools was conducted in 2019. Measurements included anthropometry and a single modified 24-hour dietary recall (to assess intakes of beverages, fruit and vegetable intakes relative to dietary guidelines). Regression analyses tested associations of intake with sex, body mass index for age z-score (BMIz), school type and sociodemographic characteristics.

Results: Of 742 children, (386 girls, 356 boys) with mean age 9.3 years (SD, 1.0), 17.5% and 12.9% were living with overweight and obesity, respectively, with mean BMIz of 0.3 (SD, 1.3). Overall, 81.8% of children consumed at least 1 sweetened beverage (mean volume 642.9mL (SD, 400.6)), with 69.6% drinking unsweetened beverages (mean volume 459.5mL (SD, 425.6)). The latter was mainly water as only 5.5% children reported consuming milk or 100% juice. Beverages were consumed mostly as water 430.3mL (SD, 398.4), juice drinks 390.7mL (SD, 339.2), sweetened milks 46 mL (SD, 112.0) and sweetened homemade teas 56.9 mL (SD, 97.1). While 57.0% of children reported eating F&V at least once, only 4.7% of children ate recommended amounts with mean intake of 97.1g (SD, 129.7). Children derived 17.0 % (SD, 10.5) of total calories from beverage sugars (mean 72.2g (SD, 44.5)) with girls having significantly less (p<0.05). Most children (71.8%) exceeded the WHO recommended limit of 10% of total calories from free sugars. BMIz was associated with an increased consumption of non-sweetened drinks.

Conclusions: Jamaican school children are drinking excessive amounts of sweetened beverages, with sugars from beverages exceeding recommended sugar guidelines three-fold. Few children are drinking unsweetened options apart from water, and fruit and vegetable intakes are inadequate. Efforts are needed to educate parents, school personnel and manufacturers on healthy reduced sugar reformulations for both commercial and homemade beverages. Healthy food policies regulating children's access and exposure to sweetened beverages at schools are strongly warranted.

P2.23 Facilitators and barriers to effective food policy development and implementation in Cape Town, South Africa: Insights from city- and provincial-level government officials

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: A recent change of political leadership in the City of Cape Town (South Africa) has opened the door for potentially progressive innovations in local food governance approaches and practices. These changes involve an attempt to coherently govern food systems and environments towards, in part, a healthier urban population. This research considers current barriers and facilitators to this process from the perspective of involved government officials.

Method: Semi-structured in-depth interviews were conducted online with purposefully sampled city- and provincial-level government officials (n=11). Interviews were recorded, transcribed, and thematically analysed to identify potential facilitators and barriers to effective food policy development and implementation. Anonymity of all interviewees was maintained by strict adherence to an approved ethics protocol.

Findings: Key barriers resulting from officials' input included:

1) General government official misconduct - including officials working the system, often for personal gain – e.g., the hijacking of food aid and redirection towards selected beneficiaries for political currency.

2) Politics and entrenched power - including the deflection of responsibility/mandate to 'save face' and maintain political standing, decision-making based on the avoidance of risk, and the unwarranted holding of power and resources preventing innovation.

3) Siloed government structure and approaches - including hierarchical, bureaucratic systems based on narrow targets and progress indicators, stifling innovation and undermining competence.

Key facilitators centred around one theme, that of cross-departmental collaboration lead by visionary senior officials. This includes the cultivation of a 'network culture' to better facilitate collaborative interdepartmental relations and encourage participation in discursive food governance networks beyond the state; the inviting of neutral third parties to facilitate dialogue, thus allowing senior leaders to shift deeply entrenched mistrust and

divisions; and the adoption of innovative reporting mechanisms that could support greater autonomy and transversal collaboration.

Conclusions: There is a real need for visionary leaders that forward a shift in organisational culture and conventions towards more collaborative attitudes and practices in Cape Town, as well as the cultivation of trust and the alleviation of tensions and divisions between City departments, if recent innovations in food governance are to effectively influence food policy development and implementation.

P2.24 Impact of a mobile market intervention on food security and fresh fruit and vegetable purchase and consumption among a low-income, ethnically and racially diverse population

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: The purpose of this study was to assess the one-year impact of a Healthy Food Access Intervention (Fresh for Less) utilizing a Mobile Market strategy designed to provide greater access to fresh fruits and vegetables (FV) on improving food security and fresh FV purchase and consumption among residents living in low-income, ethnically/racially diverse communities in central Texas.

Methods: 400 eligible individuals were recruited from low-income communities and categorized into 3 different groups: (1) the Confirmed Users group including participants recruited at one of the Fresh for Less (FfL) Mobile Market locations (n=130), (2) the Geographically Exposed group including participants living within .5 mile of a FfL Mobile Market location (n=185), and (3) the Comparison group including participants living in communities with no Mobile Market locations but were similar sociodemographically to the Geographically Exposed neighborhoods (n=85). Participants completed a quantitative survey during Baseline (October 2018-March 2019) and Year 2 (October 2019-Early March 2020 - pre-COVID-19). The survey included items measuring demographic variables and the 5 outcome variables: fresh FV purchase and consumption, food insecurity, awareness and usage of the Mobile Markets. Mixed regression modeling was used to examine changes in the outcome variables from Baseline (Year 1) to Year 2 by recruitment strategy (Confirmed User, Geographically Exposed, and Comparison group). Mixed regression models were run unadjusted for each outcome variable, and then adjusted for race/ethnicity and income.

Results: Participants were mostly Hispanic and Black (54% and 10%, respectively). 23% had an income of less than $25,000 per year and 40% were classified as food insecure based on a validated food insecurity screener. 12% indicated using food banks/pantries. Results indicate a significant increase in shopping at a FfL Mobile Market among the Confirmed Users group. Food insecurity decreased significantly in both the Confirmed Users and the Geographically Exposed groups. In addition, the Geographically Exposed group reported a significant increase in fruit consumption.

Conclusions: Food access strategies such as the FfL Mobile Markets are effective in increasing healthy food purchasing and decreasing food insecurity in low-income communities. Polices that decrease barriers to implementation of such strategies need to be explored and implemented.

P2.25 Active Transport Requires Equitable Access to Bicycles

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Investing in cycling infrastructure provides numerous benefits for a community. However, to make a shift to active transport, low income residents need access to affordable bicycles and bike maintenance. Nonprofit, community bike shops sell refurbished bicycles and provide mechanical assistance or training at low cost or no cost, through sweat equity programs. The purpose of the study was to examine the demographics of nonprofit, community bike shop programs. These bike shops need to be included in transit designs, so all people within a community can access bicycling infrastructure and make the mode shift to active transport.

Methods: A thirty-three question survey was emailed to the 214 community bike shops in the United States. Eighty-eight completed surveys were returned (40.1%). Question categories consisted of Likert scales and qualitative data regarding bike shop goals, values, barriers, incentives, funding, programming and communities served. Using zip codes and 2017 US Census Data, bike shop demographics – race, sex, education, median income, poverty rate, and transportation mode – were compared to national US averages and analyzed using a one-way t-test.

Results/findings: Bike shops reported either strongly agree or agree that their primary goals are to provide bicycles for active transport (81.8%) and empower people in the community (81.8%). They serve diverse populations: low income/underemployed (98.9%), working adults (93.2%), homeless (89.8%), unemployed (89.8%), refugees (82%), veterans (84.1%), LGBTQ (88.6%), underserved teens/youth (86.4%), and individuals with disabilities (73.9%). Sweat equity opportunities are provided at 62.5% of the shops. Eighty-four percent of shops are located within less than one mile from a bike lane. They serve a population significantly below the national averages for whites (p=0.001) and significantly above the averages for blacks (p=0.002). In addition, they serve in areas significantly below the national median income level (p<0.001) and significantly higher in poverty (p<0.001).

Conclusions: Nonprofit, community bike shops help transform communities. To ensure equitable access to the active transport and its health benefits, community bike shops need to be part of the design of the built environment and supported by public policy.

P2.26 Restaurant dining and diet quality during the COVID-19 pandemic among low-income adults in the United States

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The COVID-19 pandemic caused widespread business closures and changes in business practices, altering purchasing behaviors throughout the United States. However, little is known about the impact on food consumption from restaurants (including drive-thru, takeout, and delivery), particularly among socioeconomically disadvantaged adults. This study examined restaurant dining behaviors from fast-food and non-fast-food (i.e., fast casual and full-service ['other']) restaurants and their association with diet quality among low-income adults (incomes <250% of the Federal Poverty Level) during the early months of the COVID-19 pandemic.

Methods: Using a cross-sectional design, participants completed an online survey using CloudResearch (formerlyTurkPrime) asking about restaurant dining behaviors in the past week during the COVID-19 pandemic (June 2020) and during a typical week pre-pandemic. Diet quality was measured using the Prime Diet Quality Score (PDQS). Surveys from 1,756 adults were analyzed using chi-squared tests to examine demographic characteristic associated with consuming foods from restaurant during the pandemic, as well as to examine differences in dining frequency compared with prior to COVID-19. Negative binomial regressions were used to examine mean restaurant dining frequency, adjusted for socio-demographic characteristics.

Results: During the COVID-19 pandemic, participants who dined at restaurants reported consuming foods from both fast-food and other restaurants on average twice per week. Greater consumption of fast-food was observed among those who were Hispanic, non-Hispanic Black, or with lower educational attainment. Despite the overall high levels of ordering from restaurants, compared with prior to the pandemic, the majority of participants reported that both fast-food and other restaurant ordering occurred less frequently. During the pandemic, greater fast-food consumption was consistently associated with poorer diet quality; participants who ate fast-food 3+/week had a PDQS score of 51.3 compared with a PDQS Score of 55.9 among those who did not eat fast food (p< 0.001).

Conclusions: While fast-food consumption was less frequent during the pandemic, the overall high levels observed among socioeconomically disadvantaged adults remains concerning, highlighting the continued need for initiatives and policies to encourage greater access to and purchasing of affordable and healthier food choices.

P2.28 Individual characteristics associated with fruit and vegetable intake among socioeconomically disadvantaged adults in Flanders, Belgium.

Miss Yasemin Inaç[1,2,3,4], Miss Suzannah D'Hooghe[1,4,5], Prof. Delfien Van Dyck[6], Prof. Benedicte Deforche[5,7], Dr. Karin De Ridder[1]

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: A balanced diet is instrumental in reducing the risk of developing obesity, with fruit and vegetables being important components of such a diet. An unhealthy dietary pattern lacking sufficient fruit and vegetable intake is more often observed among socioeconomically disadvantaged people. However, not all members of this population have an unhealthy diet. Identifying predictors that influence a healthy diet could steer intervention efforts. Therefore, the aim of this study is to examine the association between sufficient fruit and vegetable intake and individual characteristics among socioeconomically disadvantaged adults living in peri-urban municipalities in Flanders.

Methods: In total, 319 socioeconomically disadvantaged adults aged 25 to 65 years old (M_{age}= 48.47, SD=11.11, n=199 females, n= 115 males, n=3 gender unspecified) residing in two peri-urban Flemish municipalities completed a self-reported survey assessing demographics, dietary habits, physical activity, BMI, general health and perceived social and physical environmental characteristics between May and October 2021, as part of the CIVISANO project ("*a mixed-methods project using community-based approaches to tackle disparities in health behaviours in the Flemish peri-urban environment*"). Binary logistic regression was used to determine cross-sectional associations between sufficient (daily vs. non-daily) fruit and vegetable intake and individual characteristics.

Results/findings: Eating fruit at least once a day was reported by 60.69% of the sample and eating vegetables at least once a day by 54.72%. Positive subjective health (OR 2.14; CI 1.41, 3.24) was the most telling factor associated with sufficient fruit and vegetable intake. Higher educational qualifications (OR 1.74; CI 1.15, 2.61), less subjective financial hardship (OR 1.31; CI 1.03, 1.67), female sex (OR 2.04; CI 1.42,4.07) and higher age (OR 1.04; CI 1.01, 1.06) were also all positively associated with sufficient fruit and vegetable intake. While reduced mobility during the last month showed a negative association (OR 0.49; CI 0.29, 0.81) with consuming fruit and vegetables at least once a day.

Conclusions: The identification of individual characteristics that influence sufficient fruit and vegetable intake differ in socioeconomically disadvantaged adults, suggesting that population subgroups might benefit from targeted interventions to improve diet quality and prevent further healthy inequalities.

P2.32 Change in self-reported physical health and activity location impacts physical activity and sedentariness among Texas college students during COVID-19 pandemic

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The COVID-19 pandemic limited opportunities for physical activity (PA), a key determinant of chronic disease, and the emergence of new variants necessitates identifying strategies for increasing/maintaining PA. We examined how changes in physical and mental health and the location of regular PA during the pandemic were associated with time spent in PA or sedentary (SED) among Texas college students.

Methods: Data are from the *COVID-19 Texas College Student Experiences Survey* (June-August 2020; n=608). Students were ≥18 years and enrolled in a Texas higher education institution. Students self-reported change in physical (PH) and mental health (MH) pre- and post-pandemic declaration (hereafter, pre- and post-pandemic). Location of regular PA (e.g., home, parks/trails) pre- and post-pandemic was coded as stopped use, no change, and new user. Post-pandemic weekly minutes in vigorous PA, moderate PA, walking, and sitting were assessed. Multiple linear regressions examined associations of time spent in PA and SED with changes in PH, MH, and location of PA. Analyses controlled for age, race/ethnicity, BMI, household income, and nativity. Standard errors were adjusted to account for clustering by institution.

Results: Adjusting for the covariates, improved self-reported PH post-pandemic was associated with more vigorous (B=9.31, *p*=.029) and moderate PA (B=9.62, *p*=.055) compared to those whose PH declined. New post-pandemic parks/trails users spent more time in vigorous PA (B=42.28, *p*=.039), moderate PA (B=28.46, *p*=.045), and walking (B=35.51, *p*=.027) than those reporting no change in their use. New online video users also spent more time in vigorous PA (B=24.03, *p*=.034) than those reporting no change in use of online videos. Students who stopped using online videos spent less time sitting than those who reported no change (B=-126.84, *p*=.029) but not necessarily more PA. Finally, those newly engaging in PA at home/ neighborhood spent less time walking (B=-19.97, *p*=.05) than students reporting no change in home/neighborhood usage. Home/neighborhood usage was not related to vigorous or moderate PA.

Conclusions: Findings of this study suggest higher education institutions could ameliorate the negative impact of COVID-19 social distancing policies on PA by directing resources to increase student access to outdoor facilities and virtual PA classes.

P2.33 Knowledge and perceptions of nutrition assistance programs among young adults

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[1]*Meredith College, Raleigh, USA*

SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: College food insecurity (FI) has garnered attention as rates are reported to be higher than the United States national average. To help alleviate this issue, many higher education institutions have implemented campus-based FI initiatives. However, literature on these initiatives is lacking, and little is known about program operations, funding mechanisms, and evaluation. The purpose of this study was to describe campus-based initiatives and to investigate the barriers and facilitators to sustained implementation on campus.

Methods: Twelve nutrition and dietetic professionals from the Society of Nutrition Education and Behavior's College FI Subcommittee developed an online survey based on previous literature. A convenience sample of higher education professionals with experience regarding campus FI initiatives completed the 23-item survey via Qualtrics. The survey included questions about campus FI initiatives, including how they were funded, led, and evaluated, and if COVID-19 impacted implementation. Respondents were asked to describe what barriers they faced when implementing initiatives and what is needed for sustained implementation. Descriptive statistics were computed for quantitative data. Qualitative data were independently coded by two researchers, with any discrepancies resolved, and overarching themes were identified.

Results/Findings: Ninety-five percent of respondents (n=108) reported having at least one campus FI initiative. A campus food pantry was the most common initiative (98%), and 75.3% of campuses reported changes in implementation due to COVID-19. Respondents (69.7%) stated initiatives were evaluated for impact, but evaluation methods varied. Some institutions (38.9%) provided an allocated budget for initiatives, but funding mechanisms varied. FI initiatives were most often managed through Student Life Offices. Barriers to implementation were funding and marketing/student awareness. Campus culture (such as institutional support), resources and operations (such as funding), and data collection (such as needs assessment) were themes derived as facilitators to sustaining initiatives.

Conclusions: Campus-based FI initiatives are available, although the type, funding, and evaluation vary. The need for a campus culture that promotes sustainable funding and support is highlighted. Increased investment from administration and stakeholders is warranted. Awareness campaigns could be prioritized to increase student awareness of initiatives, especially as operations may continue to fluctuate due to COVID-19.

P2.34 Changes in college students' health behaviors and substance use after a brief wellness intervention during COVID-19

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: All

Purpose: College students exhibit poor physical activity, diet, sleep, stress management, and substance use behaviors. On-campus resources to improve college students' health have been limited during the pandemic. The purpose of this study was to test a brief intervention to improve wellness behaviors and reduce substance use among college students.

Methods: This single-arm repeated measures intervention was conducted remotely over 12 weeks in spring and summer 2021, utilizing the Behavior Image Model. The model promotes positive goals and health-enhancing behaviors, while raising health-risk awareness. The intervention involved three components: a survey (baseline), a 25-minute consult with a peer health coach, and a 15-minute goal planning session. Follow-up measures were completed at 2-, 6-, and 12-weeks post session to assess changes in health behaviors. Linear mixed effects models for repeated measures were used to analyze associations between intervention on within-subject changes in physical activity, sedentary behavior, diet, sleep, general health, emotional wellness, and substance use.

Results: Of 121 participants who completed the baseline survey, 90 (74.4%) completed the health coach session (71.1% female, 76.7% White), and 83, 75, and 73 completed 2-, 6-, and 12-week follow-up surveys, respectively. At two weeks, significant increases were observed in vigorous physical activity days/week (coef.=0.5, 95% CI: 0.2,0.9), moderate physical activity (MPA) days/week (coef.=0.7, 95% CI: 0.2,1.1), general health (coef.=4.8, 95% CI: 2.1,7.5), and emotional wellness (coef.=8.6, 95% CI: 5.8,11.3). Significant decreases were observed in cannabis use (coef.= -2.3, 95% CI: -4.1,-0.5) and alcohol consumption (coef.= -2.5, 95% CI: -3.7,-1.3). At six weeks, significant increases were observed in MPA days/week (coef.=0.9, 95% CI: 0.4,1.4), weeknight sleep hours (coef.=0.4, 95% CI: 0.1,0.7), general health (coef.=7.4, 95% CI: 4.3,10.4), and emotional wellness (coef.=13.1, 95% CI: 10.0,16.2). Significant decreases were observed in sitting hours/day (coef.= -1.9, 95% CI: -2.9,-0.9), cannabis use (coef= -2.2, 95% CI: -4.3,-0.1), and alcohol consumption (coef= -1.6, 95% CI: -3.1,-0.1). Significant changes observed at six weeks were sustained at 12 weeks.

Conclusion: This brief wellness intervention shows promise to positively influence multiple health behaviors in college students and provides an example of how peer coaching can be utilized in an online setting.

P2.35 Plant-based dietary patterns in Flemish adults: a 10-year secular trend analysis

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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Although the beneficial health effects of well-balanced plant-based dietary patterns are evident, it is not clear if population-wide dietary patterns are shifting in a more plant-based direction. This study evaluated secular trends in dietary patterns among Flemish adults over a 10-year period. Second, differences in socio-demographic characteristics between different dietary pattern groups were explored.

Methods: A time series design, during which five different representative samples (2011, 2013, 2016, 2018 and 2020; N = 4859) were surveyed through an online questionnaire, was used to evaluate secular trends in dietary patterns.

Results: Across the 10-year time period, the vast majority of Flemish participants were omnivorous and only a very small proportion reported to be vegetarian or vegan. Compared to baseline (2011), the relative number of Flemish flexitarians, i.e., eating no meat or fish for minimally 3 days per week, increased from 5.3 to 10.0% (~ 88.7% increase) in 2016 and from 5.3 to 9.2% (~ 73.6% increase) in 2020, whereas the relative number of Flemish omnivores decreased from 89.0 to 84.6% (~ 4.9% decrease) in 2016 and from 89.0 to 72.7% (~ 18.3% decrease) in 2020. No secular trends were found for vegan, vegetarian, almost vegetarian and pesco-vegetarian patterns in Flemish adults. The vegan/vegetarian group differed from the omnivorous group in sex (67.1 vs. 47.0% of females), age (42.9 vs. 23.9% of 18-34-year olds), education (44.3 vs. 30.0% reporting higher education) and geographical distribution (54.3 vs. 42.0% living in urban areas).

Conclusions: While the proportion of vegetarians and vegans remained stable over the past decennium, a modest shift from the omnivorous towards the flexitarian dietary pattern was observed in the Flemish adult population. Despite this shift, the share of flexitarians remained relatively low (nearly 10%) and plateaued after 2016. The observed plateau effect may suggest that previous campaigns mostly triggered the more receptive and open-minded people. Finally, eating more plant-based was associated with female sex, younger age, higher education and living in urban areas. So, besides focusing on those being less open-minded on the topic, campaigns might benefit from targeting older and lower educated males living in rural areas.

P2.36 Post pandemic behavior: Staying awake but few other health behavior changes

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[1]*The University of Sydney, Sydney, Australia*

SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Sleep

Purpose: Disruptions to health behaviors during pandemic stay-at-home measures have been well-documented. Less well-known is how behavior changes as restrictions ease. The aim of this study was to investigate changes in health behaviors following the easing of pandemic restrictions.

Methods: University staff (n=154) who participated in a 2021 vaccination study and its pilot study the prior year. The 2020 recruitment occurred ~7 weeks into strict stay-at-home orders while 2021 participation occurred ~2.5 months after blended on-campus/online teaching had begun and ~11 months after other on-campus working was permitted. Participants self-reported health behaviors, including the number of hours sleep on a weeknight; sleep quality; the number of days in the past week they had done ≥30 minutes physical activity which was enough to raise breathing rate; servings/day of fruit and vegetables; alcohol intake frequency; and emotional health (DASS-21). Proportion and means testing were conducted to compare between years and correlations were conducted on change variables; α=0.05. (Ethics Approval: 2019/711)

Results: Respondents were mostly female (62%) with mean age of 44±11.6 years. Physical activity, BMI, fruit and vegetable intake, alcohol consumption, sleep quality rating, and overall emotional health indicators remained stable. Sleep duration decreased by 12 minutes on average (95%CI 0.01- 0.39), a significant change. Change in sleep duration was correlated with age (r=0.16, p=0.04) such that younger people reported more sleep loss. Change in sleep was noticeable among females, with a 13% drop in the proportion who achieved the recommended duration (p=.03), and was negligible among males (5% decrease in proportion).

Conclusion: Following the release from lockdown, staff experienced a small but significant reduction in sleep duration. This may indicate an increased sleep duration during lockdown, consistent with the literature, with an ensuing return to normalcy. The health implications from the sleep reduction appear minimal in this well-educated and higher socioeconomic population as the reduction was small and most adults achieved age-appropriate sleep duration, but whether this is also true in marginalized communities is unknown. Further, the sustained failure to achieve recommended physical activity and dietary indicate a continued need for public health interventions and policies.

P2.37 Changes in Eating Behaviors During the Early COVID-19 Pandemic: A Comprehensive Review

Ms. Ashlie Johnson[1], Ms. Raeven Clockston[2], Ms. Lindsey Fremling[1], Ms. Emma Clark[1], Ms. Pam Lundeberg[1], Dr. Megan Mueller[1], Dr. Dan Graham[1]
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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Nutrition

This comprehensive review synthesizes research on eating behavior changes during the early months of the COVID-19 pandemic. Changes in amount, types, and healthfulness of foods consumed, rate and timing of consumption, reasons for eating (e.g., stress, hunger), and other specified eating behaviors (e.g., restrained eating, binging, emotional eating) are reviewed across 71 studies conducted in 2020 with participants from over 30 countries. Findings show eating behaviors changed little during the early pandemic, relative to before the pandemic, for most participants. Among those whose eating behaviors changed, increases in both intake and frequency of eating meals and snacks were more common than decreases. When changes occurred in type of food consumed, increases were more common for snacks, homemade pastries, white bread/pasta, legumes, and fruits/vegetables and decreases for meats, seafood/fish, frozen foods, fast food, dark breads/grains, and dark leafy green vegetables. Changes in depression, anxiety, boredom, and stress were related to changes in eating behaviors. Meal skipping, emotional eating, binge eating, and restrictive eating tended to increase during the pandemic. Despite the wealth of knowledge provided by these 71 studies, some questions remain (e.g., only 3 studies assessed changes in timing of eating). Thus, we include a critical discussion of researching eating behaviors under pandemic conditions and recommendations for further empirical inquiry

P2.38 Using the COM-B model to identify the determinants of the parents offering fruits to children

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: This study aimed at identifying the determinants of the parents to offer 2 portions of fruits per day to their children aged 2 to 5 years old, based on the Behavior Change Wheel (BCW) approach. This research was motivated by the fact of the low consumption of fruits by children aged 2 to 5 years in Brazil and by the lack of interventions with this focus, based on a solid methodological framework.

METHODS: The BCW guide was followed for this qualitative study. The interview questions were developed using the Theoretical Domains Framework (TDF). The interviews were conducted by telephone and transcribed. Transcripts were deductively analysed by two independent researchers by means of content analysis. Written informed consent was obtained from all subjects by google forms.

RESULTS/FINDINGS: We interviewed 16 parents, defined by saturation criteria. Qualitative analysis using COM-B identified that participants felt that, regarding *Capability*, they don't have enough knowledge about the number of portions that they should offer to their children and how to plan the meals, including fruits in the routine. *Oportunity* was identified as very important once the participants have financial problems or don't have easy access to buy fruits. Many of them believed that they can't offer fruits regularly because of lack of time or they don't believe the children would accept. *Motivation* represents a relevant determinant because often the parents don't believe that the lack of adequate fruit intake brings consequences for the child and they don't have an objective view of what they would like to achieve.

CONCLUSIONS: This study shows the importance of recognizing and better understanding the role of parents in offering fruit to their children. Parental factors such as knowledge, habits, environment, resources can determine the behaviour of offering fruit to children and, therefore, bring future consequences. Tools to assist parents are strategies needed to amplify and help form habits that are potentially important to parents' self-efficacy in performing and determining the child's fruit intake.

P2.39 mHealth App intervention development to promote healthy salt intake in adults: a Behavior Change Wheel approach

Mrs. Samantha Dalbosco[1], Mrs. Milena Perin[1], Prof. Maria-Cécilia Gallani[2], Dr. Thais São-João[1], Dr. Roberta Rodrigues[1], Dr. Marilia Cornélio[1]

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: There are sound evidences associating high salt intake and greater risk of cardiovascular and non-cardiovascular diseases. A high salt intake has been observed in several populations worldwide, therefore the promotion of a healthier salt consumption has been encouraged as a low cost strategy to reduce this risk factor. However, these strategies need to be sound, built on theoretical and methodological bases and considering context of the target population. Considering these reasons this study aimed to develop a mobile phone App-based intervention to promote healthy salt intake among adults based on the steps of the Behavior Change Wheel (BCW).

Methods: The three stages of the BCW guided the development of the intervention: (1) understanding the unhealthy salt intake according to Theoretical Domains Framework domains and the Capability, Opportunity, Motivation to Behaviour (COM-B) model; (2) identifying intervention options; and (3) identifying the content and implementation strategies.

Results/findings: Three Theoretical Domains Framework domains were selected: Intentions, Beliefs about Capabilities and Behavioural Regulation and 2 components of the COM-B model: Reflective Motivation and Psychological Capability. After applying APEASE criteria (Affordability, Practicability, Effectiveness and cost-effectiveness, Acceptability, Side-effects and safety, and Equity) by five experts in the study area, firstly 6 intervention functions were selected: (1) education (increasing knowledge or understanding); (2) persuasion (using communication to induce positive or negative feelings or stimulate action); (3) incentivisation (creating an expectation of reward); (4) modelling (providing an example for people to aspire to or imitate); (5) enablement (increasing means/ reducing barriers to increase capability or opportunity; and (6) training (imparting skills).and after 16 behavior change techniques were retained: Goal setting (behavior); Problem solving; Goal setting (outcome); Action planning; Commitment; Feedback on behavior; Self-monitoring of behavior; Social support (unspecified); Social support (practical); Instruction on how to perform the behavior; Information about health consequences; Demonstration of the behavior; Prompt/cues; Behavioral practice/rehearsal; Credible source; Adding objects to the environment.

Conclusions: Results informed further development the next phases of the larger study, i.e., integration of the intervention strategies in the mobile phone App, its implementation and evaluation.

P2.40 Factors Associated with Changes in Physical Activity among a Sample of Appalachian Residents during the COVID-19 Pandemic

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Assess the sociodemographic, geographic, and health factors associated with increased physical activity (PA) and decreased PA during the pandemic in a sample of North Central Appalachian adults.

Methods: Surveys (n=1951) collected from a convenience sample of adults during Community Health Needs Assessments at two non-profit hospitals covering eight counties in West Virginia from January to March, 2021, were analyzed. The two dependent variables were based on response to a single, multi-select item in which respondents were asked "In the past six months, which of the following are things you have done in response to the coronavirus pandemic?" Among the list of 24 options were "spent more time doing physical activity" and "spent less time doing physical activity" from which the two, dichotomous dependent variables were created. Predictor variables included age, self-rated health, body mass index, sex, marital status, household income, education, children in the home, and county-level rurality (based on percentage of residents living in a rural area). Logistic regression analyses were performed using SAS 9.4©.

Results/findings: Roughly twice as many respondents indicated they spent less time doing PA during the pandemic (n=584, 29.9%) than more time doing PA (n=303, 15.5%). *More time spent doing PA* during the pandemic was positively associated with good/excellent self-rated health (AOR: 2.33), under/normal weight (AOR: 2.33) and overweight (AOR: 1.56), higher household income categories (AOR 1.56-2.50), and having earned a bachelor's degree (AOR: 1.49). These same factors (with the exception of overweight, annual household income of $50,000-$74,999, and education level) were significantly negatively associated with *less time spent doing PA* during the pandemic (AORs 0.51-0.61). Noteworthy is the finding that living in a Mostly Urban county was positively associated with *less time spent doing PA* during the pandemic (AOR 1.57) when compared with Completely Rural county of residence.

Conclusions: Results highlight further PA reductions in a North Central Appalachia population already with low levels of PA prior to the pandemic. Understanding the impact of the pandemic on key health behaviors is critical in advancing our understanding of the long-term effects and where existing disparities have been exacerbated.

P2.41 Understanding physical activity declines during COVID-19: The affective repercussions of disruption to exercise routines

Miss Celina Furman, Miss Sarah Volz, Dr. Alexander Rothman
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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Research suggests that intrinsic motivation—doing an activity because it is inherently enjoyable or interesting—supports sustained exercise engagement. Intrinsic motivation is posited to increase when one feels they have autonomy over their behaviors and choices (see self-determination theory; Deci & Ryan, 2008). However, changes brought about in the early stages of the COVID-19 pandemic heavily restricted how people could engage in exercise. Thus, this study aims to examine how these restrictions impacted people's affective experiences with exercise, especially for those who were previously highly intrinsically motivated to exercise, and if changes to these experiences are associated with declines in exercise engagement.

A sample of US adults who were highly physically active prior to the pandemic (>150 weekly PA minutes; N=373) were recruited from MTurk in April/May 2020, and completed a survey assessing engagement in moderate-vigorous PA (MVPA) pre- and during COVID-19, disruption to one's exercise routine, intrinsic motivation for exercise, and perceived changes in affective experiences during one's exercise sessions (i.e., how one most often feels during workouts during the pandemic, as compared to before).

We first tested if the association between disruption and MVPA declines were mediated by positive/negative affect. Findings revealed a partial mediation, such that greater disruption was associated with less positive/more negative affect during workouts, which were associated with larger declines in MVPA. Second, we tested if intrinsic motivation moderated the pathways between disruption and affect using moderated mediation (with parallel mediators). Findings indicated that positive and negative affect were predicted by an interaction between intrinsic motivation and disruption, such that those with high intrinsic motivation had the highest positive and lowest negative affect if they experienced less disruption, but had the highest negative affect if they experienced more disruption.

Findings suggest that there might be affective repercussions when autonomy is constrained for people who have high intrinsic motivation for exercise. More negative affective experiences during physical activity may undermine exercise engagement, especially for those who were previously motivated to exercise for intrinsic reasons (i.e., positive affect). Future work using experimental and longitudinal methods is needed to strengthen inferences about causality.

P2.42 Promoting Pupils' Physical Literacy (3PL): a pilot study testing the feasibility and acceptability of the Y-PATH intervention within the Danish school setting

Miss Mette Kurtzhals[1], Miss Paulina Sander Melby[4], Dr. Peter Elsborg[1,2], Associate Professor Glen Nielsen[4], Prof. Peter Bentsen[1,3], Dr. Wesley O'Brien[5], Associate Professor Sarahjane Belton[6], Dr. Johann Issartel[6]

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Background: The increase of physical inactivity across the world is costly to societies. A considerable number of Danish children and adolescents do not meet the national physical activity (PA) recommendations. In recent years, the concept of physical literacy (PL) has gained popularity worldwide and is considered as a proximal measure for lifelong PA. Few interventions, however, targeting PL exist on a global scale. In Denmark, the development of theoretically driven and evidence-based PL interventions that aim to increase children and adolescents' PL are still in their infancy. Yet, a promising theory-based and internationally tested intervention, Youth-Physical Activity Towards Health (Y-PATH), has proven to be effective on children and adolescents' PA levels, motor skills, and PL as a whole. *Aim:* This presentation introduces the Promoting Pupils' Physical Literacy (3PL) project which aims to test the feasibility and acceptability of the Y-PATH intervention within the Danish context among pupils aged 9-11 years old. The goal being that a revised and adapted "3PL intervention" protocol that aims to increase pupils' PL, will be ready for effectiveness testing by the end of this project.

Methods: Two public schools will be recruited and randomly assigned to an intervention or control condition following a waitlist design. The feasibility of the practicality and the recruitment process will be assessed within a document log administered by trained research assistants. The acceptability, including demand and experiences, and the intervention implementation degree, will be evaluated using short bimonthly questionnaires with teachers, along with interviews for pupils, teachers, parents, and school managers. The preliminary effectiveness will be tested by comparing changes in pupils' PL over time assessed with the validated Danish Assessment of Physical Literacy (DAPL) tool.

Discussion*:* A revised PL intervention, a Template for Intervention Description and Replication (TIDieR) checklist, and a protocol that offers a solid empirical and theoretical foundation for a future upscaled effectiveness study will be developed and implemented. The development of such a protocol and checklist

provides a national, as well as an international, opportunity for researchers to use and compare the effectiveness of the intervention across countries taking into account educational, cultural and societal differences.

P2.43 Impact of COVID-19 on a worksite weight loss program for employees with overweight and obesity

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: The current study examined changes in weight, physical activity, and diet related to COVID-19 among school district employees who participated in Vibrant Lives (VL), a worksite weight loss program.

Methods: This study included a secondary analysisof data from the VL program (2017-2020). Among school district employees who participated in the 6-month VL weight loss program, we categorized participants into two groups based on school year of participation: 1) non-COVID (2017-2019 school years) and 2) COVID (2019-2020 school year). A questionnaire was added at follow-up in 2019-2020 to ask whether participants changed their behaviors due to the COVID-19 pandemic. Changes in weight, physical activity, and diet were compared between non-COVID and COVID years using repeated measure mixed model and logistic regression.

Results: A total of 380 participants were included in the analyses (non-COVID: n=237; COVID: n=143). After the program, we observed significant weight loss (non-COVID=-2.03 kg±0.32vs. COVID=-1.14 kg±0.42; B=-2.03, SE=0.32, p=<.001) and increases in moderate/vigorous physical activity minutes (non-COVID=47.8 min±10.6 vs. COVID=55.7 min±13.7; B=47.84, SE=10.64, p<.001), but no significant differences between the years. Participants in the COVID year decreased fast food consumption (2 or fewer times in the past week; OR=2.12, SE=0.61, p=.009) but increased sugar-sweetened beverage intake(did not drink in the past week; OR=0.20, SE=0.08, p<.001) more than non-COVID year participants after the program. More snacking frequency, baking sweets, and overeating during the COVID-19 pandemic were reported as barriers to a healthy diet.

Conclusion: The COVID-19 Pandemic was negatively associated with favorable dietary behaviors among the VL program participants, but the participants in the VL program showed efforts to retain healthy behaviors during the stay-at-home order. More research is required to understand the barriers to health behaviors related to COVID-19 pandemic.

P2.44 Evaluation of the Impact of Cooking and Gardening Programs on Fruit and Vegetable Intake in Elementary Schools: A Systematic Review

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Children 6-12 yrs
Subject Category: Nutrition
Purpose: The objective of this review is to systematically analyze cooking and/or gardening programs for elementary school-aged children for their effectiveness in improving eating patterns, specifically increase in fruits and vegetables.

Methods: Electronic databases such as Cumulative Index to Nursing and Allied Health (CINAHL), PubMed, Web of Science, Academic Search Complete, Google Scholar, Springer Link, Science Direct, MDPI, NIH, SAGE, and

Mary Ann Liebert Inc. were searched to retrieve articles. Inclusion criteria were as follows: studies published in English, participants were in kindergarten through 5th grade, study took place within a school setting, study included a cooking and/or gardening program, study was published from 2011-2021, and the study was peer-reviewed. Keywords used for literature search were identical across all databases and included "gardening", "cooking", and "elementary school". PRISMA guidelines were used to conduct this systematic review. The quality of the studies was assessed by two researchers using the Quality Assessment Tool online forms from the National Institute of Health (NIH).

Results: In total, 69,595 articles were identified and screened. Finally, 34 articles met the inclusion criteria. 11/34 articles selected for review were exclusively gardening programs, 10/34 articles were exclusively cooking programs, and 13/34 articles were both cooking and gardening programs. The most prevalent study design was the quasi-experimental method with baseline and post intervention data collection. Third through fifth grade children were the most common age group in these studies. All interventions included hands-on experiences. Most studies ranged in duration from four months to one year. Two-thirds of the studies included additional components such as tasting sessions, physical activity, nutrition education, and parental engagement. Outcome measures in the studies included gardening/cooking enjoyment, gardening/cooking self-efficacy, preference for fruits and vegetables, access/availability/consumption of fruits and vegetables, willingness to try new foods, nutrition knowledge, BMI, and parental inclusion.

Conclusions: Positive results were seen for both gardening and cooking programs. However, combined cooking and gardening programs were more successful in significantly improving knowledge, exposure, availability, preference, and intake of fruits and vegetables. More research with larger study samples and follow up assessment is needed to confirm the findings from this review.

P2.45 Psychosocial Influences on Young Adult Life Skills and Cooking Skills

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Young adults are at a time period of increased independence with a stressful, fast-paced lifestyle and the emergence of mental health disorders. The development of unhealthy behaviors is prevalent in college, despite the need to learn to practice healthy behaviors, such as budgeting skills and cooking, which play a significant role in future financial and physical wellness. The aim of this study was to investigate how stress, mental health, and alcohol use are associated with college life skills and cooking self-efficacy.

Students attending an Appalachian university in spring 2019 completed an online survey that measured their stress using Cohen's Perceived Stress Scale-10 Item (PSS-10), depression using the Patient Health Questionnaire-9 Item (PHQ-9), anxiety using the Generalized Anxiety Disorder-7 Item (GAD-7), alcohol use using the Alcohol Use Disorder Identification Test (AUDIT-C), life skills (such as financial and time management), and cooking self-efficacy. Multiple linear regression was used to determine influence of stress, depression, anxiety, and alcohol use on life skills and cooking self-efficacy. All data was analyzed using JMP Pro Version 14.0.

The mean life skills score was 10.67 ± 2.88 out of a possible 24 and the mean cooking self-efficacy score was $16.51 + 3.45$ out of a possible 20. Students were least confident in their ability to budget money for food, managing time while preparing food, and their understanding of personal finance. Stress and depression were negatively associated with life skills scores ($\beta = -.05$, $p<.0001$ and $\beta -.08$, $p<.0001$, respectively) and cooking self-efficacy scores ($\beta = -.08$, $p<.0001$ and $\beta = -.08$, $p<.0001$, respectively). Anxiety was positively associated with life skills scores and cooking self-efficacy scores ($\beta = .06$, $p<.0001$ and $\beta = .05$, $p = .0025$, respectively. Alcohol use was positively associated with cooking self-efficacy scores ($\beta = 0.11$, $p<.0001$).

Findings show that education for college students on budgeting and life skills is needed in order to increase their confidence in how to budget for foods and manage time while preparing them. Further, mental health disorders negatively impact college student life and cooking skills and improving the mental health of college students can positively influence these behaviors.

P2.46 Role of Personality Type in Young Adult Eating Styles

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Young adults in college are at risk of developing unhealthy eating styles during this stressful transitional stage of life. The role of personality in health is an important area of research in order to understand underlying determinants of lifestyle behaviors. The purpose of this study was to determine the relationships between personality types and eating styles in college-attending young adults.

Methods: Young adults enrolled at an Appalachian university during fall 2021 were invited to participate in an online survey via Qualtrics. Survey measures included the Ten Item Personality Inventory (TIPI) which measures the Big 5 Personality types: extraversion, agreeableness, openness to experiences, emotional stability, and conscientiousness; and the Three Factor Eating Questionnaire (TFEQ) that measures three eating styles: cognitive restraint, uncontrolled eating, and emotional eating. Descriptive statistics were computed for all variables. Bivariate analysis examined the relationships between personality types and eating styles. All analysis occurred using JMP Pro Version 16.0.

Results/Findings: The mean extraversion score was 7.96 ± 3.41, the mean agreeableness score was 9.67 ± 2.46, the mean conscientiousness score was 10.38 ± 2.77, the mean emotional stability score was 7.82 ± 3.09, and the mean openness to experiences score was 10.28 ± 2.34. The mean cognitive restraint score was 14.39 ± 4.32, the mean uncontrolled eating score was 19.21 ± 6.27, and the mean emotional eating score was 6.43 ± 2.75. Lower cognitive restraint was significantly associated with higher emotional stability ($p<.0001$) and higher openness to experiences ($p=.0169$). Lower uncontrolled eating was significantly associated with higher emotional stability ($p<.0001$), higher openness to experiences ($p=.0017$), higher agreeableness ($p=.0014$), and higher conscientiousness ($p<.0001$). Lower emotional eating was associated with higher emotional stability ($p<.0001$), higher openness to experiences ($p<.0001$), higher agreeableness ($p=.0023$), and higher conscientiousness ($p<.0001$).

P2.47 Migrating to a physically active country: changes in physical activity and motivation

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Purpose: The migration effect on physical activity (PA) is understudied. In the European Union (EU), 72% of the citizens in Portugal vs. 30% in Sweden never or seldom exercise or play sports. Learning the factors influencing these differences may provide essential public health information. This study aimed to analyze the association between emigration from an "inactive country" (IC) to an "active country" (AC) and PA, and the quality of motivation (QM).

Methods: In this cross-sectional study, 402 participants accessed an online survey. Of these, 83 met eligibility criteria: i) 18-65 years old; ii) have lived in an IC for at least 10 years; iii) migrated and now living in an AC for at least 6 months. An AC was defined as an EU country, where >8% "regularly" and <42% "never" exercise or play sport (EU averages, according to the Eurobarometer). A self-report assessed QM (BREQ-3) and PA (IPAQ-SF) in both contexts. Differences between contexts were examined through a paired sample t-test. Effect sizes (r) were calculated, with values of .1, .3, and .5 representing a small, medium, and large effect. Pearson correlations and regression analysis assessed the associations among the variables.

Results: Emigrating from an IC to an AC increased all forms of PA (.55>r>.21). Autonomous motivation (AM) increased (r=.37), and controlled motivation also increased (r=.34; due mainly to introjected regulation). In the IC, AM was positively associated with all forms of PA. These associations were less frequent in the AC, where only higher AM was linked to higher vigorous PA and total PA MET-min. Interestingly, only integrated motivation (i.e., when one expresses that PA is part of their life) was associated with all PA forms in the AC. While living in the IC, it was mainly the intrinsic motivation associated with PA. The regression analysis did not produce any significant results.

Conclusions: In our sample, migrating from an IC to an AC increased the QM and PA. The correlations suggest that the AC facilitates an active lifestyle integration in their populations. Future studies should look into how their physical and psychosocial contexts may facilitate this.

P2.48 Exercise Role Identity and Physical Activity in U.S. College Students

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Regular physical activity (PA) yields documented health benefits. The recommendation for MPA is 150 minutes/week and VPA is 75 minutes/week. However, 60% of U.S. adults do not engage in the recommended amount of PA; 25% of U.S. adults report no leisure time PA. Previous studies have examined exercise role identity (ERI) as a potential determinant of PA behavior. To investigate, this the present study sought to understand if exercise role identity would predict differences in moderate and vigorous physical activity (MVPA) over a 4-week period in a sample of college students.

Methods: Participants self-reported total bouts of MVPA, lasting 10 minutes or more, using a 7-day PA recall (correlation = .72, r = .58). ERI was measured using the Exercise Identity Scale. The Exercise Role instrument has been shown to be both valid and reliable in multiple populations (Cronbach's alpha = .94, r = .93). ANOVA was used to compare group means. Linear regression was used to test ERI as a predictor of MVPA.

Results: A sample of 286 student volunteers were recruited to participate in a four-week PA study. The original sample was 72% female and 28% male. Random sampling of female subjects was completed to balance the design (n = 155, 49.4% female, 50% male, M = 21 years). Mean ERI was 19.88 ± 5.89; mean MPA = 13.86 ± 11.21; mean VPA = 9.34 ± 9.83. The ANOVA model showed significant between group differences in ERI (p = .003). ERI was a significant predictor of both MPA (p = .006, R^2 = .06, β = .43) and VPA (p < .001, R^2 = .17, β = .70).

Conclusions: ERI was low in the represented sample but was a significant predictor of PA. PA tends to decline beginning in adolescence and continues to decline through early adulthood. Thus, future research should develop interventions targeting ERI as a method to increase PA in college students.

P2.49 Association between body-related self-conscious emotions and weight-related intentions during adolescence: A 6-year longitudinal analysis

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Body dissatisfaction appears common among youth, with about 50% of young people reporting intentions to lose weight3. It is unclear however, how body image-related self-conscious emotions relate with intentions about weight throughout adolescence. The objective of this study is to assess the association between change in body-related self-conscious emotions and weight-related intentions during adolescence.

Methods: This secondary analysis is based on data from the MATCH study, an ongoing longitudinal study of 937 New Brunswick youth who answered a self-administered questionnaire 3 times per year for 8 years (from age 10 to 18 years). The measure of body-related emotions was administered once per year and captured self-conscious shame, guilt, envy, embarrassment, authentic pride and hubristic pride. Intentions about losing, gaining, or staying the same weight were measured at every cycle. Gender-stratified generalized estimating equations accounting for repeated measures were used to assess the association between changes in self-conscious emotions and weight-related intentions.

Results/findings: We found significant positive associations between all negative self-conscious emotions (shame (OR=2.84), guilt (OR=2.45), embarrassment (OR= 3.43), and envy (OR=2.21)) and weight loss intentions among girls (all, p < .001). Similar, but non-significant, positive associations were also found among boys. Inversely, a negative association was found between embarrassment (OR=0.66) and the intention to stay the same weight among girls. Authentic (OR=1.71) and hubristic pride (OR=1.83) were both associated positively with the intention to stay the same weight among girls. There was no significant association between self-conscious emotions and weight gain intentions.

Conclusions: Higher negative body-related self-conscious emotions were associated with higher weight loss intention in girls. Weight control interventions should focus more on body-related self-conscious emotions to improve the relation with weight control on adolescents.

P2.50 Changes in food-related behaviors due to the Covid-19 pandemic

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

The present study aims to assess how the Covid-19 pandemic has affected food-related behaviors, such as shopping, eating, or cooking, and describe disparities across socioeconomic and demographic groups in the US. Likewise, it seeks to understand why people may have changed their food-related behaviors during and post-pandemic.

A mixed-methods design addresses the research questions. Data was collected as part of an ongoing RCT of communities with mobile produce markets. We used cross-sectional data from surveys collected between February and November 2021 with 399 adults in 28 communities across three US states. Measures looked at perceptions of how COVID-19 affected fruit and vegetable (FV) access, consumption, cooking, and shopping. We assessed differences by race, income, and governmental assistance participation using chi-square tests. Semi-structured interviews are conducted with participants who reported changes to address the reasons behind them. Qualitative data collection will be completed in February 2022 with guidance of the Retail Food Environment and Customer Interaction Model through an inductive and deductive approach.

The mean age of the participants is 51.1 years (SD=14.8); 51% identify as Black, and 40% White; 29% participate in at least one governmental assistance program; 18% have an annual household income <$10,000, and 18% >$60,000. Survey data revealed changes in food frequency (28% consume more FV while 20% less), grocery online shopping (28% buy more often), and cooking at home (38% cook more often). We observed racial and income disparities in increased online-grocery-shopping between people who identified as White or not (37% vs. 22%, p-value=0.01), and among income categories (17% <$10,000 vs. 41% >$60,000, p-value=0.0473). Users of governmental assistance eat fewer FV (23%) than non-users (12%) (p-value=0.0367). Higher income participants cook at home more often (28% <$10,000 vs. 51% >$60,000, p-value=0.0397).

Changes in food-related behaviors have been described in the literature during the Covid-19 pandemic and are being examined in this study. Researchers and policymakers can capitalize on the results to encourage people to keep and improve positive post-pandemic food behavior changes using a health equity lens due to different motivations and barriers presented by different socioeconomic and demographic groups.

P2.51 Coping Strategies and Emotional Health of Young Adults with Problematic Eating Behaviors

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Young adults 19-24 yrs
Subject Category: Sedentary behavior and nutrition

Purpose: An essential component of a healthy lifestyle is diet, and problematic eating behavior can have negative physical and mental implications. Food addiction is a severe form of disordered eating that is understudied in the non-clinical population. Food addiction can place a significant emotional burden on an individual. College-attending young adults are at a stressful time period of life characterized by the development of unhealthy behaviors that can extend into their future lifestyle habits. The purpose of this study is to further the understanding of food addiction and its associations with mental and emotional health in college-attending young adults.

Methods: Students currently enrolled at an Appalachian university in fall 2021 were invited to participate in an online survey via Qualtrics. Survey items used validated tools that measured food addiction using the Yale Food Addiction Scale Version 2.0, depression using the Patient Health Questionnaire-9 Item (PHQ-9), anxiety using the Generalized Anxiety Disorder-7 Item (GAD-7), stress using Cohen's Perceived Stress Scale-10 Item (PSS-10), coping strategies using the Brief COPE, and emotion dysregulation using the Difficulties in Emotion Regulation-Short Form (DERS-SF). Descriptive statistics were computed for all variables. One-way ANOVA was used to examine significant differences in mean depression, anxiety, stress, coping, and emotion regulation scores among different levels of food addiction severity.

Results/Findings: Respondents (n=1645) had a prevalence of food addiction of 21.9%, with 11.5% having severe, 4.7% having moderate, and 5.7% having mild food addiction. More severe food addiction showed significantly higher mean scores in depression ($p<.0001$), anxiety ($p<.0001$), and stress ($p<.0001$). More severe food addiction was associated with more difficulty with emotion regulation ($p<.0001$), non-acceptance of emotions ($p<.0001$), impulsivity ($p<.0001$), lower emotional awareness ($p<.0001$), and lower emotional clarity ($p<.0001$). Finally, more severe food addiction was associated with more frequent use of emotion-focused coping ($p = .0007$) and avoidant coping ($p<.0001$).

Conclusions: Results show that individuals with food addiction have difficulties with mental health disorders, emotional health, and negative coping strategies. These findings contribute to the understanding of the food addiction population and underlying mental and emotional problems that need to be address in interventions and treatments.

P2.52 Preferences, barriers, and facilitators to exercise and physical activity in cancer survivors of African, Black, and Caribbean descent in Nova Scotia

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The Canadian Cancer Registry does not currently report its findings based on ethnicity/race. However, data from the United States shows that cancer survivors of African, Black, and Caribbean (ABC) descent have the lowest survival rate of any racial or ethnic group for most cancers. A strong and growing body of evidence has demonstrated that regular physical activity (PA) and exercise is associated with lower risk of cancer recurrence, cancer-related death, all-cause mortality, and decreased adverse effects associated with treatments. Nova Scotia (NS) Canada is home to the oldest and largest indigenous Black community in Canada. To date however, no study has explored exercise participation among ABC cancer survivors in NS. Knowing the benefits of exercise for cancer survivors and the higher advanced disease diagnoses and death rates among those of ABC descent, the primary objective of this study will be to examine: 1) the trends of exercise participation of cancer survivors of ABC descent; and 2) their perceived preference, barriers, and facilitators to exercise participation while living with a cancer diagnosis.

Methods: This study will use an explanatory sequential mixed-methods design (two-phase). ABC cancer survivors will first complete an anonymous online survey that will include self-reported quality of life using the Functional Assessment of Cancer Therapy – General (FACT-G) and self-reported leisure time using the modified Godin Leisure Time Exercise Questionnaire (GLTEQ). Participants will also be asked about their beliefs, barriers and facilitators, and preferences to exercise and physical activity. Semi-structured interviews will also take place to find emerging themes and add depth to survey answers. Descriptive statistics will be used to describe survey responses and an inductive thematic approach will be used to analyze interviews and focus groups.

Results: The survey will be open for 2 months. Since November 8th, there have been 12 completed surveys. We hope to receive 50 completed surveys and 8 interviews. Preliminary results will be updated and discussed by conference date.

Conclusion: Identifying barriers and preferences to regular PA among ABC cancer survivors is needed for improving survival outcomes, quality of life and minimizing disparities in conducting, developing, and implementing tailored exercise interventions.

P2.53 Assessing the Needs, Preferences, and Views of Informal Cancer Caregivers Regarding Exercise Programs

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Informal cancer caregivers (ICC) require interventions to support their health. ICC have been shown to experience several physical, emotional, and social consequences leading to a reduced quality of life, an increased risk of all-cause mortality, and a reduced capacity to care for their loved ones. Exercise appears to be a potent intervention to improve the physical and emotional well-being of these caregivers but research in this area is lacking. The primary purposes of this study are to develop an understanding of the needs and preferences of adult ICC living in Nova Scotia and to better understand their views regarding participating in dyadic exercise programs with their care recipients to inform the design of exercise programs that will foster high uptake. ICC are generally interested in exercise programs, but their specific needs and preferences are not well understood. Very little is known about the PA behaviours of Nova Scotian ICC or about their specific preferences for exercise programs including frequency, intensity, time, type, mode, and interest in dyadic programs. In this mixed-methods study, a survey will be employed to assess ICC PA levels, caregiving demand and duration, quality of life, and exercise program preferences. Chi-squared analysis will explore relationships between these measures and whether PA levels, caregiving demand, quality of life, or program preferences differ for ICC who provide care to people with different types or stages of cancer. A follow-up semi-structured interview will seek to better understand ICC exercise behaviours and history, their knowledge of the benefits of exercise for ICC and people living with cancer, and their opinions about dyadic exercise programs. Interviews will be analyzed using interpretive description, which is a credible, transparent process for developing understanding and generating knowledge that can advance clinical practice. Data collection will take place from January-April 2022. The anticipated results of the study are a description of the characteristics of adult ICC living in Nova Scotia and an understanding of their needs, preferences, and views regarding exercise programs. This knowledge will be useful in designing exercise programs that will foster high uptake among adult ICC in Nova Scotia.

P2.54 Chinese Breast Cancer Survivors' Functional Fitness, Biomarkers, and Physical Activity Determinants and Behavior: A Descriptive Study

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical activity and sedentary behavior

Purpose: Little information is available on physical activity (PA) and other health outcomes among Chinese breast cancer survivors (BCS). This study investigated associations among Chinese BCS's PA determinants, PA behavior, functional fitness, and biomarkers, as well as examined these outcome variables as a function of PA and BMI.

Methods: A total of 168 BCS (age = 44.81±7.94) were recruited from Guangdong, China. BCS self-reported demographic and clinical information (e.g., stage at diagnosis, menstrual status). Validated surveys discerned PA engagement and PA determinants (e.g., PA attitudes, PA strategies, self-efficacy, enjoyment, family support, friend support). BMI was defined as weight/height2. Other outcomes included lipid profile (i.e., total cholesterol, high-density lipoprotein, low-density lipoprotein, triglycerides), fasting serum glucose, breast cancer biomarkers (i.e., carcinoembryonic antigen [CEA] and cancer antigen 15-3[CA153]), and functional fitness (i.e., strength in arms and legs, endurance, balance, agility, and flexibility).

Results: Regression results suggested self-efficacy ($\beta = 0.32$), friend support ($\beta = 0.20$), lower body flexibility ($\beta = 0.18$), and upper body flexibility ($\beta = -0.24$) were significant predictors ($p < 0.05$) for participants' PA levels. Participants' triglyceride ($\beta = 0.30$), glucose ($\beta = 0.23$), and upper body strength ($\beta = 0.45$) significantly predicted their CEA; while glucose ($\beta = -0.26$) and upper body flexibility ($\beta = 0.22$) were significant predictors for CA153. Overall, the results yielded no significant differences on any outcomes between those met and not met the PA recommendations, Wilks' Lambda = 0.92; $F_{(8,78)} = 0.82$, $p = 0.59$. Yet, participants' outcomes differed significantly by BMI. Specifically, individuals with healthy BMI had higher HDL, $F_{(1,90)} = 3.43$, $p = 0.06$, and lower glucose, $F_{(1,90)} = 8.12$, $p < 0.01$, as compared with those overweight or obese individuals.

Conclusions: Findings indicated some, but not all of, PA determinants, fitness, and lipid profiles were predictors of participants' PA and breast cancer biomarkers. Also, BCS with healthy BMI tend to have better lipid profile and glucose compared with overweight/obese BCS. Obesity prevention interventions targeting Chinese BCS need to be developed given that breast cancer risk factors may reduce because of decreased BMI.

P2.55 The feasibility of recruitment of cancer survivors to participate in a fully remote physical activity promotion program during a pandemic.

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Cancer survivors (CS) can significantly benefit from physical activity (PA), as regular engagement can reduce symptoms of fatigue and medication side-effects, improve function and quality of life, and decrease cancer recurrence. Concerningly, evidence shows that 34% of adult CS report engaging in no leisure time PA. The COVID-19 pandemic is believed to have additionally affected this populations' PA engagement, given their higher-risk status and desire to reduce possible exposure.

Purpose: Since many in-person PA opportunities became inaccessible and unsafe for CS, the purpose of this pilot study was to examine the feasibility of recruiting CS for a fully-remote home-based PA promotion program during the COVID-19 pandemic.

Methods: Study recruitment took place from July-September of 2021. Recruitment efforts were restricted to 150 miles of the research lab. We specifically targeted cancer support groups, survivor-orientated and community social media pages, and contacted participants from existing databases.

Results: 33 CS contacted the lab expressing interest. Of these individuals, 16 (48%) were ineligible primarily for being too active, or having recent cancer treatment (< 1month). Overall, n=16 participants are currently enrolled, producing an overall enrollment rate of 48%. N = 15 CS with an average age of 58.73 (±10.24) years were successfully recruited and are currently participating a fully-remote PA promotion program. 100% of participants are female Caucasians with an average time since cancer diagnosis of 111(±95.7) months. The most common cancer type is breast cancer (N=10) followed by ductal carcinoma (N=2). A majority of the participants were diagnosed with stage 1 (N=7), or stage 2 cancer (N=4).

Conclusion: Over 3 months, it was feasible to recruit and enroll 15 CS for a fully remote PA program. While our recruitment and enrollment rates are comparable to past studies, strong clinical connections (oncologists, clinicians) could help improve rates. Virtual programming seems to be of interest for this population, however, supplementing the recruitment efforts with in-person events may allow for an effective recruitment strategy as it lends itself to making a personal connection between the research team and participants prior to commencement of a fully remote PA promotion program.

P2.56 Testing Activity Correlates in Colorectal Cancer Survivors (TACTICS): A study protocol for a group-based, videoconference-delivered physical activity intervention

Dr. Heather Leach[1], Ms. Mary Hidde[1], Ms. Emma Gomes[1], Ms. Sarah Roberts[4], Dr. Angela Bryan[2], Dr. Myles Cockburn[3], Dr. Wells Messersmith[4]

[1]Colorado State University, Fort Collins, USA, [2]University of Colorado at Boulder, Boulder, USA, [3]University of Southern California, Los Angeles, USA, [4]University of Colorado Cancer Center, Aurora, USA

SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Background: Physical activity (PA) after a colorectal cancer (CRC) diagnosis can improve health outcomes and is associated with lower mortality. Unfortunately, CRC survivors report some of the lowest levels of PA of any survivor group, necessitating interventions which utilize behavior change techniques (BCT's). BCTs drawn from social cognitive theory (e.g., goal setting, graded tasks, self-monitoring), and group-dynamics (e.g., group environment, structure, processes) have demonstrated success in face-to-face PA interventions but have yet to be tested in a virtual format. Herein, we describe the study protocol of an ongoing group-based videoconference-delivered PA intervention for CRC survivors.

Methods: Participants must be ≥40 years old, diagnosed with stage II-IV CRC, completed chemo and/or radiation therapy ≤5 years, and have access to a computer or phone with internet and camera. Exclusion criteria are evidence of metastatic disease, ≥150 minutes of PA per week, and presence of known contraindications for exercise. Participants are randomized 1:1 to the intervention or a PA education control group. The intervention consists of instructor led group-based exercise sessions 2x week for 12-weeks, and 5 PA discussion sessions, all delivered in real-time via Zoom videoconferencing software. Outcomes are assessed at baseline and post-intervention, and include PA, quality of life, body composition, and physical fitness. Additional questionnaires will assess hypothesized mediators of PA behavior change, including exercise self-efficacy, outcome expectations, social support, group cohesion, and neighborhood PA resources.

Results: To date, N=16 have enrolled in the study (Mage=58±13 years, 62.5% female, MBMI=29.0±5.8 kg/m^2), N=8 allocated to intervention. A total of N=9 have completed the post-intervention study visit, N=3 withdrawal/dropout, and N=4 currently on study. Adherence to exercise and discussion sessions is 65.6% and 90%, respectively. At baseline, accelerometer measured MVPA was M=15.5±16.6 mins/day, and sedentary time was M=12.94±2.25 hrs/day.

Conclusions: Accrual is ongoing through July 2023. Results from this study can inform the use of videoconferencing software to enhance the reach and accessibility of PA interventions and programs for CRC survivors.

P2.57 HERE For You, For Them: Initial lessons learned from a wellbeing program for early childhood education professionals in rural family childcare homes

Dr. Danae Dinkel[1], Ms. Cynthia Lujan[1], Ms. Dana Dyksterhuis[2], Ms. Jen Armstrong[2], Dr. Matthew Bice[3], Dr. Jolene Johnson[4]

[1]University of Nebraska at Omaha, Omaha, USA, [2]HERE For You For Them, Omaha, USA, [3]University of Nebraska at Keanrey, Kearney, USA, [4]University of Nebraska Medical Center, Munroe Meyer Institute, Omaha, USA

SIG - Primary Choice: F. Early care and education
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Background: Early childhood education professionals (ECEPs) possess risk factors for cardiovascular disease and high rates of stress which can lead to depression and/or burnout. Unfortunately, this may impact the quality of care they provide for children. Rural family childcare home (FCCHs) ECEPs typically have limited resources and access to physical and mental wellbeing trainings compared to their urban counterparts.
Purpose: The purpose of this study is to explore the feasibility of the HERE For You For Them (HERE) program for rural FCCH ECEPs.

Methods: HERE utilizes evidence-based mindfulness tools to improve the wellbeing of ECEPs and the children they care for. During this 16-week pilot the ECEPs attend monthly one-hour long trainings via Zoom. Online surveys were completed to measure their physical and mental wellbeing at baseline. ECEPs received a Fitbit to track their physical activity levels throughout the program. Feasibility of implementation is being assessed via bi-weekly surveys and end of program interview.

Results: Our initial goal was to create two geographic based communities of practice (n=12 ECEPs/group). Due to challenges with recruitment of ECEPs and desire of the rural ECEP advisory board working with the research team to connect with more ECEPs across the state, eligibility was expanded to all rural areas in Nebraska. After additional recruitment strategies were utilized, recruitment goals were exceeded in 3 weeks (n=28). All participants are female and have been working in childcare for 17.4 (±6.5) years. Due to scheduling conflicts, a new trainer was recruited and trained to implement the program; however, some inconsistencies in implementation were noted and fidelity checklists were developed for the remaining trainings. Importantly, 95% of the ECEPs were satisfied with the topic of the first training and 85% were engaged by the presenter. Despite not being required, 13 participants joined the private Facebook group, 15 downloaded the HERE app. After the first week, the HERE website had 66 visits, and 11 activity pack downloads.

Conclusion: There were multiple lessons learned during the recruitment process and launch of the HERE program. The program will continue to be assessed for feasibility and acceptability.

O.2.09 - Disease prevention research for specific populations

Room 154

May 20, 2022, 12:05 PM - 1:20 PM

Impact of school-based pediatric obesity interventions on disordered eating behaviors across three randomized control trials

Ms. Lenora P. Goodman[1], Associate Professor Nancy E. Sherwood[1], Associate Professor Craig A. Johnston[2], Assistant Professor Katherine R. Arlinghaus[1]
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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Few studies have examined the impact of school-based obesity prevention programs on disordered eating outcomes. We evaluated disordered eating outcomes across three school-based randomized controlled obesity intervention trials.

Methods: Study 1 (n=355), Study 2 (n=302), and Study 3 (n=240) were six-month interventions implemented during participants' physical education (PE) class. All participants were recruited from a Houston, Texas charter school district and self-identified as Hispanic-American. The intervention arm of Study 1 (delivered by PE teachers and peer mentors) and Study 2 (delivered by trained research staff) included physical activity, nutrition, and behavioral modification components. In both studies, the comparison condition consisted of the same intervention delivered by trained PE teachers. The intervention arm of Study 3 included physical activity and behavioral modification (no nutrition) delivered by trained research staff, and was compared to PE class as usual. Body dissatisfaction and purging/restriction behaviors were measured at baseline and six months using the Modified Kids Eating Disorder Survey, a validated tool for this population. Controlling for age, gender, and baseline BMIz, three separate ANCOVA models were developed to examine differences in body dissatisfaction and purging/restriction between groups over time. Models were stratified by weight status.

Results: Across studies, participants' mean age ranged from 11.9-12.9 years, 52-58% of participants were female, and 46-57% had overweight/obesity at baseline. There were no significant differences in body dissatisfaction over time between conditions in any of the three studies. There were also no differences in purging/restriction behaviors among participants with overweight/obesity (Study 1: $F(1, 157)=0.93$, $p=0.34$; Study 2: $F(1, 152)=3.34$, $p=0.07$; Study 3: $F(1, 106)=1.59$, $p=0.21$) or among participants with healthy weight status in Study 1 ($F(1, 168)=0.003$, $p=0.96$) or Study 2 ($F(1, 140)=1.41$, $p=0.24$). However, among individuals with healthy weight status in Study 3, intervention arm participants had significantly worsened purging/restriction relative to comparison condition participants ($F(1, 124)=4.04$, $p=0.047$).

Conclusions: School-based obesity programs should consider potential adverse consequences, particularly among students with healthy weight. Comparison of interventions across these studies can help identify intervention aspects that may be protective against disordered eating behaviors among Hispanic adolescents while improving weight status.

Nutrition intervention to reduce body weight and systemic inflammation among World Trade Center responders with Post Traumatic Stress Disorder: Randomized Controlled Trial

Associate Professor CHRISA ARCAN[1], Associate Professor Wei Hou[2], Ms. Xiaohua Yang[2], Ms. Kathryn, F Hughes[2], Ms. Amanda Reichardt[2], Associate Professor Sean A. P. Clouston[2], Prof. Benjamin J. Luft[2]

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Nutrition

Purpose: The Mediterranean dietary (MedDiet) pattern has been shown to lower systemic inflammation and risk of metabolic syndrome. Responders to the 9/11 World Trade Center (WTC) disaster suffer from high levels of post-traumatic stress disorder (PTSD) and other chronic conditions such as obesity, increased systemic inflammation, and cardiovascular disease; however, despite this increased risk no nutrition intervention studies have been conducted among WTC responders.

Methods: We conducted a pilot randomized controlled trial, among WTC responders (age 45-65 years) with PTSD who were overweight or obese. Participants (N=62; males: 87%) were randomly assigned to intervention (MedDiet n=31) or control (usual nutrition counseling n=31) conditions. The 10-week MedDiet intervention included weekly online nutrition education sessions through the Web and smart phones, motivational text messages, goal setting/teach-back questions, and online cooking lessons, while both groups received three in-person counseling sessions. Baseline, post-intervention (n=93% retention), and 3-month follow-up (73% retention) data (blood collection, anthropometrics, electronic surveys, MedDiet survey, and PTSD checklist score were collected. For continuous outcomes, between-group comparisons were conducted using nonparametric Wilcoxon rank sum tests, and pre-post within-group comparisons were conducted using Wilcoxon signed rank tests.

Results: Both groups experienced a significant increase in median MedDiet score ($p<0.0001$) and decrease in oxidized LDL at post- and 3-month follow-up (FU). Compared to the control group, the intervention group had significant improvements in waist circumference at post- and 3-month up FU ($p<0.0001$), a decrease in Hemoglobin A1c (HA1c) at post- ($p_{grpdiff}=0.019$) and 3-month FU ($p_{grpdiff}=0.039$) and a significant decrease in omega-6/omega-3 ratio at post-intervention ($p_{grpdiff}=0.029$). There was a clinically significant decrease in the PCL score for both groups at post- and FU measurements ($p=<0.0001$).

Conclusion: The WTC-HP Nutrition study involved a high-dose remote communication/education coupled with personal counseling targeting nutrition-related personal, behavioral, and home environmental factors. The goal was to improve weight status, systemic inflammation, and symptoms of PTSD. Both groups experienced

some positive outcomes, however the MedDiet group experienced the best overall outcomes including improved mental health. The results of this trial may inform the design of future larger scale interventions.

The effectiveness of the Structured Health Intervention For Truckers (SHIFT): A cluster randomised controlled trial (RCT)

Dr. Stacy Clemes[1,2], Dr. Veronica Varela-Mato[1,2], Dr. Danielle Bodicoat[3], Ms. Cassandra Brookes[4], Dr. Yu-Ling Chen[1,2], Dr. Charlotte Edwardson[2,4], Prof. Laura Gray[4], Ms. Amber Guest[1], Ms. Vicki Johnson[5], Prof. Fehmidah Munir[1,2], Dr. Nicola Paine[1,2], Ms. Katharina Ruettger[1], Dr. Mohsen Sayyah[1,2], Dr. Aron Sherry[1,2], Ms. Ana Suazo Di Paola[4], Ms. Jacqui Troughton[5], Prof. Thomas Yates[2,4], Dr. James King[1,2]

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical activity and sedentary behavior

Purpose: Long distance heavy goods vehicle (HGV) drivers' working environment provides limited opportunities for a healthy lifestyle with unhealthy lifestyle behaviours prevalent in this occupational group. Consequently, HGV drivers exhibit higher than nationally representative rates of obesity, and obesity-related co-morbidities, and are underserved in terms of health promotion initiatives. The purpose of this study was to evaluate the effectiveness of the multicomponent 'Structured Health Intervention For Truckers' (SHIFT), compared to usual care, at 6-months follow-up.

Methods: We conducted a two-arm cluster RCT in transport sites throughout the Midlands, UK. The 6-month SHIFT programme included a group-based interactive 6-hour education and behaviour change session, health coach support and equipment provision (Fitbit® and resistance bands/balls to facilitate a 'cab workout'). Clusters were randomised following baseline measurements to either the SHIFT or usual practice control arm. The primary outcome was device-assessed physical activity, expressed as mean number of steps/days, at 6-months. Secondary outcomes included: device-assessed sitting, physical activity intensity and sleep; cardiometabolic health, diet, mental wellbeing and work-related psychosocial variables. Data were analysed using mixed-effect linear regression models using a complete-case population.

Results: 382 HGV drivers (mean±SD age: 48.4±9.4 years, BMI: 30.4±5.1 kg/m^2, 99% male) were recruited across 25 clusters (depots), and randomised (at the cluster level) into either the SHIFT (12 clusters, n=183) or control (13 clusters, n=199) arms. At 6-months, 209 (55%) participants provided primary outcome data. Significant differences in mean daily steps were found between groups, in favour of the SHIFT arm (adjusted mean difference: 1008 steps/day, 95% CI: 145-1871, p=0.022). Favourable differences were also seen in the SHIFT group, relative to the control group, in time spent sitting (-24 mins/day, 95% CI: -43 - -6), and moderate-to-vigorous PA (6 mins/day, 95% CI: 0.3-11). Differences were largely driven by behavioural changes on non-workdays. No differences were observed between groups in the other secondary outcomes.

Conclusions: The SHIFT programme led to a clinically meaningful difference in daily steps, between trial arms, at 6-months. The programme offers potential to be incorporated into driver training courses to promote activity in this at-risk, underserved, and hard-to-reach essential occupational group.
Trial registration: ISRCTN10483894.

O.2.10 - Exploring relationships between food environment, intake and health

Room 155

May 20, 2022, 12:05 PM - 1:20 PM

Sugar-sweetened beverage consumption among adolescents from 1998-2017

Dr. Kelly Morgan[1], Dr. Emily Lowthian[1], Dr. Jemma Hawkins[1], Dr. Britt Hallingberg[2], Dr. Manal Alhumud[3], Dr. Chris Roberts[4], Prof. Simon Murphy[1], Prof. Graham Moore[1]

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: The present study examined time trends in adolescent consumption of sugar-sweetened beverages and energy drinks among secondary school students in Wales, United Kingdom. This is the first study to examine such historical trends and to model change in inequalities over time.

Methods: Between 1998 to 2017, students aged 11-16 years old completed the Health Behaviour in School-aged Children (HBSC) survey and the Welsh School Health Research Network (SHRN) survey. Surveys were conducted approximately every two years from 1998 to 2017 and data appended over the years to create a repeated cross-sectional dataset. Questions on drink consumption asked; 'How many times a week do you usually drink Coke or other soft drinks that contain sugar?' and 'How many times a week do you usually drink energy drinks (such as Red Bull, Monster, and Rockstar)?' For both questions, responses were recoded to form a three-category variable; 'Never or less than weekly' (included 'Never' and 'Less than weekly'), 'Weekly' (included 'Weekly/once a week', '2–4 times a week' and '5–6 times a week') and 'Daily or more' (included 'Daily' and 'More than one a day'). Sociodemographic questions concerned gender, year group and family affluence. Multinomial regression models were employed alongside tests for interaction effects.

Results: The sample comprised 176,094 student responses (49% boys). The prevalence of daily sugar-sweetened beverage consumption decreased between 1998 (57%) to 2017 (18%) while weekly consumption remained constant since 2006 (49% to 52%). From 2013 to 2017, daily consumption of energy drinks remained stable (6%) while weekly consumption reports steadily decreased (23% to 15%). Higher consumption rates of sugar-sweetened beverages and energy drinks were found among boys, older children and those from a low socioeconomic group. The only characteristic to show a statistically significant change over time was consumption according to socioeconomic group, revealing a widening disparity between sugar-sweetened beverage consumption rates of those from low and high socioeconomic groups.

Conclusions: While results indicate a positive shift in overall consumption rates of both sugar-sweetened beverages and energy drinks, urgent policy action is required with close attention to equity of impact throughout policy design and evaluation plans.

The Aperitif effect: alcohol intake, macronutrient and energy intake in the Australian population

Dr. Amanda Grech[1], Prof. Stephen Simpson[1], Prof. David Raubenheimer[1]
[1]The University of Sydney, Sydney, Australia

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

The role of alcohol on body weight regulation, food intake, and appetite has received much attention, however, the consensus is that we still don't completely understand the role of alcohol in weight regulation. Recent evidence has demonstrated that alcohol intake increases circulating levels of fibroblast growth factor 21(FGF-21), suppresses appetite for alcohol and carbohydrate, and increases appetite for protein.
We tested the predictions that
  i.   FGF21-elicited protein seeking will result in increased proportional protein intake when drinking alcohol;
  ii.   ii. the strong satiating effect of increased protein will be associated with decreased energy intake ("protein leverage"), but
  iii.   iii. when protein seeking results in consumption of umami-flavoured (savory) low protein snack foods (the "protein decoy effect") increased energy intake will be associated with alcohol consumption.

We used proportions-based nutritional geometry and mixture models to test these in participants which were measured with one 24-hour recall in the Australian National Nutrition and Physical Activity Survey (n=9,341 adults). One alcohol peak corresponded with high protein and low carbohydrate and fat (%E) and total energy intake was below estimated energy requirements (EER). Alcohol in this region was accompanied by lean meats, poultry, fish, seafood, nuts, or legumes. A second alcohol peak corresponded with moderate protein (%E) and high fat (%E) and higher energy intake than the EER. This was partly attributed to a higher intake of "protein decoys" including savory snack foods and processed meats. The third peak in alcohol was due to intake from spirits and was accompanied by energy from sugary beverages and was low in protein and fat (%E) but high in carbohydrate (%E) and total energy intake.

Our results are consistent with increased FGF-21 stimulated by alcohol consumption causing protein seeking and the resul

ting increase in the dietary proportion of protein reducing total energy intake via protein leverage. However, if processed "protein decoys" are eaten instead of whole foods, the reduced proportional dietary protein leverages excess energy intake. These results could resolve contradictory epidemiological evidence that demonstrates no relationship or an inverse relationship with weight gain or otherwise finds alcohol a risk factor for overweight but not obesity.

The associations between the neighborhood food environment and obesity rates in Mexico City

Mrs. Eugen Resendiz[1], Dr. Deborah Salvo[1], Dr. Alejandra Jáuregui[2], Dr. Simón Barquera[2]
[1]Prevention Research Center, Brown School, Washington University in St. Louis, St. Louis, USA, [2]Center for Health and Nutrition Research, National Institute of Public Health, Cuernavaca, Mexico

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Most evidence on the neighborhood food environment (FE) influence on obesity is from high-income countries (HICs). Mexico has been undergoing an obesity epidemic for the past two decades, and obesogenic environments are thought to be an important contributor. However, little research using objective measures to assess the FE of residential neighborhoods in relation to objectively measured obesity outcomes has been conducted in Mexico. Furthermore, the FE of Mexican cities varies widely from that of HICs settings, given the substantial presence of informal food vendors. This study aimed to examine the relationship between a comprehensive set of objectively assessed FE variables and obesity among a representative sample of adults from Mexico City.

Methods: A cross-sectional study was conducted in Mexico City, Mexico, between May and December 2018. A multistage, clustered, stratified sampling approach was used to draw a representative sample of adults. Body mass index (BMI) and waist circumference (WC) were objectively measured and were used to calculate dichotomous variables denoting having/not having BMI- and abdominal obesity. Using environmental audits and GIS, the presence of eighteen food-vending locations, including formal and informal food vending outlets, within a 500-meter radius of each participant's geocoded home, were calculated. Multilevel logistic regression was used to estimate the associations between food environment variables (e.g., street food stalls, fast-food restaurants, full-service restaurants, supermarkets, markets, bodegas/grocery stores, convenience stores, baked goods, bars, and liquor stores) and BMI-based and abdominal obesity.

Results: There were no statistically significant associations between the examined FE characteristics and either BMI- or WC-based obesity (p>0.05 for all tested associations). However, the interclass correlation coefficients revealed that some neighborhood-level clustering is present and is responsible for 9% and 11% of the variability of BMI-based obesity and WC-based obesity, respectively.

Conclusion: This was the first study to examine the association between objectively measured FE exposures and objectively measured obesity status among Mexican adults. The null findings are inconsistent with reports from other global settings on the association between food outlet density and obesity, warranting further study. In addition, our findings suggest caution in generalizing findings from high-income countries to low- and middle-income countries.

Using Mobile Ecological Momentary Assessment to understand food selection behaviours and dietary intake of online food delivery users: the pilot FASTERFOOD study protocol

Miss Sisi Jia[1], Prof. Margaret Allman-Farinelli[2,3], Associate Professor Philayrath Phongsavan[2,4], Dr. Rajshri Roy[5], Dr. Alice Gibson[2,6], Dr. Stephanie Partridge[1,2,4]

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SIG - Primary Choice: D. e- & mHealth
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: With accelerating digitalisation and growing reliance on online technologies to facilitate contactless living, the way we are accessing foods is changing. Online food delivery services (OFDS) potentially further exacerbate unhealthy takeaway food consumption as menu items are delivered straight from food outlets to doorstep. Mobile Ecological Momentary Assessment (mEMA) is a method of data collection to gather real-time and contextual data from participants as they go about their daily lives. This pilot study aims to determine the feasibility and acceptability of a mEMA protocol in a sample of young people who have used OFDS. A secondary aim is to identify preliminary associations between frequency of OFDS usage, lifestyle chronic disease risk factors and related food selection behaviours.

Methods: This cross-sectional study will be conducted online using the Ilumivu mEMA software. Approximately 100 participants who are aged between 16-35 years, living in Australia, have access to a smartphone and are existing users of OFDS will be recruited via targeted social media advertising. Participants will be monitored over 3 days including 2 weekdays (Monday-Thursday) and 1 day on the weekend (Friday, Saturday or Sunday) between 7:00am and 11:00pm. Six EMA surveys consisting of 8-tems will be prompted via the Ilumivu mEMA smartphone app on each of the 3 days.

Results: Expected results will establish which OFDS is most used amongst the study sample, what menu items were ordered, and factors influencing food choice such as price (economical), hunger, taste and appetite (biological), emotional status (psychological), physical access to foods and knowledge/cooking skills (physical) and their dining setting and patterns concerning culture, family, peers (social). Feasibility will be reported as the percentage of number of mEMA surveys answered compared to expected total number of mEMA surveys completed. Acceptability of the protocol will determine the clarity of questions asked, ease of use and perceived participant burden.

Conclusion: Using mEMA to obtain data on dietary intake and related behaviours may be a highly feasible and acceptable method. The information gathered from mEMA may be critical to understanding the consumption of online food delivery in young people, hence enabling the development of future targeted interventions.

ECR Presentation

Ballroom

May 20, 2022, 2:35 PM - 3:05 PM

Healthy, Environmentally Sustainable Food in Childcare

Mrs. Audrey Elford

Food is a strong lever for both human and planetary health. Around half of children in high income countries attend childcare for an average of 30 hours per week, often being provided with 1 main meal and 2 snacks per day. The childcare setting therefore offers a promising opportunity to cultivate food practices that can benefit the health of the child and the health of the planet. In this presentation I will discuss the overall theme of my PhD "Healthy, environmentally sustainable food provision in childcare". I will provide an overview of the three main studies, which include quantitative, qualitative and co-design research methodologies. Results of studies conducted and currently underway will be shared, including the complexities and changes made due to COVID restrictions, implications for practice and policy, and insights on where I believe this research might lead.

ECR Presentation

Room 150

May 20, 2022, 2:35 PM - 3:05 PM

Moving forward with children's school-based physical activity

Dr. Allison Ross

Widely recognized as a prominent and accessible setting with incredible reach, schools are critical spaces and places for children's physical activity. Over the past two decades, we have seen a paradigm shift toward a whole-of-school approach to increase and improve physical activity opportunities. This shift includes an emphasis on targeting multiple domains within the comprehensive school day when designing interventions and programs, as well as aligning physical activity objectives with social, emotional, and learning outcomes. Despite the potential, establishing and sustaining practices in schools remains a challenge given the complexity of school systems and environments. This presentation will include an overview of two school-based physical activity projects in Arizona, highlighting the potential of community partnerships and surveillance to embed and promote a culture of active schools.

ECR Presentation

Room 151

May 20, 2022, 2:35 PM - 3:05 PM

Which domains of physical activity should we promote for children and young people

Erika Ikeda

Active travel, organised sport and physical education are important sources of physical activity for children and young people. Understanding which domain of physical activity should be promoted to most efficiently increase physical activity is informative for intervention design, policy development and infrastructure investment. Through harmonising data from the International Children's Accelerometry Database, we examined cross-sectional and longitudinal associations between domain-specific physical activity and moderate-to-vigorous physical activity. The findings support a need for a multi-sectoral approach where sports, transport, urban design, and public and private organisations work together to give all children and young people access to safe, equitable and varied opportunities to be active. During the talk, I will share benefits and challenges of the harmonisation, and how this experience has allowed me to create opportunities for international collaborations and develop knowledge and skills to be an interdisciplinary researcher and to work with a multidisciplinary team.

ECR Presentation

152

May 20, 2022, 2:35 PM - 3:05 PM

Potential Circadian and Circannual Rhythm Contributions to Obesity in Primary School Children

Dr. Jennette P. Moreno

During summer, primary school children increase their BMI at an accelerated rate compared to the school year. Our data showed that about 18 percent of children began a trajectory toward overweight or obesity when children were 5-8 years old with summer BMI increases contributing substantially. We have observed that during summer, students experience changes in their sleep and activity patterns, resulting in later sleep timing, shorter sleep duration, increased sedentary behavior, and decreased light physical activity. However, only later sleep timing during summer predicted increases in BMI during summer. The Circadian and Circannual Rhythm Model of Accelerated Summer weight gain posits these changes in sleep and activity patterns influence children's exposure to the light-dark cycle, resulting in changes in their height and weight gain. We have developed a novel circadian rhythm and sleep-focused mHealth intervention for the prevention of accelerated summer weight gain, which is in feasibility testing.

D2S.2.06 - ImPARfections in co-creation experiences

Room 156

May 20, 2022, 3:10 PM – 4:40 PM

Assistant Professor Maite Verloign, Ghent Univeristy

When doing participatory research in the field of health promotion (i.e. to develop a health promotion intervention, to propose health promotion changes in a specific community, …), the people of interest are actively involved in the research process. They are seen as real-life experts who have an equal contribution to the research project, next to the researchers. In other words, participatory research is doing research with people, not on people. It is a promising avenue and an increased amount of researchers are applying such approach, but let's be honest: it brings along many challenges and unexpected turns. Nevertheless, participatory research is learning by doing, and sharing these imperfections (or do we need to say imPARfections) can help strengthening further participatory research

O.2.11 - Schools and environments affecting children's nutrition and physical activity behaviors

Room 150

May 20, 2022, 3:10 PM - 4:40 PM

Physical activity, sedentary behaviour and healthy eating environments in before school care services – an observational study.

Mr. Andrew Woods[1], Associate Professor Yasmine Probst[2], Ms. Karen Wardle[3], Dr. Jennifer Norman[2, 4], Miss Sarah Ryan[1], Dr. Rachel Sutherland[5], Ms. Mel Leedham[4], Dr. Susan Furber[2, 4], Prof. Anthony Okely[1, 2]

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: Before school care within the out-of-school-hours care sector offers morning care to primary/elementary school-aged children. To date there have been limited studies examining the health promotion environments in before school care services, which offer opportunities for targeted settings-based approaches to child overweight and obesity prevention. This study examined the physical activity, sedentary behaviour and healthy eating environments of before school care services.

Methods: A cross-sectional observational study was conducted with 25 before school care services in New South Wales, Australia. Each service was visited twice from March to June 2021. Promotion practices for physical activity and healthy eating were captured via short interviews and the validated System for Observing Staff Promotion of Physical Activity and Nutrition (SOSPAN) tool. Physical activity levels of children were collected using Actigraph accelerometers and analysed using Evenson cut-points. Food provision was assessed using direct observation and categorised according to the Australian Health Survey food classification system and the Australian Dietary Guidelines.

Results/findings: Physical activity data were collected for 654 child days. The average wear time of accelerometers was 63 minutes (> 30 minutes wear time excluded) with children spending 24 minutes/hour sedentary, 36 minutes/hour physically active, and 9 minutes/hour in moderate- to vigorous-intensity physical activity. On the 49 observation days, food provided to the children by services consisted of breakfast cereals and dairy on 100%, other grains on 95.5%, fruit on 20.5%, and vegetables on 2.3% of days. Grain variety was wholemeal/wholegrain 58.6% of the time it was provided. Staff promoted healthy eating on 4.2% of days and discouraged healthy eating on 4.2% of days. Children were involved in preparing their own breakfast on 52.1% of days and had the ability to serve themselves on 54.2%.

Conclusions: Opportunities exist in before school care services to increase the amount of time that children are physically active and the frequency of fruit and vegetables provided. Further research and interventions to promote PA and healthy eating in the setting are warranted.

Leveraging systems science to improve child health: an application simulating the effects of family interventions on child obesity and disordered eating

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Families are complex, dynamic systems. For instance, prior research has shown that child characteristics, such as weight gain, can increase the likelihood of weight-focused parent-child conversations, and these conversations are, in turn, associated with child health outcomes such as disordered eating. Disentangling these dynamic health and family relationships with traditional statistical approaches is limited, suggesting a need for additional methods that can adequately capture these complex relationships. Systems science approaches, such as systems dynamics, agent-based modeling (ABM), and systems mapping, are a set of tools well-suited to model this complexity. In this presentation, we will: (1) discuss the advantages of using systems science approaches to study families and health, and (2) highlight the application of an ABM that simulates the effects of different parent-targeted interventions aimed at reducing child obesity and disordered eating as they age from adolescence into young adulthood.

Methods: Literature and other sources (e.g., content expertise, comparable models) were used to inform the discussion of leveraging systems science approaches, the inputs to the ABM, and the parent interventions simulated. The ABM was developed using Repast Simphony (version 2.7) and implemented in Eclipse (version 4.12.0). Data from four waves of the Project EAT (Eating and Activity over Time) studies (1998-2016) were used to parameterize and calibrate the model.

Results: We present three key advantages to using systems science approaches, such as ABMs, to study families. (1) These approaches capture the system of family dynamics, which can change and adapt over time. (2) Before devoting time and resources, models can test and estimate the future effects of proposed family interventions, allowing those most promising to be identified for real-world implementation. (3) Models allow indirect effects and their full impact to be understood over time, including whether unintended consequences are produced (e.g., family interventions that reduce obesity while increasing disordered eating). We use the ABM to illustrate each of these.

Conclusions: Systems science approaches are a valuable set of tools for understanding the complex relationships among parents and children and may advance how best to guide, cultivate, and promote healthy weight and well-being outcomes among families.

More physical activity and less sitting at school: Needs and wishes of Dutch primary school teachers and pupils.

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: A more dynamic school day that includes less sitting and more physical activity throughout the day may support health in primary school children. We assessed how Dutch primary school teachers currently use physical activities during their program, and what wishes and needs both pupils and teachers have with respect to a more dynamic school day.

Methods: We used mixed methodologies; we assessed current practice regarding a dynamic school day, wishes and needs of both teachers and pupils through an online questionnaire. Thereafter, we conducted in-depth interviews with classroom teachers and physical education teachers to assess facilitators and barriers for a more dynamic school day. The interview data were transcribed verbatim, and thematic analysis was conducted guided by the framework for innovation.

Results: 336 teachers (207 schools) and 801 pupils (9-12 years old, 10 schools) completed the questionnaire. The physical environment of Dutch primary schools does not stimulate children to be physically active during the school day. Children prefer to be physically active together with classmates and also as an energizer between lessons in the classroom.
Results from the interviews with 24 teachers showed that the facilitators and barriers of teachers to implement a dynamic school day could be categorized into four themes: the teacher, the school, the class/pupils and practical restrictions. If we focus on the barriers the teachers themselves perceived, the main barriers for a more dynamic school day were insufficient knowledge and skills.

Conclusion: Although children like to be more physically active during their school day, teachers report many barriers for the implementation of a more dynamic school day that includes more physical activity and less sitting time. For the implementation of a more dynamic school day, it is probably not enough to only make the environment more stimulating for the pupils. In order to support the implementation of a more dynamic school day, we are currently working on a set of implementation strategies that are tailored to the reported barriers by teachers.

The 2022 Physical Activity Report Card for Lebanese Children and Youth: Encouraging Movement in Times of Hardships

Dr. Patrick Abi Nader[1], Miss Ruba Hadla[2], Dr. Lina Majed[3], Dr. Lama Mattar[4], Mrs. Suzan Sayegh[5]
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SIG - Primary Choice: N. Other
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: In 2018, Lebanon's first physical activity report card for children and youth was published, highlighting several intervention priorities and gaps in the literature. To verify how the Lebanese situation evolved, the Lebanese Active Healthy Kids Work Group (LAHKWG) implemented once again an exhaustive synthesis of all recent literature.

Methods: The LAHKWG identified all peer reviewed literature, national surveys, and gray literature (e.g. government reports) that were published since December 2017 on 10 common indicators adopted by the Active Healthy Kids Global Alliance (AHKGA) for the inception of "Global Matrix 4.0". These indicators were: overall physical activity (PA), organized sport and PA, active play, active transportation, sedentary behaviors, physical fitness, family and peers, school, community and environment, and government. Two additional indicators (sleep and weight distribution) were added by the LAHKWG. The literature search revealed 764 records. Two independent researchers reviewed titles and abstracts to decide whether articles should be fully reviewed. Twenty-eight articles met inclusion criteria and were scrutinized by four researchers. Data from nationally representative samples for ages 5 to 17 years and related to established benchmarks were retrieved and served as the basis for grading the report card.

Results: Data on six indicators from one nationally representative sample were available for ages 13-17 years. No nationally representative data were available for ages below 13. According to AHKGA's grading rubric, five indicators received an "Incomplete" (Organized sport and PA; Active Play; Physical Fitness; Family and Peers; Community and Environment); two indicators received a D- (Overall PA and school); two indicators received a D+ (active transportation and sleep); two indicators received a C+ (sedentary behaviors and weight status); the government indicator received a C.

Conclusion: Since 2019, Lebanon has been going through difficult times with overwhelming economic and political situations that are exacerbated by the COVID-19 pandemic. Hence, efforts to promote and offer physical activity opportunities for children and youth are essential components to foster mental health, wellbeing, and resilience. This report card highlights multiple areas for the improvement of PA services in Lebanon, and relevant stakeholders are strongly encouraged to take actions for change.

Can United States Adolescents Accurately Assess Their Diet Quality?

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SIG - Primary Choice: J. Young Adults
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Using a single question to assess an individual's diet quality could reduce researcher burden when screening potential participants for dietary interventions. Thus, the purpose of this study was to determine if United States (US) adolescents can accurately assess the quality of their diet.

Methods: Data from two cycles of National Health and Nutrition Examination Survey (NHANES), 2015-2016 and 2017-2018, were used for this study. Self-assessed diet quality was measured with a single question asking adolescents, aged 16-19 years, how healthy is their diet? The five responses included excellent, very good, good, fair, and poor. Measured diet quality was assessed using the 2015 Healthy Eating Index (HEI-2015) and based on 24-hour dietary recalls. HEI-2015 total scores were categorized using a 10-point grading scale as A (90-100), B (80-89), C (70-79), D (60-69) and F (0-59). The following matches between self-assessed and measured diet quality were classified as accurate assessments: excellent=A, very good=A or B, good=B or C, fair=C or D, and poor=D or F. All others were classified as inaccurate assessments. Descriptive statistical methods for complex survey designs were used to analyze the data.

Results/findings: Based on 1086 adolescents, 7%, 18%, 41%, 29%, and 6% self-assessed their diet as excellent, very good, good, fair, and poor, respectively. For measured diet quality, <1%, 1%, 3%, 11%, and 85% scored grades of A, B, C, D, and F, respectively. Overall, 12% of adolescents accurately assessed their diet quality with accuracy percentages as high as 100% in the poor self-assessment group and less than 10% in each of the other four self-assessment groups. Of the 956 adolescents who inaccurately assessed their diet quality, all but 2 overrated the healthfulness of their diet.

Conclusions: In general, US adolescents cannot accurately assess the quality of their diet with the exception of those assessing the healthfulness of their diet as poor. The tendency of US adolescents to overrate their diet quality suggests that work is needed to educate adolescents about what constitutes a healthful diet with knowledge gained potentially leading to more healthful dietary intake.

O.2.12 - Individual and contextual effects on motivation

Room 151

May 20, 2022, 3:10 PM - 4:40 PM

"I don't know… It's only sport": Emergence of four physical activity profiles through a longitudinal study among adolescents

Dr. Mathieu Belanger[1,2,3], Mrs. Julie Goguen Carpenter[1,2], Dr. Jacinthe Beauchamp[1], Mrs. Anika Boucher[1,2], Mrs. Sara Degrace[1,2], Mr. Jean-Sebastien Chevarie[1,2], Mr. Yanis Saheb[1,2], Mrs. Maryse Gagnon[1,2], Mr. Francois Gallant[1,2], Dr. Isabelle Dore[4], Dr. Catherine M Sabiston[5]

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Although adolescence is often marked by declining physical activity participation, some individuals maintain physical activity throughout this period. The objectives were to identify sub-groups of youth who present distinct physical activity profiles and factors contributing to these physical activity profiles during adolescence. A better understanding of these profiles and their determinants would provide guidance for tailored interventions.

Methods: A purposeful sample of 23 physically active participants [mean age=12.2 (0.6) years; 52% female at study inception] enrolled in the Monitoring Activities of Teenagers to Comprehend their Habits (MATCH) prospective study were interviewed once a year for five years for this qualitative descriptive study. The semi-structured interview guide was anchored in the self-determination theory, the developmental model of sport participation, and the socio-ecological model, and designed to enable participants to describe their physical activity experience during adolescence. Verbatim transcripts were coded inductively and iteratively to characterize each participant's personal trajectory. Physical activity profiles were then created by grouping participants based on the similarities and differences of their longitudinal experiences.

Results/findings: Four distinct profiles captured participants' physical activity experiences throughout adolescence. Profiles identified include the *Independents* (i.e., physical activity participation in harmony with the need for autonomy); *Multitaskers* (i.e., involvement in a large variety of sports and activities as a way of life); *Specialists* (i.e., high achievement aspirations); and *Unintentionals* (i.e., engagement in physical activity as a way to pass time or to conform to others' expectations). Each profile presents a unique physical activity participation trajectory, key defining characteristics, and distinct motives for participation. Moreover, the different profiles are associated with different likelihoods of maintaining physical activity throughout adolescence.

Conclusions: The characterisation of these profiles and physical activity-related experiences has implications for development of theories and physical activity participation models. Moreover, since motives and determinants for participation in physical activity vary considerably across physical activity profiles,

consideration of these variations could advance initiatives aimed at promoting sustained physical activity throughout adolescence.

Which psychosocial determinants predict a change in adolescents' sleeping behavior over time?

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adolescents 13-18 yrs
Subject Category: Sleep

Although sufficient sleep is important for adolescents' mental and physical health, more than half report less than the recommended eight hours of sleep on school days. The current study aims to investigate which psychosocial determinants (i.e., knowledge, attitude, social influence, self-efficacy, barriers and facilitators) predict a 1-year change in adolescents' sleeping duration. This can subsequently guide the development of new and successful interventions. So far, research into multiple psychosocial determinants of sleeping behavior in adolescents has been scarce. Moreover, previous studies were mostly cross-sectional, while the current study investigated determinants of sleeping behavior longitudinally. Psychosocial determinants of sleep, as well as sleep quantity at school days and free days were assessed at baseline and one year later by means of a questionnaire in 1097 Flemish adolescents (M_{age} = 15.01, SD = 0.65, 46.3 % girls). The questionnaire included items of the Munich Chronotype Questionnaire for Children, as well as questions on psychosocial determinants of sleep. Multiple linear regression analyses were conducted in SPSS. Results show that a more positive attitude at baseline predicted a positive change in sleeping duration on school days after one year (β = .08, p = 0.02), while external barriers at baseline negatively predicted a change in sleeping duration on school days after one year (β = -.12, p = p < .001). Moreover, a more positive attitude at baseline predicted a positive change in sleeping duration on free days after one year (β = .07, p = .04), while external barriers, especially screen use before bedtime at baseline negatively predicted a change in sleeping duration on free days after one year (β = -.08, p = .01). The current results imply that interventions to promote healthy sleep in adolescents might target the perceived benefits of sleeping behavior, external barriers, and screen time before bed, in order to successfully improve sleep duration. By using a longitudinal framework to investigate multiple psychosocial determinants of sleeping behavior in adolescents, the current study adds to the existing body of knowledge.

Body image and health-related behaviors among FitSpirit participants

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O.2.12 - Individual and contextual effects on motivation, Room 151, May 20, 2022, 3:10 PM - 4:40 PM

SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adolescents 13-18 yrs
Subject Category: All

Background: Body image variables, like body size perception (BSP) and body size dissatisfaction (BSD), can influence health-related behaviors. However, few studies have investigated these body image variables in adolescent girls participating in a physical activity intervention. Therefore, the study objectives was to examine 1) the association between health-related behaviors (physical activity, screen time, eating habits and sleep duration) with BSP and BSD among girls participating in FitSpirit, a physical activity intervention for girls only; 2) the influence of weight control practices on the association between health-related behaviors with BSP and BSD.

Methods: A sample of 545 adolescent girls (15.0±1.5 years) from different schools participated in this cross-sectional study. Body mass index, health-related behaviors, perceived actual body size and desired body size variables, were self-reported and collected via an online questionnaire at the end of the FitSpirit intervention. A negative BSP score [perceived actual body size – calculated BMI *z*-score] indicates an underestimation of body size. A positive BSD score [perceived actual body size – desired body size] indicates a desire to reduce body size. A multiple linear regression analysis examined the effects of age, zBMI and health behaviors on BSP and BSD. A second multiple linear regression analysis examines the independent association of BSP and BSD by weight control practice. The linear relationships between BSP and BSD were evaluated with Pearson's correlation.

Results: Underestimation and dissatisfaction of body size are more prevalent in participants living with overweight/obesity. Screen time and sleep duration were significantly, independently associated with BSP score (Beta=0.02; *P*<0.05 and Beta=-0.07; *P*<0.05, respectively), whereas only screen time was associated with BSD score (Beta=0.07; *P*<0.001). Physical activity was independently associated with BSP score only in participants trying to control their weight (Beta=-0.18; *P*<0.05).

Conclusions: Body size overestimation and dissatisfaction are associated with health-related behaviors, specifically with more screen time and less than optimal sleeping habits. Physical

activity level does not appear to be associated with body image in girls engaged in a physical activity intervention and who want to lose or gain weight. Health promotion interventions could include screen time and sleep components as it may influenced body image. v

Mediation effects of physical activity, screen time, and their psychosocial determinants on health-related quality of life in adolescents: a pathway analysis of a cluster-randomized controlled trial

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and sedentary behavior

Importance: Experimental data assessing the mediation of physical activity (PA) and screen time (ST) on the relationship between school-based interventions and adolescents' health-related quality of life (HRQoL) is required further to understand the complex pathways towards effective health promotion.

Purpose: To evaluate the direct and indirect effects of changes in PA, ST, and psychosocial determinants (self-efficacy, outcome expectations, and social support) on the relationship between a school-based intervention and the HRQoL.

Methods: The *Movimente* program was performed in Florianopolis, Brazil, over an academic year in 2017. Six out of eighteen eligible schools agreed to participate and were randomized as intervention or control. The strategies consisted of teacher training about PA and ST, educational strategies through the availability of folders/posters, and the creation of PA spaces at the schools. Validated questionnaires were used to measure HRQoL(Kidscreen-27), PA, ST, psychosocial determinants, sex, age, and socioeconomic status. A structural equation modeling approach was performed to examine the direct (whether pre-post changes on mediators were associated with HRQoL) and indirect effects (mediation) through the product-of-coefficients.

Results: A total of 734 (1.5:1 intervention-control ratio) out of the 921 (girls=51.7%, age mean=13.0) students assessed at the baseline completed the trial. There was no significant indirect effects. We found the following direct effects: (i) PA self-efficacy (b=0.072, p=0.026), PA outcome expectations (b=0.135, p<0.001), parents support for PA (b=0.086, p=0.008), and friends support for PA (b=0.075, p=0.022) on physical well-being; (ii) PA self-efficacy (b=0.074, p=0.024), PA outcome expectations (b=0.086, p=0.009), parents support for PA (b=0.070, p=0.034), and family support for reducing ST (b=0.121, p<0.001) on psychological well-being; (iii) ST self-efficacy (b=0.079, p=0.022), and friends support for PA (b=0.095, p=0.006) on peers & social support; (iv) parents support for PA (b=0.140, p<0.001) on autonomy & parent's relation; (v) PA outcome expectations (b=0.089, p=0.010), friends support for PA (b=0.138, p<0.001); and ST (b=0.081, p=0.025) on school environment.

Conclusions: Pre-post changes in PA and ST psychosocial determinants were related to HRQoL. However, we found difficulties in changing PA and ST through the intervention strategies, which partially explains no mediation effects.

O.2.13 - Determinants of behavioral nutrition and physical activity in young adults

Room 152

May 20, 2022, 3:10 PM - 4:40 PM

Healthier movement behavior profiles are associated with lower psychological distress and higher mental wellbeing during emerging adulthood

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The transition into emerging adulthood is a stressful time fraught with new challenges for many attending post-secondary institutions. Evidently, it is imperative to identify protective factors that can help prevent or reduce mental health problems and improve mental wellbeing during this period so that students can realize their full potential. The purpose of this study was to identify unique movement behavior profiles among emerging adults attending post-secondary institutions, evaluate predictors of profile membership, and to examine the relationships between group membership and indicators of mental health and wellbeing.

Methods: This cross-sectional study used data from the 2019-2020 deployment of the Canadian Campus Wellbeing Survey. Emerging adults (N = 15,269; 67.6% female; M age = 20.78 ± 2.00) from 20 post-secondary institutions in Canada self-reported their movement behaviors using the International Physical Activity Questionnaire – Short Form to assess moderate-to-vigorous physical activity (MVPA), and daily recall questionnaires to assess recreational screen time (ST) and sleep. Participants also completed the 10-item Kessler Psychological Distress Scale and 14-item Warwick-Edinburgh Mental Well-being Scale. Latent profile analysis was employed.

Results: The results identified five profiles that had similar sleep patterns and were thus characterized by different levels of MVPA and ST: high MVPA/low ST (15%), moderate MVPA/low ST (27%), low MVPA/low ST (46%), moderate MVPA/high ST (3%), and low MVPA/high ST (9%). Several socio-demographic variables were associated with higher odds of profile membership. After adjusting for covariates, findings revealed the healthiest movement behavior profiles (high MVPA/low ST and moderate MVPA/low ST) were associated with the most favorable scores for psychological distress and mental wellbeing. Mixed behavior profiles (low MVPA/low ST and moderate MVPA/high ST) were associated with higher scores for mental wellbeing than the least healthy profile (low MVPA/high ST); however, for psychological distress, profiles characterized by high levels of ST were associated with less favorable scores than the low MVPA/low ST profile regardless of MVPA levels.

Conclusions: Campus-based interventions focused on getting emerging adults to engage in a healthy balance of physical activity, sedentary behavior and sleep should be investigated for their potential to reduce the mental health burden of attending post-secondary education.

Environmental and psychosocial perceived barriers in active commuting to university in Spanish and Chilean students: which one matters more?

Associate Professor Daniel Camiletti-Moirón[1,2], Miss Ximena Palma-Leal[3,4], Miss Fátima Martín-Acosta[1,2], Dr. Daniel Velázquez-Díaz[2,5], Mr. Juan Corral-Pérez[2,5], Dr. Alejandro Pérez-Bey[1,2], Mr. Alejandro Sánchez-Delgado[1,2], Associate Professor Víctor Segura-Jiménez[1,6,7], Assistant Professor Rocío Izquierdo-Gómez[1,2], Prof. José Castro-Piñero[1,2], Prof. Palma Chillón[4]

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Active commuting to university (ACU) (walking or cycling) represents an opportunity to incorporate physical activity into students' daily routines. However, AC may be affected by different factors, such as environmental and psychosocial barriers. Consequently, the aims of this study were: i) to examine the differences in the mode of commuting and barriers to active commute among sex and country (Chile vs. Spain); and ii) to analyse the association between the mode of commuting and the perceived barriers for men and women Chilean and Spanish university students.

Methods: The sample included 2269 university students (53.0% women) from three Chilean universities and one Spanish university. Mode of commuting and perceived barriers in ACU was assessed by self-report. Multinomial logistic regression analysis was used to examine the associations between mode of commuting and barriers in AC.

Results/findings: In Chilean students, the main mode of commuting to and from university was the public commuting, higher in women than men (p<0.001); followed by active commuting, higher in men than women (p<0.001). In Spanish students, the main mode of commuting to and from university was the private commuting, higher in women than men but not significantly (p=0.086). In addition, Chilean men vs. Spanish men presented significant differences in active, public, and private commuting (all, p<0.001). Regarding to country, Chilean students perceived higher barriers to ACU compared to Spanish students (p<0.05). Regarding to sex, Chilean and Spanish women perceived higher barriers to ACU compared to Chilean and Spanish men (p<0.001 and p<0.01, respectively). Chilean and Spanish private commuters reported a larger proportion of planning/psychosocial than environment/safety barriers, mostly in women, compared to Chilean and Spanish active commuters (all, p<0.05).

Conclusion: The most used mode of commuting to university was public in Chilean and private modes for Spanish students. The Chilean students, both men and women, reported higher barriers to ACU compared to Spanish students. Therefore, the findings suggest that the mode of commuting and the perceived barriers to ACU may be influenced by personal factors, such as sex, and environmental factors, such as the cultural context.

Inequities in Food Insecurity and Academic Performance among College Students at a Public University

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Food insecurity (FI) among college students has become a significant problem across the United States. Few studies have examined linkages between food insecurity and academic performance and related disparities by race and ethnicity. Therefore, the purpose of the current study was to examine the relationship between racial and ethnic disparities in FI risk and academic performance at a public university.

Methods: A student survey was administered to four regional, non-residential campuses of a public university. The survey included the 10-item USDA FI questionnaire and a subjective measure of academic performance behaviors (e.g., missing class, missing assignments), linkages between FI and academic performance. Survey data were linked to student demographic variables, GPA, and family financial data from university administrative records. Linear regression was used to assess the relationship between FI status, and both objective (GPA) and self-reported academic performance. Further, a mediation analysis was conducted to examine the direct effect of race and ethnicity on objective and subjective academic performance and test whether this was mediated by FI status.

Results: The sample included 642 students (68% female, 33% White, 30% Latino, 15% Asian, 14% Black). Regression analyses found that students reporting food insecurity also reported significantly more frequent problematic academic performance behaviors (β = -1.34, p< .001, 95%CI = [-1.54, -1.14]). In addition, students reporting food insecurity had significantly lower low GPAs (β = -.17, p< .05, 95%CI = [-.32, -.01]). Surprisingly, family financial status was not significantlyassociated with self-reported academic performance or GPA. The mediation analyses found that food insecurity mediates the relationship between race and self-reported academic performance, rendering the relationship between race and this outcome no longer significant (β = .04, p=.91, 95%CI = [-.57, .64]).

Conclusions: The results suggest that food security is significantly related to both self-reported academic performance and GPA among college students and that food insecurity is an important factor in understanding racial gaps in academic standing. Equity-oriented efforts targeting disparities in food insecurity risk among college students and academic performance are warranted.

Effects of the inclusion of physical activity in academic classes on educational indicators and health markers: the ACTIVE CLASS study

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Physical inactivity has been highlighted as one of the main determinants of childhood obesity, being considered for the WHO as the fourth risk factor with respect to mortality worldwide. Specifically, it has been observed how, during school days, students spend most of their time in sedentary behaviors. Therefore, the educational context is an interesting framework to increase physical activity (PA) levels. The main aim of this project is to develop an intervention program based on the inclusion of PA in academic lessons, as well as to evaluate its impact on PA, health, educational, and cognition outcomes.

Methods: The present study will be a Randomized Controlled Trial at school level. We estimate the participation of 6 high-schools and 300 students from 9th and 10th grade of secondary stage from Southern Spain. Schools will be randomized assigned to a control group (CG; n = 2), experimental group I (EGI; n = 2), and experimental group II (EGII; n = 2). The EGI will carry out an implementation of active lessons in Math subject. The EGII will develop the inclusion of a daily active break 10 minutes long. Both interventions will last 16 weeks, and measures will be taken before the intervention, at week 8, at week 16 (last week), and 4 weeks after the intervention.

Results/findings: PA and sedentary levels will be assessed by accelerometry, levels of health-related physical fitness through field tests, body composition parameters through anthropometry, academic performance through grades, positive health by questionnaires and cognition parameters through specific cognition tests. Additionally, a qualitative study will also be carried out, to identify the teachers' perception regarding the intervention program (interest, barriers, facilities, student perception of learning, future intention to implement, etc.).

Conclusions: This project will be the first national empirical study about physically active lessons interventions, and it is expected to verify the positive effects of the intervention to promote healthy lifestyles in adolescents

during school days. The Active Class study will contribute to create new resources that may be used by teachers in order to increase PA levels and, therefore, improve health during the school days.

Making Ends Meet: College Students Facing Episodic and Persistent Food Insecurity and their use of Food Acquisition and Management Coping Strategies

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Little is known about whether food insecurity (FI) is a persistent challenge for college students or whether it is episodic in nature. Food insecure individuals often employ coping strategies to maintain an adequate supply of food, for example, eating less healthy meals to eat more (food management) or buy the cheapest food available (food acquisition). The aim of this study was to assess the rates of episodic and persistent FI among college students at a large Midwestern university and examine whether coping strategies employed were associated with food security status. We hypothesize that students facing persistent FI will employ coping strategies more frequently than other students.

Methods: A randomized sample of students from a large Midwestern university were invited to participate in an online survey. Episodic and persistent FI was assessed using the 10-item UDSA Adult Food Security Survey Module. Coping strategies related to food acquisition and food management were measured using modified questionnaires. Students were classified as facing persistent FI if they experienced FI in both the past 12 months and past 30 days. Chi-squared tests, one-way ANOVAs, and post-hoc analyses were conducted to examine associations of sociodemographic factors and coping strategies with FI status. Linear regression models were used to estimate the association between the coping strategies scale and subscales with FI status, adjusting for sociodemographic characteristics.

Results/findings: Of the 888 study participants, 21.8% experienced FI with 52% and 48% of these students experiencing episodic and persistent FI, respectively. Students facing persistent FI were more likely to be US-born, Black, Hispanic, first-generation, and receive governmental or other financial support (p<0.05). The coping strategy scale and subscales for food acquisition and management were significantly different across food security status (p<0.001) with persistently food insecure students employing coping strategies most frequently. Both episodic and persistent FI and receiving financial support from loans were associated with utilizing coping strategies to a greater extent.

Conclusions: Campus resources may not provide sufficient support for students experiencing persistent FI. Policy and programs that support students long-term are needed. More research related to frequency and duration of FI will help develop tailored-solutions for students.

O.2.14 - Optimizing D&I Research

Room 153

May 20, 2022, 3:10 PM - 4:40 PM

Are statistically significant studies better?

Ms. Lauren von Klingraeff[1], Dr. Sarah Burkart[1], Dr. Christopher D. Pfledderer[1], Mr. Md. Nasim Saba Nishat[2], Dr. Alexander McLain[2], Dr. Michael Beets

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SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: All

Background: Scientists may be biased against studies with certain attributes, such those labeled as preliminary pilot/feasibility studies. This study assessed the impact of key study characteristics on behavioral scientists' interpretation of study merit and impact.

Methods: This study used a 2x2x2x2 factorial design. Abstracts from five published obesity prevention studies were modified to generate 16 nearly identical versions of each abstract. Abstract versions varied by four factors: **sample size** (n=20 vs. n=150), **statistical significance** (P<.05 vs. P>.05), **study design** (single group vs. randomized two group) and **preliminary study status** (presence/absence of pilot/feasibility language). Reported effect sizes, intervention components, population, and duration were maintained across all versions. Respondents were provided with one randomly selected version of each of the five abstracts and blinded to the existence of other versions. Respondents rated each abstract on five attributes; significance of the scientific question, methodological rigor, study innovation, writing clarity, whether the findings warrant further testing, and probability of obtaining meaningful results in a subsequent definitive trial using a 1-10pt Likert-scale. Multilevel mixed-effects models evaluated the main effects and all 2- and 3-way interactions with preliminary study status.

Results: Respondents (N=247, years since terminal degree 9.1±9.5) indicated preliminary study status did not impact scores on any scale. Abstracts presenting statistically significant effects were rated as more significant (mean difference 0.31, 95CI 0.08-0.55, Cohen's d=0.17), rigorous (0.57, 95CI 0.30-0.84, d=0.30), innovative (0.38, 95CI 0.11-0.65, d=0.22), clearly written (0.45 95CI 0.15-0.74, d=0.30), warranted further testing (0.90, 95CI 0.60-1.20, d=0.55), and had meaningful results (1.06, 95CI 0.77-1.35, d=0.54). Abstracts with a randomized design were rated as more rigorous (1.04, 95CI 0.77-1.31, d=0.55) and innovative (0.30, 95CI 0.03-0.58, d=0.17). No other statistically significant effects were observed.

Conclusion: Contrary to hypothesis, pilot/feasibility studies were not viewed differently compared to non-pilot/feasibility studies. Abstracts presenting statistically significant findings, irrespective of study design, preliminary study status, and sample size were rated higher on scientific merit/impact compared to abstracts presenting the same effect sizes but lacking statistical significance. The high ratings attributed to statistically significant findings is concerning and may lead scientists to overlook other important aspects of studies to evaluate quality.

Limited use of guidelines, checklists, recommendations, or frameworks for pilot and feasibility studies of behavioral interventions – implications for the field: A Comprehensive Scoping-Bibliometric Review

Dr. Michael Beets[1], Dr. Christopher Pfledderer[1], Dr. Sarah Burkart[1], Miss Lauren von Klinggraeff[1], Dr. Russ Jago[2], Dr. David Lubans[3], Miss Alexsandra da Silva Bandeira[4]

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SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: All

Background: Designing, conducting, and clearly reporting pilot/feasibility studies (PFS) informs decisions about the evaluation of behavioral interventions in large-scale trials. Numerous reporting guidelines, checklists, recommendations, and frameworks (GCRF) exist, yet their use in PFS is unknown. A scoping-bibliometric review was conducted to identify the application of GCRF in the reporting of PFS.

Methods: A multi-phase approach identified a final sample of PFS. PubMed, Embase, and Web of Science were searched for PFS published from 01/01/2018-10/01/2021 with "pilot" or "feasibility" and "intervention" in the title/abstract. In these PFS, journals were identified that published ≥50 studies and were an outlet for behavioral interventions. A review of titles/abstracts within these journals identified the final sample of behavioral intervention PFS. A total of 91 GCRFs were identified from the literature and placed into 9 categories: study/methodology (e.g., CONSORT, 8-articles), intervention reporting (e.g., TIDieR, 7-articles), adaptation/modifications (e.g., FRAME, 7-articles), implementation/process evaluation (e.g., RE-AIM, 7-articles), feasibility (e.g., Bowen 2009, 8-articles), pilot guidance (Arnold 2009, 29-articles), translational science (e.g., ORBIT, 6-articles), intervention development (e.g., Bartholomew 1998, 4-articles), and scale-up (e.g., WHO 2010, 14-articles). Citations of a GCFR were captured via text-mining procedures of references in the PFS and analyzed descriptively.

Result: A total of 33,955 unique PFS were identified. Of these, 23 behavioral intervention journals (e.g., Pilot and Feasibility Studies, BMJ Open) published 3,781 PFS (avg. 167; 53-638). After full-text screening, 1496 behavioral intervention PFS were included with mhealth (40%), mental health (33%), and physical activity (29%) the 3 most common topics. Overall, 40.2% of PFS did not cite any GCRFs and an additional 31% only cited one, most commonly a CONSORT-related guideline. Most cited GCRFs were study/methodology (37.9%), pilot guidance (17.8%), and translational science frameworks (12.6%). Remaining categories were cited less (0.3% to 7.6%).

Discussion: The use of GCRFs in PFS is low, with the major focus on internal validity. Few PFS utilized GCRFs considered important for early-stage intervention design and testing such as, intervention development or

reporting, or implementation/process evaluation and feasibility testing. Increasing awareness and use of existing GCRFs by authors and journal editors is required to enhance transparency and reproducibility in PFS.

Feasibility indicators in behavioral intervention pilot/feasibility studies: A historical scoping review

Dr. Christopher Pfledderer[1], Miss Lauren von Klinggraeff[1], Dr. Sarah Burkart[1], Dr. Luke Wolfenden[2], Dr. Michael Beets[1]
[1]*University of South Carolina, Columbia, USA,* [2]*University of Newcastle, Callaghan, Australia*

SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: All

Purpose: In the behavioral sciences, where interventions often consist of delivering complex, multi-component behavior change techniques, reporting key aspects of feasibility during the initial testing of the intervention is essential. Reporting trial and intervention feasibility in pilot/feasibility studies creates a foundation for the optimization and successful scaling-up to larger trials. The aims of this study were to: 1) conduct a scoping review of the reporting of feasibility indicators in behavioral pilot/feasibility studies published through 2020, and 2) describe trends in the amount and type of feasibility indicators reported in studies published across three periods: 1982-2006, 2011-2013, and 2018-2020.

Methods: A search of four online databases (PubMed, Embase, EBSCOhost, Web of Science) for health behavior pilot/feasibility studies published up to 12/31/2020 was conducted and a random sample of 600 studies, 200 from each of the three timepoints (1982-2006, 2011-2013, and 2018-2020) was included in this review. The presence or absence of feasibility indicators, including recruitment, retention, acceptability, attendance, compliance, and fidelity, was identified/coded for each study. Univariate logistic regression models were employed to assess changes in the reporting of feasibility indicators across time.

Results: A total of 16,365 unique articles were identified and screened to arrive at the final sample of 600 studies. For the total sample, 428 (71.3%) studies provided recruitment information, 595 (99.2%) provided retention information, 219 (36.5%) reported quantitative acceptability outcomes, 157 (26.2%) reported qualitative acceptability outcomes, 199 (33.2%) reported attendance, 187 (31.2%) reported participant compliance, and 85 (14.2%) reported intervention fidelity outcomes. When compared to the Early Group (1982-2006), studies in the Late Group (2018-2020) were more likely to report recruitment (OR=1.60, 95%CI:1.03-2.49), acceptability-related quantitative (OR=2.68, 95%CI:1.76-4.08) and qualitative (OR=2.32, 95%CI:1.48-3.65) outcomes, compliance outcomes (OR=2.29, 95%CI:1.49-3.52), and fidelity outcomes (OR=2.13, 95%CI:1.21, 3.77).

Conclusions: The reporting of feasibility indicators within behavioral pilot/feasibility studies has improved across time, but key aspects of feasibility, such as fidelity, are still not reported in the majority of studies. Given the importance of behavioral intervention pilot/feasibility studies in the translational science spectrum, there is a need for improving the reporting of feasibility indicators to better inform the process of scaling-up to larger trials.

Combining Effectiveness, Reach, and Cost of a Scalable, Digitally-Delivered Weight Loss Program for Rural Primary Care

Dr. Gwenndolyn Porter[1], Dr. Robert Schwab[1], Dr. Jennie Hill[2], Dr. David Dzewaltowski[1], Prof. Paul Estabrooks[1]
[1]University of Nebraska Medical Center, Omaha, USA, [2]University of Utah, Salt Lake City, USA

Obesity is a pressing concern for clinical and public health professionals, particularly in rural areas. We used a Hybrid Type-III effectiveness-dissemination trial to examine program reach (i.e., number, proportion, and representativeness of participants), retention, effectiveness, and cost of an evidence-based, digitally-delivered, 12-month weight management intervention for rural primary care patients. Patients were referred to the intervention through 1 of 4 methods: 1) point of care referral from their physician with telephone follow-up (POC+); 2) point of care referral without follow-up (POC-); 3) electronic medical record-derived letter with telephone follow-up (Letter+); 4) electronic medical record-derived letter without follow-up (Letter-).

Over 16 weeks, 573 referrals were made and 97 patients, representative of the region, enrolled in the program (59% female; 94% Caucasian; 97% Non-Hispanic). Letter referrals reached a significantly higher proportion of patients than POC (100% vs 17%) and yielded more participants (12% vs 8%, p<.05). Patients receiving telephone follow-up were more likely to be screened (47% vs 7%; p<.001) and enroll (15% vs 7%, p<.001) when compared to those without follow-up.

Participants completed weigh-ins via Bluetooth-enabled home scale. Participants recorded 7.1 (SD=18.4) weights on average. Among participants with at least two recorded weights (n=54), there was a significant difference in weight between baseline (M=224.0lbs, SD=52.0) and final weigh-in [(M=216.7lbs, SD=47.2); t(54)=4.49, p<.001]. Weight change did not differ among the four referral strategy groups (F(3,51)=1.93, p=.14).

Cost per participant was $372. The cost per participant that weighed in once (n=77) was $469, compared to $669 for those that weighed in at least twice (n=54). Cost per participant achieving 3% or more (n=25) and 5% or more (n=17) body weight loss was $1,445 and $2125, respectively. Total recruitment and intervention costs per participant enrolled in each referral strategy were: POC with ATF, $359; POC only = $371; Letter with ATF = $395; Letter only = $361.
When examining the overall impact of the different referral strategies it is important to consider reach, effectiveness, and cost; results from this study indicate the Letter- condition is the superior referral choice. However, local context should be considered before selecting a referral strategy.

From a research trial to routine practice: a qualitative study exploring perceptions and experiences of referral to the National Exercise Referral Scheme (NERS) in Wales

Dr. Kelly Morgan[1], Ms. Jennifer Lewis[2], Dr. Jemma Hawkins[1], Prof. Graham Moore[1]
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SIG - Primary Choice: E. Implementation and scalability
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Purpose: Few studies have revisited effective interventions years into their delivery in routine practice to understand how implementation, and perceived effects have been maintained over time. In Wales, United Kingdom, the National Exercise Referral Scheme (NERS) continues to be routinely delivered in primary care ten years on from a randomised controlled trial and subsequent national roll-out. This study explores perceptions and experiences of referral to NERS among referrers, scheme deliverers and patients.

Methods: In total, 50 individual semi-structured interviews were conducted with three groups of stakeholders; scheme referrers (n = 9); scheme deliverers (n = 22); and referred patients (n = 19). Scheme refers were recruited using convenience sampling techniques while scheme deliverers and patients were purposively sampled. Referrer guides covered: frequency of and reasons for referral, facilitators and barriers to referral, patient journey through the scheme and process for referral. Topics covered within scheme deliverer guides included; referral rates, types of referrers and engagement of surgeries. Guides for patients covered: experiences of the referral process and reasons for uptake. Themes were derived following the iterative phases of a thematic analysis approach.

Results: Five key themes were developed from analyses; referrer characteristics, geographical disparities in referral and scheme access, reinforcements for awareness of the scheme, patient characteristics and processes and context underpinning a referral. Barriers and facilitators to referral were found to be entwined within and across themes, with an overall high concordance of views between all stakeholder groups. Findings highlighted referral barriers that have persisted since the earlier trial (e.g. a lack of consultation time and a lack of referral feedback) and newly identified barriers (e.g. a lack of scheme awareness and a referral system perceived to be time intensive and disjointed). Key referral facilitators included patient self-referrals, a growing scheme reputation and promotional activities of scheme deliverers.

Conclusions: NERS is an established, evidence-based programme, which continues to support thousands of patients across Wales each year. Findings provide evidence that could inform the further development of NERS and wider exercise referral schemes to ensure the referral process is timely, efficient and equitable.

Cost and cost-effectiveness analysis of the Stand & Move at Work intervention to improve sedentary behavior at work

Dr. Tzeyu Michaud[1], Dr. Wen You[2], **Prof. Paul Estabrooks[1]**, Dr. Krista Leonard[3], Ms. Sarah Rydell[4], Dr. Sarah Mullane[5], Dr. Mark Pereira[4], Dr. Matthew Buman[3]

[1]University of Nebraska Medical Center, Omaha, USA, [2]University of Virginia, Charlottesville, USA, [3]Arizona State University, Phoenix, USA, [4]University of Minnesota, Minneapolis, USA, [5]Johnson & Johnson, London, United Kingdom

SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Objectives: Few studies have reported the intervention costs and cost-effectiveness of the workplace sedentary behavior interventions. The study sought to conduct cost analysis and economic evaluation of a multilevel intervention with and without sit-stand workstations to reduce sitting time and increase light-intensity physical activity (LPA) among office workers.

Methods: A retrospective within-trial cost and cost-effectiveness analysis (CEA) was conducted to compare a multicomponent intervention and the provision of a sit-stand workstation (STAND+), with a multicomponent comparison without a workstation (MOVE+) for 630 participants, across 24 worksites, enrolled in a cluster randomized clinical trial. The intervention costs associated with STAND+ and MOVE+ were estimated using the activity-based costing approach and expressed in a per person and per worksite basis. CEA were conducted using an incremental cost-effectiveness ratio (ICER) metric, which was expressed as costs for additional unit increase/decrease in workplace and overall (including times outside work) sitting time (minute/day), LPA (minute/day), cardiometabolic risk score, and quality-adjusted life years (QALYs) at 12 months. The cost analysis and CEA were assessed from the organizational (i.e., employer) perspective.

Results: The total intervention costs were $134 and $72 per person, and $3,939 and $1,650 per worksite for the STAND+ (n=354) and MOVE+ (n=276) interventions, respectively. The ICER was $1 (95% CI, $0.8-$1.4) for additional minute reduction of workplace sitting time (standardized to 8-hour workday); and $4,656 for additional QALY gain at 12 months. Modest and not significant work productivity improvement was found (-0.03 hours; 95%CI: -4.16, 4.09 hours), which is associated a $0.34 return for every $1 invested.

Conclusions: The multi-level intervention with sit-stand workstation holds the potential to be widely implemented, and were preferable in reducing workplace sitting time. Future research into work productivity outcomes in terms of cost-benefits for employers, is warranted.

O.2.15 - Latest findings and methods in participatory research in health promotion

Room 154

May 20, 2022, 3:10 PM - 4:40 PM

Co-created interventions among children and adolescents targeting physical activity or sedentary behaviour at school: A systematic review

Ms. Veerle Van Oeckel[1], Prof. Benedicte Deforche[1,2], Dr. Teatske Altenburg[3], Ms. Anneke Vandendriessche[1], Ms. Frances Muylaert[1], Prof. Maïté Verloigne[1]

[1]Ghent University, Ghent, Belgium, [2]Vrije Universiteit Brussel, Brussels, Belgium, [3]Amsterdam University Medical Centers, Amsterdam, Netherlands

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 0-18 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: A great proportion of children and adolescents do not achieve the WHO guidelines, which recommend an average of 60 minutes of moderate-to-vigorous physical activity (PA) per day. In addition, children and adolescents spend the majority of the day sedentary. This inactive lifestyle is associated with adverse health outcomes, suggesting effective interventions are needed. Using a co-creation approach, in which children and adolescents are actively involved in the intervention development, might increase the effectiveness of such interventions. This systematic review aims to (1) give an overview of co-created interventions targeting PA and/or sedentary behaviour (SB) at school and (2) summarize the effect of these interventions on pupils' PA and SB.

Methods: A search strategy was conducted in six databases (MEDLINE, Embase, Web of Science, CENTRAL, Scopus and SPORTDiscus). Two reviewers screened titles and abstracts independently. Full texts were screened by one reviewer. Interventions were defined as co-created when there was (at least) shared decision making between researchers and children/adolescents during the development of the intervention. A quality assessment was completed using the QualSyst tool. Extracted data included: aim, design, country, participants, description of co-creation process (co-creation group members, duration, number and content of sessions), description of the intervention, outcomes, measurement tools, results and key findings.

Results: Nine studies were included (Europe: n=6, USA: n=2, New Zealand: n=1) of which most were conducted among adolescents. Six studies included a control condition receiving no intervention. Only four studies found significant favourable intervention effects, but effects were generally small. The co-creation process of these studies was very different and often little described or not described at all.

Conclusion: It cannot be concluded that co-created interventions automatically lead to more behaviour change as no study compared such an intervention with an intervention developed by researchers, and intervention effects were generally small or absent. Future interventions should better describe the co-creation process, to evaluate whether intervention effects differ depending on the intensity of co-creation. Using a structured approach to co-create health promoting interventions (like the Intervention Mapping Protocol) could help to report the co-creation process.

Impact of participatory research interventions on adolescents' obesity-related behaviours: systematic review and meta-analysis

Miss Judit Queral Añó[1,2], **Miss Annemieke Wargers[3]**, Dr. Famke Mölenberg[3], Dr. Lucía Tarro[1,2], Dr. Elisabet Llauradó[1,2], Prof. Rosa Solà[1,2,4], Dr. Wilma Jansen[3,5]

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Overweight and obesity is a major public health problem. Adolescents are experts in their own behaviour, so it is important to involve them when promoting healthy lifestyles. Participatory research may be a way to actively involve and empower young people in research projects to co-create innovative interventions that match their living environment. Knowledge is lacking so far at which levels of engagement participatory approaches are being used in health promotion ranging from citizens as interprets to collaboration in all steps of the research-process and whether these approaches are effective. The aim of this systematic review is to investigate the effectiveness of participatory research interventions on obesity-related behaviours in adolescents.

Methods: Nine databases were searched from 2000 to July 2021 by two independent reviewers. Studies were included if evaluating a participatory research intervention on obesity-related behaviours in adolescents (11-18 years), by means of a controlled trial with pre- and post-assessment in high-income countries. Studies not published in English were excluded. Two reviewers independently extracted data and carried out a quality assessment. Primary outcomes on physical activity (PA), nutrition and other obesity-related behaviours will be extracted. Studies reporting on similar outcomes will be pooled by means of random-effect meta-analysis.

Results: The search resulted in 6363 articles; 11 studies met the inclusion criteria. Three studies focused on dietary behaviour, four studies focused on PA and four studies focused on both behaviours. Participatory elements included peer-led interventions (n=6), adolescent-led social marketing strategies (n=1), co-created interventions (n=1) or a combination of those (n=3). Nine interventions took place at school, whereas two focused on communities. Frequent reported outcomes were PA measured by accelerometers, self-reported questionnaires on PA and snacking behaviours and Body Mass Index. The results of the meta-analysis will be presented during the ISBNPA conference in May 2022.

Conclusions: This review will give insight in the different participatory health promotion interventions related to healthy lifestyles of adolescents and the effects of various strategies on obesity-related behaviour.

Enabling better physical activity and screen time behaviours for adolescents from Middle Eastern backgrounds: semi-structured interviews with parents

Ms. Nematullah Hayba[1], Ms. Yumeng Shi[1], Prof. Margaret Allman-Farinelli[1]
[1]*University of Sydney, Sydney, Australia*

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: The heightened influence of the obesity pandemic in adolescents from Middle Eastern (ME) backgrounds predicates the need to champion co-designed lifestyle initiatives. Parents remain an important stakeholder to consider in intervention design given their influence on adolescent health and behavior. Thus, this qualitative study aimed to capture the perceptions and practices of ME parents of adolescents that would enable or prove a barrier for their adolescent's physical activity and screen time behaviours.

Methods: A total of twenty-six semi structured interviews were conducted with mothers of adolescents from ME backgrounds in Australia over zoom or phone. A reflexive thematic analysis was performed using the Capability, Opportunity, Motivation-Behaviour model and the Theoretical Domain Framework to guide the process.

Results/Findings: Mothers recruited were aged 35-59 years, and mostly residing in lower socioeconomic areas (n=19). Parents demonstrated confidence in adolescent's knowledge of need to participate in physical activity and limit screen time but were pessimistic in their ability to activate these behaviours in their children, especially for older adolescents. This was particularly evident in efforts for limiting screen time which increased during COVID-19. Irrespective of adolescent's skills and ability to engage in sports and exercise, parents revealed deep fears regarding their neighbourhood and social environment and admitted to limiting their independent mobility. Gender differences were also distinguished with parents reporting limited opportunities for girls and their mutual disinterest especially as they age. Parents pleaded for upstream policy and financial initiatives to help overcome financial obstacles and provide greater opportunity for long term sports engagement. They also reinforced the importance of schools in facilitating initiatives for girls and older adolescents and not just one-off tokenistic events.

Conclusions: The findings illustrate the need for efforts to be galvanized across schools and community organisations alongside social and policy reform to organize real-world sporting and physical activity interventions. Such interventions should be contextualized and culturally safe with special emphasis for girls and older adolescents.

Move it, Move ID! Co-creation of an intervention to promote physical activity among adolescents with intellectual disability

Miss Laura Maenhout[1,2], Prof. Greet Cardon[1], Prof. Geert Crombez[1], Prof. Geert Van Hove[1], Dr. Sofie Compernolle[1,2]
[1]*Ghent University, Ghent, Belgium,* [2]*Research Foundation Flanders, Brussels, Belgium*

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Large proportions of adolescents fail to achieve the recommended 60 minutes of moderate-to-vigorous physical activity (PA) per day. Figures are even more striking among adolescents with intellectual disability (ID). To date, adolescents with ID are a neglected population in PA research. Consequently, developing and designing PA interventions specifically tailored to the needs of youth with ID is of the utmost importance. The aim of this study was twofold: first, to describe the participatory development of a PA intervention in adolescents with ID, and second, to provide insight into the challenges associated with a participatory approach in adolescent with ID.

Methods: Six co-creation sessions were organized in two different groups of adolescents with mild-moderate ID (14-23y) (n=23) between April and June 2021. Sessions were organized at the adolescents' special needs school for two consecutive class hours. The Behavior Change Wheel was used as a theoretical framework to guide the content and flow of the sessions. A multitude of research materials were collected (e.g. recordings, transcribed interviews, 'easy to read' process evaluation forms, and creative materials) and analyzed with the appropriate descriptive statistical methods, and qualitative techniques.

Results: Social connectedness, self-efficacy/self-confidence, knowledge building, encouragement and enjoyment seem to be important intervention targets to promote PA. An intervention is best considered separately from the school context. In addition, the option of an mobile health intervention was discussed, where input was provided on what to consider within app development. It was indicated that an app alone would not motivate them to be more physically active, instead it needs to be embedded in a larger structure.

Conclusions: Adolescents' input on PA for intervention development will be discussed. Also challenges when working with co-creation in this target group, such as the use of different (creative) methods, the influence of the presence of the teacher, the different group dynamics, the importance of building a relationship of trust and perceived barriers concerning ethics committee, will be reflected on.

Process evaluation of a participatory developed school-based intervention promoting healthy sleep in adolescents

Ms. Janneke de Boer[1], Prof. Maïté Verloigne[1], Prof. Benedicte Deforche[1,2], Prof. Greet Cardon[1], Mr. Kenji Leta[1], Ms. Ann Vandendriessche[1]
[1]Ghent University, Ghent, Belgium, [2]Vrije Universiteit Brussel, Brussels, Belgium

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Sleep

Purpose: As sleep deprivation is an important health issue among adolescents, effective interventions are needed to promote healthy sleep in adolescents. Using Participatory Action Research (PAR) to develop an intervention is promising and leads to more tailored interventions, but has not been used to develop a sleep intervention in adolescents before. This study evaluates the process of a school-based PAR intervention promoting healthy sleep, by targeting sleep hygiene, physical activity, screen usage, nutrition and relaxation among 13 to 15 year old adolescents.

Methods: In three secondary schools in Flanders (general education (GE, n=2), vocational education (VE, n=1)) an action group of students (n=6-10) and a researcher was formed to develop and implement an intervention. Throughout the implementation the action group was supported by teachers and fellow students. In all schools focus groups were held to evaluate the developed intervention components (e.g. app) with arbitrarily selected students (receivers (n=59) and implementers (n=36)). Furthermore, process evaluation questionnaires were completed by students (n=798), a random sample of teachers (n=8), teacher implementers (n=5), and students' parents (n=55) in GE schools, to investigate their satisfaction and the students' exposure to intervention components delivered by teachers and parents. Focus groups were audio-taped and coded using NVivo 12, questionnaires were analysed using SPSS 26.

Results: In all schools, the process evaluation showed that student implementers and teachers were poorly informed about how to implement the intervention components. Consequently, not all components were implemented as planned which resulted in relatively low student exposure. However, several intervention components were evaluated positively by students, such as Instagram, app, posters, and discussion classes in the VE school and the kick-off event and Fitbit competition in GE schools. Additionally, parents were encouraged to discuss healthy sleeping behaviour with their child but evaluation showed that most of them did not.

Conclusions: Several intervention components were positively evaluated by students, which could be explained by the participatory approach. Moreover, future research should focus on providing sufficient training and fostering good communication with the implementers of the participatory developed intervention. Therefore, it is recommended to also involve teachers from the beginning of the PAR process.

Effectiveness of the Multilevel, Multicomponent Strong Hearts, Healthy Communities-2.0 Intervention: A Community-Randomized Controlled Trial

Dr. Rebecca Seguin-Fowler[1], Ms. Galen Eldridge[2], Dr. Chad Rethorst[2], Ms. Meredith Graham[2], Dr. David Strogatz[3], Dr. Jay Maddock[4], Dr. Miriam Nelson[5], Dr. Sara Folta[5]

[1]Texas A&M AgriLife Research, College Station, TX, USA, [2]Texas A&M AgriLife Research and Extension Center, Dallas, TX, USA, [3]Bassett Research Institute, Cooperstown, NY, USA, [4]Texas A&M University System, College Station, TX, USA, [5]Friedman School of Nutrition Science and Policy, Boston, MA, USA

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Effective community-based programs addressing multiple factors contributing to poor health outcomes in rural communities can play a critical role in addressing rural health disparities. The study objective was to test a refined version of the multilevel Strong Hearts, Healthy Communities intervention, which used extensive process and outcome evaluation data from the original randomized trial to optimize effectiveness.

Methods: The community-randomized controlled trial was conducted in 11 rural New York communities with women ≥40 years old with 1) obesity or 2) overweight and a sedentary lifestyle. The 24-week multilevel, multicomponent intervention consisted of hour-long, twice-weekly classes including strength training, aerobic exercise, skill-based health education (individual level), and civic engagement activities regarding healthy food and physical activity environments (social, community, and policy levels). BMI and Simple 7 score, a composite measure of cardiovascular disease risk, were primary outcomes; additional biometric and behavioral measures were secondary outcomes. Multilevel models were used to compare changes in outcomes between intervention and delayed intervention participants; a sensitivity analysis among participants ≥60 years old was conducted. Analytical approaches adhered to intention-to-treat principles.

Results: 182 participants were randomized by community; average age was 57.16±8.9. Compared with control participants, the intervention group had greater improvements in BMI (difference: -1.14, $p<0.01$) and Simple 7 (1.03, $p<0.001$) and secondary outcomes: biometric (weight [-2.97 kg], body fat [-1.99%]), functional fitness (aerobic endurance [15.92 steps in two minutes], agility [-0.53 seconds, quickly stand up, walk 8 feet, and come back to seated], upper body strength [5.39 arm curls with 5-pound weights in 30 seconds], lower body strength [3.43 chair stands in 30 seconds]), physical activity (moderate to vigorous physical activity [MVPA] [702.99 MET-minutes/day, 0.86% of time spent in MVPA, 6.83 minutes/day in MVPA], total steps [1462.21 steps/day]), and eating attitudes (healthy eating attitudes [0.36, 5-point scale], cognitive restraint [2.09, 18-point scale]) measures (all $p<0.05$). Similar results were found in the subset analysis of women over 60 years of age.

Conclusions. The intervention demonstrated significant and clinically meaningful improvements among at-risk women and holds potential for dissemination to help address rural health disparities.

O.2.16 - Machine Learning and agent based modeling for physical activity and nutrition research

Room 155

May 20, 2022, 3:10 PM - 4:40 PM

An artificial intelligence approach to conducting pedestrian streetscape audits for physical activity

Dr. Christine Phillips[1], Mr. Akshar Patel[2], Ms. Alison Cantley[2], Dr. Ariane Middel[2], Prof. Marc Adams[2]
[1]Clemson University Institute for Engaged Aging, Seneca, USA, [2]Arizona State University, Phoenix, USA

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Physical Activity

Purpose: To train, test, and validate an artificial intelligence approach to detect micro-scale pedestrian streetscape amenities that promote walking and active travel. This work innovates by combining machine learning and computer vision techniques with Google Street View (GSV) images to overcome impediments to conducting streetscape audits, namely, the time and cost of expert human labor.

Methods: Step 1: We built deep learning classifiers using EfficientNETB5 architecture and Fast.ai deep learning framework for eight micro-scale features guided by the Microscale Audit of Pedestrian Streetscapes-Mini tool: sidewalks, sidewalk buffers, curb cuts, zebra crosswalks, line crosswalks, walk signals, bike symbols, and streetlights. Classifier output was a probability of feature presence in each image. Classifiers were developed using a train-correct loop, whereby classifiers were trained on a training dataset of images from of five U.S. cities, evaluated using a separate validation dataset, and trained further until acceptable performance metrics were achieved. Precision (i.e., positive predictive value), recall (i.e., sensitivity), and accuracy are presented. Step 2: Trained classifiers were used to conduct automated virtual audits for the home neighborhoods of participants in the Phoenix region, Arizona, USA enrolled in the WalkIT Arizona trial (N=512). Audit points included all coordinates for which GSV images were available within a 500-meter street network buffer around each participant's home. We further explored correlations between model-detected micro-scale features and GIS-measured and participants' perceived neighborhood walkability.

Results/Findings: Step 1: Classifier precision ranged from 100% (zebra crosswalks) to 87% (streetlights), recall ranged from 97% (walk signals) to 86% (sidewalk buffers), and accuracy ranged from 100% (zebra crosswalks) to 88% (streetlights). Step 2: The prevalence of model-detected features ranged from 90% (sidewalks) to 0.3% (zebra crosswalks). An index of model-detected micro-scale features was associated with GIS-measured macro-walkability (r=.30, p<.001). Positive associations were found between model-detected and perceived neighborhood sidewalks (r=.41, p<.001) and sidewalk buffers (r=.26, p<.001).

Conclusions: Automated virtual streetscape audits may provide a scalable alternative to human audits, thus enabling advancements in the field currently constrained by time and cost. Reducing reliance on trained auditors will enable scaling-up audits to assess hundreds or thousands of neighborhoods for population surveillance or hypothesis testing.

Use of deep learning and Google Street View imagery to examine relationships between residential streetscapes and physical activity.

Dr. Bethany Williams[1], Dr. Ofer Amram[1], Dr. Andrew Larkin[2], Dr. Glen Duncan[1], Ms. Ally Avery[1], Dr. Perry Hystad[2]
[1]Washington State University Health Sciences Spokane, Spokane, USA, [2]Oregon State University, Corvallis, USA

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Access to green space and walkable built environments affect daily routines and behaviors. Compared to satellite measures that provide a birds-eye view, Google Street View (GSV) images capture neighborhood microenvironments as viewed and experienced by residents. Here we examine relationships between residential GSV-derived built environment features and physical activity (PA) within the Washington State Twin Registry (WSTR).

Methods: We examined 9,483 adult twins enrolled in the WSTR from 2009-2019 living in urban areas; 16,701 total survey observations were analyzed. The PSPNET deep learning segmentation algorithm was applied to images sampled from 100 meters around residential addresses to quantify street level objects. We created exposure metrics hypothesized to be important to PA, including %total green space, %accessibility features (sidewalks, paths, stairs, streetlights, benches, step, etc.), %built environment features, %sidewalks separately. Bouts and duration of PA, including moderate-to-vigorous PA (MVPA) and neighborhood walking, were self-reported. Those with ≥150minutes/week of MVPA and walking were coded as meeting recommendations. Mixed effects logistic regression models determined odds ratios (ORs) of meeting recommendations for MVPA and for each quartile increase in residential GSV measures. Models included a nest random intercept for twins and twin pairs, and adjusted for age, sex, race, income, neighborhood area deprivation, and satellite-derived greenness (NDVI within 100m).

Results/findings: Across observations, most WSTR participants did not meet PA recommendations for MVPA (62.1%) or walking (76.2%). Positive relationships between MVPA and increased GSV measures were observed, however were not significant in fully adjusted models. Specifically, the OR for meeting MVPA recommendations was 1.10 (95%CI: 0.96-1.26) for total greenspace, 1.09 (0.96-1.24) for accessibility features, 0.97 (0.85-1.11) for built environment features, and 1.12 (0.98-1.27) for sidewalks, all comparing the top quartile of exposures to the lowest. For walking we observed similar associations; the OR for meeting recommendations was 1.16 (0.96-1.39) for total greenspace, 0.99 (0.84-1.17) for accessibility features, 0.92 (0.77-1.10) for built environment features, and 1.10 (0.92-1.30) for sidewalks, comparing the top quartile of exposures to the lowest.

Conclusions: We observed small associations between street-level GSV measures and PA. Further research will integrate satellite and street-level measures to capture built environment characteristics important to PA.

Examining the impact of large-scale built and food environmental changes on physical activity and healthy eating using agent-based modeling

Dr. Deborah Salvo[1], Dr. Leandro Garcia[2], Dr. Rodrigo Reis[1], Dr. Ivana Stankov[3], Dr. Rahul Goel[4], Dr. Jasper Shipperijn[5], Dr. Pedro Hallal[6], Dr. Ding Ding[7], Dr. Michael Pratt[8], Dr. Pablo Lemoine[10], Dr. Kathryn Janda[9], Dr. Nalini Ranjit[9], Mrs. Aida Nielsen[9], Dr. Alexandra van den Berg[9]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Testing the impact of systems-level changes to the built and/or food environment using traditional controlled experimental designs is not always feasible. This study aimed to demonstrate the utility of agent-based modeling for assessing the potential effects of large-scale modifications to the built and food environments on physical activity and healthy eating outcomes.

Methods: We developed two independent agent-based models. The first simulates three city types (low-, middle-, and sprawling high-income country cities), and tests the impact of five scenarios (vs. business-as-usual) on physical activity and sustainability outcomes. Scenarios were: 1) expansion of public transit infrastructure; 2) expansion of pedestrian and bicycling infrastructure; 3) expansion of public open spaces; 4) strategies 1-3 combined; 5) strategies 1-3 combined, plus increased driving costs. The second model simulates the City of Austin, Texas, USA, and tests the impact of four food environment change scenarios on vegetable consumption among low-income, ethnically-diverse residents. Scenarios were: 1) expansion of non-traditional food assets in low-income communities (farm-stands, mobile markets, healthy corner stores); 2) reduced cost of vegetables in existing non-traditional food assets; 3) expansion of non-traditional food assets plus 50% cost reduction for vegetables; 4) cost reduction for vegetables in traditional food assets (supermarkets/grocery stores).

Results: For the built environment and physical activity/sustainability model, the "all strategies and no increased driving cost" scenario was the most optimal one for improving population levels of physical activity and sustainability outcomes (improved air quality, decreased carbon emissions, reduced traffic deaths). In the sprawling, high-income country city type, only the "all strategies plus increased driving costs" scenario showed meaningful population-level improvements in physical activity and sustainability outcomes. The food environment model showed that steep reductions (>70%) in vegetable prices in supermarkets/grocers is a as effective a strategy for increasing vegetable intake among low-income residents, as is increasing the number of non-traditional food stores (mobile markets) whilst offering a 50% discount on vegetables.

Conclusions: Large-scale modifications to the built and food environment of cities can be effective strategies for promoting physical activity and healthy eating, and for reducing health disparities. Multi-component, synergistic approaches help maximize public health impact and minimize unintended consequences.

Development and face validity testing of MealSim, an agent-based model simulating child eating behaviors

Dr. Melissa Pflugh Prescott[1], Dr. Roland Ofori[1], Ms. Mayra Saenz Amaguaya[1], Dr. Brenna Ellison[2], Ms. Shelly Palmer[1], Ms. Iulia Ciubotariu[1]
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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: The purpose of this study is to develop an agent-based simulation model of the school meal environment that can be used by school nutrition administrators and policymakers to identify evidence-based strategies to improve child diet quality and reduce wasted food in school meal programs.

Methods: We developed the agent-based model in three stages. First, we review the relevant literature to build a conceptual model of child eating behaviors during the National School Lunch Program and identify key variables associated with the school meal environment to include in the model. Second, we apply econometric models to quantitative data from cafeteria experiments to predict student food selection and consumption. Third, we use these findings to develop the agent-based model in the NetLogo programming language. The model simulates a complex system consisting of a school cafeteria with food, meal policies, and heterogenous students applying the econometric models and other boundedly-rational strategies to make decisions about food selection and consumption. Our multidisciplinary team conducted verification processes to ensure the agent-based model reflects underlying economic and behavior theory and other relevant systems factors. Face validity testing was conducted with school nutrition staff, relevant community partners, and academicians.

Results: Face validity testing suggests that the model has relevant applications to the work and interests of school nutrition practitioners and their relevant community partners, as well as use in future research on the impact of new school meal policies. Constructive criticisms included the need for improved integration of peer effects and agent-to-environment interactions.

Conclusions: The base *MealSim* model adequately reflects the current evidence of child eating behaviors during lunch and is well-received by practitioners and researchers. Additional research is needed to incorporate face validity findings and validate the model.

FLASH-TV 2.0: Refining and assessing the FLASH-TV methods for TV viewing estimation

Dr. Teresia O'Connor[1], Mr. Anil Kumar Vadathya[2], Ms. Alicia Beltran[1], Ms. Oriana Perez[1], Dr. Salma Musaad[1], Dr. Tom Baranowski[1], Dr. Sheryl Hughes[1], Dr. Jason Mendoza[3], Dr. Ashok Veeraraghavan[2]
[1]Baylor College of Medicine, Houston, USA, [2]Rice University, Houston, USA, [3]University of Washington, Seattle, USA

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 6-12 yrs
Subject Category: Sedentary Behavior

Purpose: Excessive TV-viewing among children is a public health concern, yet tools to measure children's TV viewing suffer from biases. Our goal was to refine and reassess FLASH-TV 1.0, an objective measure of children's TV viewing using computer vision and machine learning algorithms to analyze video images of children in front of TVs.

Methods: Four design studies (n=21) were conducted with family triads (parent and 2 siblings): three in an observation lab and 1 in the child's home. Family triads participated in task-based screen use protocols for about 90 minutes. The FLASH-TV system included a video camera placed near TV facing the room in front of TV during data collection. Video data coded by staff using duration coding for whether the target child's gaze was on the TV were the gold-standard (10% double coded, mean Kappa 0.83-0.88). FLASH-TV estimated a child's TV viewing time by sequentially detecting faces in a video frame, verifying that the face was the target child, and assessing TV-watching (gaze) behavior. Enhancements of convolutional neural network algorithms for each step included substituting YOLOv2 for RetinaFace for face-detection; DeepFace for ArcFace for face verification; and using a combination of Gaze360 and ETH-XGaze for gaze estimation. Additionally, the video-data were assessed at 5-second epochs to reduce the noise in the system. The target child's TV viewing duration estimated by FLASH-TV running the three steps sequentially was compared to the gold standard, with criterion validity for overall TV viewing calculated using intra-class correlation (ICC) in a generalized linear mixed model.

Results: The children's mean age was 10.2 years, with 38.1% non-Hispanic white, 28.6% black, 19% Hispanic white, and 14.4% other. Face detector's overall sensitivity improved from 93.6% to 96.1%. Face verification overall positive predictive value improved from 90% to 96% reducing the false positive rate. The ICC improved from 0.725 to 0.961 when comparing the child's gold standard TV viewing time (minutes) to FLASH-TV estimated time.

Conclusion: FLASH-TV 2.0 significantly improved the performance of FLASH-TV 1.0 to identify when a target child is watching TV and offers a critical new tool to accurately measure children's TV viewing.

Nutrient Prediction on Recipes – Use Case on Heterogeneous Recipe Datasets

Miss Gordana Ispirova[1], Dr. Tome Eftimov[1], Prof. Barbara Koroušić Seljak[1]
[1]*Jožef Stefan Institute, Ljubljana, Slovenia*

SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Nutrition

Objective: Nutrient tracking is the process of breaking down nutrient ratio while tracking meals to ensure eating according to a certain dietary goal. There are plenty of apps for tracking that help users in this, as well as recipe datasets – a valuable source of information for meal planning and grocery shopping. Experts in numerous industries are continually looking for ways to improve and simplify the process of estimating nutritional values that are missing for different reasons. The aim of this study was to explore the performance of a machine learning pipeline for predicting nutrient values from text embeddings on heterogeneous recipe datasets (i.e., datasets that come from different sources) for benchmarking.

Methods: Our proposed machine learning pipeline predicts the nutrient profile of a recipe by using text embeddings on the ingredients, combined with a domain heuristic. The domain-specific heuristic merges the embeddings of the ingredients by incorporating their quantities. We evaluated the pipeline by using seven heterogenous recipe datasets. One of the datasets, called Spoonacular has nutrient values available, while all the others have no nutritional information. To apply the methodology, before the predictions, the datasets went through the processes of named entity recognition (for extracting the measurement units and quantities of the ingredients), and data mapping (for mapping the ingredients to a Food Composition Database (USDA) to obtain the nutrient values).

Results: The prediction models were highly effective for all seven datasets. Regarding the separate nutrient predictions, the best results were achieved from the protein prediction models (up to 95% accuracy) and the worst performing were the salt prediction models (up to 51%). On a dataset level, the best results were achieved for the Spoonacular dataset, while the accuracies for the other datasets were approximately 12-16% lower in accuracy.

Conclusions: With this use case we achieved harmonization over the meta-data of different heterogeneous recipe datasets, while evaluating the effectiveness of the machine learning pipeline and the domain heuristic for merging multi-word embeddings. The diversity of the data in these datasets also provides a base for generalizing the prediction models to many different scenarios with minimum amount of data.

S.2.19 - The 24-hour movement behaviour perspective in children: Is any guideline better than no guideline to move the field forward?

Room 150

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
To define priorities in health promoting research focusing on 24-hour movement behaviors (24-HMB) in children.

Rationale:
With the release of 24-HMB guidelines for children by the World Health Organization and in several countries (e.g., Canada), the integrated use of 24-HMB in children is emerging. These guidelines were developed using robust and transparent processes, but are based on limited, and some lower quality, evidence. Despite apparent limitations, this innovative approach is guiding health promotion research in children globally. Studies that include the 24-HMB guidelines range from epidemiological studies to intervention studies to optimize children's movement behaviors and health. In the absence of a substantial body of evidence, it is argued that these integrated guidelines are preferable to the non-integrated individual behavior guidelines. We question whether priority should be given to the establishment of high-quality epidemiological evidence to inform guideline revisions or to move the field forward by investigating guideline compliance and to evaluate behavioral interventions using 24-HMB.

Objectives:
1. Reflect on results that are in contradiction with the assumption that 24-HMB guideline compliance is associated with adiposity in children;
2. Identify stakeholders' perspectives to develop 24-HMBs interventions in children;
3. Discuss the research priorities in health promoting research focusing on 24-HMBs in children.

Summary:

Two presentations within this symposium discuss the association between guideline compliance and adiposity indicators from two cross-national European studies. One presentation qualitatively explores stakeholders' perspectives in developing 24-HMB-based interventions. Results demonstrated no association between guideline compliance and adiposity indicators in preschoolers (3-4 years) and school-aged children (5-12 years) although low compliance with the integrated 24-HMB guidelines were observed. Results from focus groups with stakeholders revealed the need to co-develop children's 24-HMB interventions with parents and other stakeholders.

Format:

3 presentations:
1. Compliance with the 24-hour movement behavior guidelines and associations with adiposity in European preschoolers: results from the ToyBox-Study (presenter: Marga Decraene)
2. Longitudinal associations between compliance with 24-hour Movement Behaviour Guidelines and adiposity among European children: results from the IDEFICS and I.Family studies (presenter: Vera Verbestel)
3. Stakeholder input in the development of 24-hour movement behaviour interventions to reduce the rapidly growing inequalities in childhood obesity in Scotland (presenter: Deirdre Harrington)

Chair: Marieke De Craemer
Discussant: Anthony Okely

Interaction:

The remote audience will be involved by using Wooclap's real-time interactions and message walls which allows participants to anonymously reply on polls and to ask questions.

Compliance with the 24-hour movement behavior guidelines and associations with adiposity in European preschoolers: results from the ToyBox-Study

Miss Marga Decraene[1], Dr. Vera Verbestel[1], Prof. Greet Cardon[1], Prof. Violeta Iotova[2], Prof. Berthold Koletzko[3], Prof. Luis Moreno[4], Mrs. Maria Miguel-Berges[4], Mrs. Beata Gurzkowska[5], Prof. Odysseas Androutsos[6], Prof. Yannis Manios[7], Prof. Marieke De Craemer[1, 8]
[1]Ghent University, Ghent, Belgium, [2]Medical University Varna, Varna, Bulgaria, [3]University of Munich Medical Centre, Munich, Germany, [4]University of Zaragoza, Zaragoza, Spain, [5]Children's Memorial Health Institute, Warsaw, Poland, [6]University of Thessaly, Trikala, Greece, [7]Harokopio University, Athens, Greece, [8]Research Foundation Flanders, Ghent, Belgium

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose Specific combinations of 24-hour movement behaviors (high physical activity (PA), low sedentary behavior (SB), and high sleep) are associated with favorable health indicators for children under five years of age, including adiposity indicators. Evidence is, however, limited due to the small number of studies among these children. Additionally, the World Health Organization acknowledges the importance of targeting these behaviors in an integrated approach to prevent adiposity. This is reflected in the release of 24-hour movement behavior guidelines for children under five years in 2019. The present study is one of the first investigating the proportion of preschoolers complying with these behavior guidelines (on a total week, weekdays and weekend days), and the associations with adiposity in a cross-national European sample.

Methods This cross-sectional study included 2468 preschoolers (mean age: 4.75 years; 41.9% boys) from six European countries. PA was objectively assessed by pedometers. Parent-reported questionnaires provided screen time (ST) as a proxy for SB and sleep duration data. Generalized estimating equations were used to analyze the association between guideline compliance and adiposity, i.e., body mass index z-score (BMIz) and waist to height ratio (WHR). The associations were investigated in the total sample and in girls and boys separately.

Results Only 10.1% of preschoolers complied with the 24-hour movement behavior guidelines, 69.2% with the sleep duration guideline, 39.8% with the ST guideline and 32.7% with the PA guideline. No association was found between guideline compliance with all three movement behaviors and adiposity. However, associations were found for isolated guideline compliance with weekday screen time (BMIz and WHR: p=0.04) and weekend day sleep duration (BMIz and WHR: p=0.03) with lower adiposity. The association for sleep duration was confirmed in girls (BMIz: p=0.02; WHR: p=0.03), but not in boys.

Conclusions Overall, low compliance with the 24-hour movement behavior guidelines was found. No association was found between integrated guidelines and adiposity. Longitudinal studies, including intervention studies, are needed to increase preschoolers' guideline compliance and to gain more insight into the association between 24-hour movement behaviors and adiposity from a young age onwards.

Longitudinal associations between compliance with 24-hour Movement Behaviour Guidelines and adiposity among European children: results from the IDEFICS and I.Family studies

Dr. Vera Verbestel[1], Dr. Nathalie Michels[1], Dr. Antje Hebestreit[2], Dr. Christoph Buck[2], Mr. Fabio Lauria[3], Dr. Herrman Pohlabeln[2], Prof. Luis Moreno[4], Prof. Molnár Dénes[5], Mr. Michael Tornaritis[6], Mr. Toomas Veidebaum[7], Mr. Staffan Mårild[8], Prof. Wolfgang Ahrens[2], Assistant Professor Marieke De Craemer[1,9]

[1]Ghent University, Ghent, Belgium, [2]Leibniz Institute for Prevention Research and Epidemiology, Bremen, Germany, [3]National Research Council, Avellino, Italy, [4]University of Zaragoza, Zaragoza, Spain, [5]University of Pécs, Pécs, Hungary, [6]Research and Education Institute for Child Health, Strovolos, Cyprus, [7]National Institute for Health Development, Talinn, Estonia, [8]University of Gothenburg, Gothenburg, Sweden, [9]Research Foundation Flanders, Brussels, Belgium

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: High levels of physical activity (PA), low levels of sedentary behaviour and sufficient amounts of sleep are important for children's health. This resulted in the launch of integrated 24-hour movement behaviour (24-hMB) guidelines for children. There is a current need to understand children's adherence to these guidelines, and to investigate how these behaviours interact to influence health. Given that childhood obesity has become a serious public health problem worldwide, this study investigates how compliance with the newly developed 24-hMB guidelines is associated with adiposity in children over time.

Methods: Analyses comprised 2,985 children (mean age: 6.20 ± 1.72 years; 49.7% boys) from eight European countries with valid ActiGraph GT3X data (i.e., sleep, light PA, moderate to vigorous PA and total PA) at baseline and 2-year follow-up. Screen time was obtained through a parental-reported questionnaire. Repeated Measures ANOVA were used to analyse if the evolution of BMI z-score (BMIz) and waist-to-hip ratio (WTHR) was associated with trajectories of compliance with the integrated 24-hMB guidelines. Trajectories of compliance were defined as children who: 1) remained compliers (RC), 2) became compliers (BC), 3) became non-compliers (BNC) and 4) remained non-compliers (RNC). Analyses were controlled for socio-economic status and age, and stratified by sex.

Results: At baseline, 17.5% of the children complied with the integrated 24-hMB guidelines and 12.3% of the children complied at 2-year follow-up. No difference in evolution of BMIz and WTHR was found between trajectories of compliance in boys (BMIZ: F=1.26, p=0.29; WTHR: F=0.45, p=0.72) and girls (BMIz: F=2.27; p=0.08; WTHR: F=2.32, p=0.08). For trajectories of guideline compliance, a significant main effect for WTHR was observed in boys (F=4.09, p=0.007) with the RNC group having a significant higher WTHR than the RC group (p=0.046) and the BNC group (p=0.006).

Conclusion: Low compliance rates with the integrated 24-hMB guidelines in children were observed but guideline compliance was not associated with adiposity indicators over time. However, results suggest that complying with the integrated 24-hMB guidelines over time is beneficial in boys.

Stakeholder input in the development of 24-hour movement behaviour interventions to reduce the rapidly growing inequalities in childhood obesity in Scotland

Miss Deirdre Harrington[1], Mr. Bradley MacDonald[1], Prof. John J. Reilly[1], Prof. Paul Flowers[1], Dr. Xanne Janssen[1]
[1]University of Strathclyde, Glasgow, United Kingdom

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The involvement of stakeholders in the early stages of the intervention development process is crucial for successful delivery and future implementation of any intervention. We report on stakeholder involvement in the development of an intervention based on the 24-hour movement behaviour (physical activity, sedentary behaviour, sleep) framework. The intervention aims to address inequalities in early-childhood obesity in Scotland

Methods: Stakeholders were defined as any individual, organisation or community with a direct interest in the process and outcomes of the research project. Pre-school education and parenting stakeholder organisations were identified through an online search. The research was also advertised to staff working in childhood obesity and pre-schooler health via public health networks. Participants were invited via email. At the time of writing four Zoom focus groups (90 minutes each) were recorded, professionally transcribed and analysed thematically using a reflexive approach.

Results: Focus groups included representatives from education and parenting charities (n=8), senior NHS public health and health promotion staff (n=6), researchers (n=3) and early years practitioners (n=1) in Scotland. Seven themes and related sub-themes were identified:

· Parents as active collaborators;
· Critical evaluation of language, messaging and branding;
· Systems-based approach to intervention development and implementation;
· Mapping to fill gaps, create connections and links;
· Play based approach;
· COVID-19 considerations;
· Ongoing pressures within the sectors.

The consensus was that an intervention is needed but it should link with what is already in place. Participants felt that the 24-hour movement framework needs rebranding and reframing from the outset within any intervention. Language used should be less prescriptive, less "military" and be gentle to avoid creating feelings

of failure in parents involved in an intervention. Other themes will inform intervention development and have implications for delivery.

Conclusions: Speaking to stakeholders helped to establish the need for an intervention. However, what an intervention would look like was less clear. Themes highlight the need to further investigate or map the system to identify an appropriate context, then develop a theory of change and engage with parents and early years staff to co-develop the intervention including the underpinning theory, philosophy and resources.

S.2.20 - Nutrition mHealth Apps: Innovative tools to empower health behaviour modification

Room 154

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
This symposium evaluates the quality and impact of nutrition mobile health (mhealth) applications on health behaviour modification for nutrition education, disease prevention and management, and enabling healthy dietary decision-making by consumers.

Rationale:
With the growing burden of obesity and diet-related diseases, it is essential for consumers to have the tools that can enable healthier food and dietary choices. However, barriers in current food environments, including interpreting nutrition labelling and the lack of nutrition information available for restaurant foods make it challenging to easily and quickly identify healthier foods. Mobile technology may be a convenient and cost-effective tool to help educate users on nutrition, choose healthier foods or adhere to various dietary recommendations. This symposium presents current research gaps in nutrition mHealth applications and the use of these tools as nutrition interventions in supporting nutrition education and empowering consumers to make healthier food choices to reduce disease risk.

Objectives:
1) To illustrate the evaluation and integration of gamification and immersive technologies in nutrition mHealth apps
2) To discuss the effectiveness of evidence-based nutrition mHealth apps in supporting nutritional behavioural changes to reducing disease risk
3) To assess the impact of interpretive nutrition information systems on enabling healthier food choices
4) To demonstrate the potential of mobile technology in addressing nutrition-related public health policies aimed at creating supportive food environments.

Summary: This symposium will present on the development of nutrition mHealth apps to evaluating them as potential interventions in modifying health behaviours. Speakers will present on investigating the many ways in which these tools can support nutrition education during childhood, encourage adherence to dietary recommendations in a clinical setting and enable healthier dietary decision-making at the population level. Through this symposium, we hope to facilitate a thought-provoking discussion on the potential of nutrition mHealth apps as effective nutrition interventions in promoting healthier behavioural changes for children, patients and consumers of all incomes, health literacy levels, and at all stages of behaviour change and in encouraging improvements in public health nutrition policies to promote transformations of the current food environment.

Format:
Dr. Mavra Ahmed - Chair (10 minutes)
Dr. Beatriz Franco-Arellano – Foodbot Factory
Meaghan Kavanagh – PortfolioDiet.App
Jennifer Lee –FoodFlip©
Dr. Mary L'Abbe – Discussant (15 minutes)

Interaction
(if online): Use of high-quality slide deck (e.g., animations, visuals) and interactive tools (polls, word-clouds, sketchboard) will be utilized and direct interaction with panelists will be possible during the Q&A.

Serious games for nutrition education in Canada: The development and enhancement of Foodbot Factory

Dr. Beatriz Franco-Arellano[1], **Ms. Jacqueline Brown[1]**, Ms. Hannah Froome[1], Ms. Courtney Lockhart[1], Dr. Ann LeSage[1], Dr. Bill Kapralos[1], Dr. JoAnne Arcand[1]

[1]*Ontario Tech University, Oshawa, Canada*

SIG - Primary Choice: D. e- & mHealth
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Nutrition education in childhood is a key strategy to promote health throughout the lifespan. There are numerous calls for more effective and engaging interventions to enhance child nutrition education, both inside and outside the classroom. Here, we describe the development, testing and enhancement of Foodbot Factory, a serious game (i.e., digital game for educational purposes) to support children in learning about healthy eating.

Methods: Guided by the Obesity-Related Behavioral Intervention Trials model, our interdisciplinary team (nutrition, education and computer sciences) iteratively developed Foodbot Factory as a two-dimensional serious game to teach children (9-11 years) about the Canada's Food Guide (CFG). The content and design were developed systematically, grounded in theory and aligned with nutrition-related curricula for Grades 4 and 5. CFG healthy eating messages, for Drinks, Whole Grain (WG) Foods, Vegetables and Fruit (VF), and Protein Foods learning modules, were incorporated as dialogue between two young scientist and Foodbots (robots). Mini-games, an interactive food log and quizzes across each learning module reinforced nutrition recommendations. Using a quasi-experimental mixed methods design, each module was iteratively tested and developed with the target audience across 5 user testing sessions to optimize learning and engagement. Foodbot Factory was then tested with children in a pilot RCT conducted in an "experimental" educational setting. To propel innovation, in 2021 the Foodbot Factory 2.0 was created to integrate additional immersive design elements, including Augmented Reality, through a 5-stage process design.

Results: Our iterative development approach demonstrates feasibility in creating impactful and engaging mHealth tools for children to support nutrition education. User testing demonstrated that Foodbot Factory was easy to use (71%) and goals were clear (94%). Pilot results showed that Foodbot Factory significantly increased overall nutrition knowledge in children (10.3±2.9 to 13.5±3.8) compared to a control group (10.2±3.1 to 10.4±3.2, $p<0.001$), as well as sub-scores of WG, VF and Protein Foods. Foodbot Factory 2.0, which amplifies user experience, will be tested with children in 2022.

Conclusions: These innovative studies can inform how mHealth tools that integrate immersive technologies and gamification features can support healthy eating and child nutrition education.

Quality improvement and usability testing of the PortfolioDiet.app, a web-based health application to translate nutrition therapy for cardiovascular risk reduction in primary care

Ms. Meaghan Kavanagh[1,2], Dr. Laura Chiavaroli[1,2], Dr. Andrea Glenn[1,2], Ms. Genevieve Heijmans[2], Dr. Chi-Ming Chow[2,4], Dr. Shannan Grant[3], Dr. Robert Josse[1,2], Dr. Vasanti Malik[1,5], Dr. William Watson[2], Dr. Aisha Lofters[2], Dr. Candice Holmes[2], Dr. Julia Rackal[2], Dr. Kristie Srichaikul[2], Dr. Diana Sherifali[6], Dr. Erna Snelgrove-Clarke[9], Dr. Jacob Udell[1], Dr. Peter Juni[2], Dr. Gillian Booth[1,2,7], Dr. Michael Farkouh[1], Dr. Lawrence Leiter[1,2], Dr. Cyril Kendall[1,2,8], Dr. David Jenkins[1,2], Dr. John Sievenpiper[1,2]

[1]University of Toronto, Toronto, Canada, [2]St. Michael's Hospital, Toronto, Canada, [3]Mount Saint Vincent University, Halifax, Canada, [4]IWK Health, Halifax, Canada, [5]Harvard TH Chan School of Public Health, Boston, USA, [6]McMaster University, Hamilton, Canada, [7]Institute of Clinical Evaluative Sciences, Toronto, Canada, [8]University of Saskatchewan, Saskatoon, Canada, [9]Queen's University, Kingston, Canada

SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The Portfolio Diet, or Dietary Portfolio, is a therapeutic dietary pattern that combines cholesterol-lowering foods to manage dyslipidemia for the prevention of cardiovascular disease. To translate the Portfolio Diet for primary care, we developed the PortfolioDiet.app as a patient and physician educational and engagement tool for personal computers and smartphones. The PortfolioDiet.app is currently being used as an add-on therapy to the standard of care (usual care) for the prevention of cardiovascular disease in primary care. To enhance the adoption of this tool, it is important to ensure the PortfolioDiet.app meets the needs of its target end-users. The objective of this project was to undertake and describe user testing of the PortfolioDiet.app as part of ongoing engagement in quality improvement (QI).

Methods: We undertook a 2-phase QI project between February 2021 to September 2021. We recruited users by convenience sampling. Users included patients, family physicians, dietitians, and nutrition and medical students. For both phases, users were asked to use the PortfolioDiet.app daily for seven days. In phase 1, a mixed-form questionnaire was administered to evaluate the user's perceived acceptability, knowledge acquisition, and engagement with the PortfolioDiet.app. The questionnaire collected both quantitative data and qualitative data including two open-ended questions. Responses were used to inform modifications to the PortfolioDiet.app. In phase 2, the System Usability Scale (SUS) was used to assess the usability of the updated PortfolioDiet.app, with a score of above 70 being considered acceptable.

Results: A total of 30 and 19 users were recruited for phase 1 and phase 2, respectively. For phase 1, the PortfolioDiet.app increased users' perceived knowledge of the Portfolio Diet and influenced their perceived food choices. Between the project phases, modifications were made to the PortfolioDiet.app to incorporate and address user feedback. At phase 2, the average SUS score was 85.39 ± 11.47, with 100 being the best

possible.

Conclusion: The PortfolioDiet.app educates users on the Portfolio Diet and is considered acceptable by users. While further refinements to the app will continue to be made, the result of this QI project will now be an improved clinical tool that better meets user needs.

FoodFlip®: Development and pilot testing the effectiveness of a food information smartphone app to promote healthier purchasing behaviours

Ms. Jennifer Lee[1], Dr. Mavra Ahmed[1], Ms. Yahan (Hailey) Yang[1], Ms. Alyssa Schermel[1], **Dr. Mary L'Abbe[1]**
[1]*University of Toronto, Toronto, Canada*

SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Nutrition

Purpose: Many consumers find it difficult and time-consuming to identify healthier foods using only the nutrition information found on food packages and limited nutrition information available in restaurants. The objective was to develop and investigate the impact of a nutrition smartphone app, FoodFlip©, on nutritional behaviour change.

Methods: FoodFlip© is a smartphone application that contains information on Canadian foods and beverages in the form of interpretative nutrition rating systems (INRS). The latest version of FoodFlip© (updated in 2021) contains foods collected using web-scraping of grocery retailers and chain restaurants. Using a 4-week randomized control trial, 80 university students will be randomly assigned (1:1:1:1) to one of 4 intervention conditions: no App control; App control (i.e., Nutrition Facts table or calorie information only); a 'high-in' INRS saturated-fat, sodium and total sugars with a stop-sign; or (iv) a 'high-in' INRS for saturated fat, sodium, and/or total sugars with a magnifying glass. Grocery and restaurant receipts will be collected at baseline and over 4 weeks to assess the change in purchasing behaviours. App functionality and usability will be assessed using a validated, consumer-focused questionnaire. Mobile analytic tools will be used to collect App use data.

Results: Nutrition information on Canadian food and beverage products was collated from the University of Toronto's Food Label Information Program (FLIP) 2020 database (n=74,445) and MenuFLIP 2020 (n=18,657). All foods were categorized into user-friendly categories. The search function in FoodFlip© allow users to search products by: 1) typing in a product name; 2) major, sub, and minor categories; or 3) scanning the barcode. The healthfulness comparison feature (showing users the healthier alternative food products) was designed to enhance decision quality for users with minimal investment time or effort. Optical character recognition technology will be used to link grocery receipts to FLIP and MenuFLIP databases to assess the changes in purchasing behaviours.

Conclusions: Web-scraping coupled with OCR technology (AI/ML) were important tools in automating the collection of real-time foods and nutrition information for populating FoodFlip©. Results will demonstrate the effectiveness of a food information smartphone App, FoodFlip© in communicating nutrition information and enabling healthier purchasing behaviours.

S.2.21 - Research gaps and opportunities related to obesity prevention in early childcare settings

Room 152

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
To explore the current research on obesity related practices and environments in childcare

Rationale:
Given that obesity develops early in life and can track into adulthood, understanding modifiable risk factors in environments where young children spend a lot of time is critical, including the childcare environment where 75% of US children spend an average of 35 hours per week. The evidence related to obesity prevention in this setting has been rapidly growing over the past several years and this symposium will look at some of the newer research in this setting. In addition, while some research has examined obesity-related practices and environments in childcare centers and with preschool children, little research has examined the childcare environment in family childcare homes or for infants and toddlers, which this symposium will include.

Objectives:
The objectives of this session are:
1. To share current research on childcare provider's nutrition and activity-related practices
2. To discuss barriers and facilities to improving childcare provider's obesity-related practices and environments
3. To discuss research gaps and opportunities

The session will begin with a 10-minute overview provided by the Chair, focused on what we have learned about weight-related practices and policies in childcare settings focusing on the immediate gaps to be addressed. This introductory overview will be followed by three, 15-minute presentations. The first presenter, Dr. Tran (Australia) will describe the nutrition and physical activity practices of educators in New South Wales, Australia family day care, as compared to the prevailing policy framework. The second presenter, Dr. Tovar

(USA), will describe the feeding, activity and screen-time environments and practices of infants and toddlers in family childcare homes and centers in the USA and differences across these settings. The final presenter, Dr. Gans (USA) will describe mixed-methods baseline results from the Drink Well study to understand and increase water availability and accessibility in family childcare homes to improve young children's water and sugary beverage intake (15 minutes). The final 20-minutes will include a summary of the presentations from Dr. Masse (Canada), discussant, who will then moderate Q&A, from the audience and then will finish the session describing next steps for the field.

Nutrition and physical activity practices in family day care

Miss Georgie Tran[1], Dr. Bridget Kelly[1], Dr. Anthony Okely
[1]University of Wollongong, Early Start, Faculty of the Arts, Humanities and Social Sciences, Woollong, Australia

SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Purpose: Early childhood settings play an essential role in providing young children with nutritious food while in care, and can encourage the development of healthy eating behaviours. In Australia, Family Day Care (FDC) is a form of childcare where education and care are provided for up to four children below school age and an additional three school-aged children, in a home environment. Children who attend FDC receive education and care from educators who operate from their own homes. FDC services must meet the National Quality Framework and the Early Years Learning Framework. In addition, there are the *Get Up & Grow* healthy eating and physical activity guidelines for young children that can help guide health policies and practices in FDC services. This study examined the nutrition and physical activity practices of FDC educators in New South Wales (NSW), Australia against the prevailing policy frameworks.

Methods: FDC educators from across NSW participated in an online survey from July 2020 to June 2021. Information regarding food provision, children's eating environment, feeding practices, physical activity, outdoor playtime, outdoor play environment, screen time, information to families, infant physical activity, breastfeeding environment, breastfeeding support practices, and educator professional development and education were collected.

Results: There were 186 complete responses out of 295 educators who participated (63% completion rate). With nutrition practices, most educators never switched on televisions or videos during mealtimes (86%); however less than half (47%) role modelled eating healthy foods at every meal and snack time. With physical activity practices, almost half (41%) did not provide recommended time for children's physical activity, and over one-third (36%) did not lead daily planned lessons focused on building gross motor skills. Approximately one-quarter (26%) of educators had never completed professional development on physical activity and almost one-third (32%) had never completed professional development on infant feeding and nutrition.

Conclusion: Current nutrition and physical activity practices in FDC are suboptimal. This study highlighted priority areas for improvement where training can be provided.

Nutrition and Physical Activity Environments for Infants and Toddlers in Family Childcare Homes and Centers

Dr. Alison Tovar[1], Dr. Patricia Risica[1], Ms. Jacqueline Karpowicz[1], Dr. Tayla VonAsh[1], Dr. Kristen Coksey-Stowers[2], Dr. Kim Gans[2]
[1]Brown University, Providence, USA, [2]University of Conneticut, storrs, USA

SIG - Primary Choice: F. Early care and education
Age Category: Infants 0-2 yrs
Subject Category: Physical activity and nutrition

Purpose: To assess the feeding, physical activity (PA) and screen-time (ST) environments for infants and toddlers in childcare centers and family childcare homes (FCCHs) and to explore differences by childcare type.

Methods: Centers (n=21) and FCCH(n=20) participated in observations using a modified version for infants and toddlers of the Environment and Policy Assessment and Observation tool. Provider behaviors and environments were separated into recommended and non-recommend practices in accordance with national guidance. Chi-square analysis and Fisher's exact test (for sample sizes less than 5) were used to analyze differences by site type for categorical variables, while t-tests were used for continuous variables with p-value of less than 0.05 considered significant.

Results: Many similarities were seen between childcare, however centers used more recommended best-practices vs. FCCHs. For example, for infants in centers we observed more enthusiastically role modeling of healthy food (58 v. 14%, p=.032), praising infants for eating healthy foods (92 v. 14%, p<.001), sitting with infants during a meal (92 v. 43%, p=.002), talking with infants about foods they were eating (100 v. 43%, p=.002), encouraging (not forcing) infants to try new foods (83 v. 43%, p=0.048) and talking about feelings of hunger and fullness (100 v. 18%, p<.001). Differences in negative nutrition practices (e.g., avoid spoon feeding, bottle propping and encouraging eating unhealthy foods) were mixed between types of childcare. Toddlers in centers spent more time playing at higher activity levels than those in FCCHs (61 vs. 13 minutes, p<.0.001). ST was observed in FCCH but not in centers.

Conclusions: Differences observed between childcare site types may indicate how they differentially influence infant and toddler feeding, PA and ST behaviors, which may influence obesity risk. Future research should further examine these feeding and activity practices in a larger sample of childcare centers and FCCHs to better inform interventions and policies.

Drink Well: Understanding & increasing water availability and accessibility in family child care homes to improve young children's water & sugary beverage intake

Dr. Kim Gans[1,2], Mx. Vanessa Esquivel[1], Mx. Viviana Nicholas[1], Dr. Patricia Risica[2], Mx. Sarah Wen Warykas[1], Dr. Shira Dunsiger[2], Dr. Alison Tovar[3]
[1]University of Connecticut, Storrs, USA, [2]Brown University School of Public Health, Providence, USA, [3]University of Rhode Island, Kingston, USA

SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Purpose: Drinking water supports child health and is a healthy, low-cost alternative to sugar sweetened beverages (SSB). Water and SSB access in childcare could play an important role in child beverage intake and health. Little research has been done in family childcare homes (FCCH), which may be higher risk settings. Water may not be accessible, or commonly offered to children in FCCH, so feasible, acceptable interventions to increase drinking water access, availability and intake are needed. The Drink Well project is a mixed methods study to better understand how to increase water availability/accessibility in FCCH and improve young children's beverage intake.

Methods: We are conducting focus groups with 36 FCCH providers (FCCPs) to determine barriers and strategies to improve water availability/accessibility and children's intake. Then, we will conduct an intervention pilot of environmental approaches to increase water availability/accessibility in the FCCH (e.g. providing water bottles, water stations, water filters, water testing/safety strategies, technical assistance, etc.) with 40 FCCP (50% Latina) operating FCCH in low income neighbourhoods in RI, MA & CT that care for children aged 6-60 months. Pre and post-surveys will assess feasibility, acceptability and efficacy of these approaches.

Results: The study is ongoing. Focus group and baseline surveys will be completed by May 2021. Focus group data will include: a). barriers and facilitators to providing water to children in FCCH and getting them to drink it; b). potential strategies to improve water availability/accessibility and children's intake. Baseline survey data will include: water source at FCCH, how often drinking water, milk, juice and SSB are provided to children with meals or snacks, how water is made available to children indoors and outside, availability of self-serve water, types of water served to children, factors/facilitators influencing water provision, attitudes about and challenges to offering water and to children drinking water, equipment for serving water; knowledge about national beverage guidelines and children's water needs, etc.

Conclusion: The Drink Well project addresses important research gaps related to beverage access and intake in FCCH, and can inform future research & policy to impact low-income/ethnic minority children at highest risk for poor diet & weight-related health disparities.

S.2.22 - Increasing the reach of physical activity and sedentary behaviour interventions in cancer survivors

Room 153

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
To identify the physical activity needs of rural cancer survivors and discuss strategies to increase the reach of physical activity and sedentary behaviour interventions for cancer survivors living in both urban and non-metro/rural areas.

Rationale:
The growing global burden of cancer is one of the most significant public health challenges. Many cancer survivors will experience late and long-term effects from treatment that are exacerbated with advanced age and multiple health comorbidities. The immunosuppressive effects of cancer and its treatment together with the threat of COVID-19 has exacerbated the stress levels experienced by people with cancer. Many of these symptoms may be preventable with lifestyle changes such as increasing physical activity and reducing sedentary behaviour. Short-term supervised physical activity programs can improve fitness and patient-reported outcomes in cancer survivors, although physical activity declines significantly post-treatment, and long-term adherence or maintenance is often low. Given these challenges, it is essential to explore multiple modes of intervention delivery, including distance-based interventions that may be easy to access, low-cost, and extend intervention reach. Various strategies for targeting and adapting physical activity and sedentary behaviour interventions for rural and urban cancer survivors will be discussed.

Objectives:
1) To understand changes in physical activity and quality of life during the COVID-19 pandemic in rural cancer survivors;
2) Provide insights into metro and non-metro status, and pre-program physical activity levels of cancer urvivors enrolled in a videoconference-delivered PA program; and

3) The application of theoretical frameworks in a distance-based intervention for reducing sedentary behaviour in prostate cancer survivors

Summary:
To achieve long-term health benefits, behaviour change must be maintained, but the effectiveness of interventions for promoting long-term change remains scant. Incorporating theoretical approaches to physical activity and sedentary behaviour interventions are critical for exercise adherence and maintenance.

Format:
Three presentations will be highlighted: Scherezade Mama from The University of Texas MD Anderson Cancer Center; Heather Leach, PhD from Colorado State University; and Linda Trinh, PhD from the University of Toronto. At the conclusion of the presentations, there will be a general discussion moderated by Cristina Caperchione.

Interaction:
Online and in-person attendees will be able to interact with the presenters during the Q&A session at the end.

Understanding changes in physical activity and quality of life in rural cancer survivors during the COVID-19 pandemic

Dr. Scherezade Mama[1]
[1]*Department of Health Disparities Research, Division of Cancer Prevention and Population Sciences, The University of Texas MD Anderson Cancer Center, Houston, USA*

SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: This study explored changes in physical activity (PA) and quality of life (QoL) in rural cancer survivors during the COVID-19 pandemic and differences in changes in physical activity and quality of life by perceived posttraumatic stress due to COVID-19.

Methods: Rural cancer survivors were recruited to the Partnering to Prevent and Control Cancer (PPCC) study in 2017-2018, and 219 cancer survivors completed questionnaires assessing physical activity and quality of life. In April 2020, PPCC participants with working email addresses were sent an e-invitation to complete an online questionnaire. Of the 195 contacted, 104 (53.3%) completed questionnaires assessing PA, QoL, and posttraumatic stress due to COVID-19. Paired samples t-tests were used to explore changes in PA and QoL from before to during the pandemic, and independent samples t-tests were used to explore differences in changes in PA and QoL by posttraumatic stress due to COVID-19 (normal/mild vs. moderate/severe).

Results: Rural cancer survivors who participated in PPCC and the follow-up survey (*N*=104) were mostly women (65.4%), in their 60s (*M* age=61.9±13.9 years), had overweight or obesity (66.0%), had completed college (63.4%), and were currently unemployed or retired (59.0%). Most participants were breast (26.0%) or prostate (26.0%) cancer survivors, and 93.5% were >12 weeks but <5 years post-treatment. Overall, participants reported decreases work-related, transportation, walking, and vigorous PA and increases in domestic, leisure-time, and moderate PA. Only changes in work-related PA were statistically significant (Δ=-723.8 MET-min/week, t=-2.4, p=.017), and there were no significant changes in QoL from before to during the COVID-19 pandemic. Over half (52.9%) of participants reported moderate to severe posttraumatic stress due to COVID-19. Participants who reported moderate/severe posttraumatic stress due to COVID-19 reported significant increases in walking (Δ=221.8 MET-min/week) and decreases in emotional wellbeing (Δ=-6.0) compared to those reporting normal/mild posttraumatic stress (Δ walking=-730.8, *t*=-2.1, *p*=.035; Δ emotional wellbeing=3.3, *t*=4.1, *p*<.001).

Conclusions: Rural cancer survivors reported moderate to severe posttraumatic stress related to COVID-19, which positively impacted their walking but negatively impacted their mental health. PA interventions that address psychosocial wellbeing are critically needed to reduce COVID-19 related distress among rural cancer survivors to promote health equity.

Use of videoconferencing to deliver a physical activity program to metro and non-metro residing cancer survivors

Dr. Heather Leach[1], Miss Mary Crisafio[1], Miss Rachel Seidner[1], Miss Kori Barber[1], Miss Emma Gomes[1]
[1]*Department of Health and Exercise Science, Colorado State University, Fort Collins, USA*

SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Group-based physical activity (PA) programs delivered via videoconferencing present a viable and innovative way to help cancer survivors increase PA, connect with other participants, and may help expand reach to those living in remote or rural areas. This study describes the metro and non-metro status, and pre-program PA levels of cancer survivors enrolled in a videoconference-delivered PA program.

Methods: Participants self-referred and enrolled in an 8-week program, consisting of circuit-style aerobic and resistance exercise sessions 1x/week, and discussion sessions which operationalize social cognitive theory informed behavior change techniques (e.g., goal setting, self-monitoring, etc.). All components would be delivered in real-time via Zoom in groups of 4-6 participants. To be eligible, participants had to have internet and a phone/computer with a front facing camera. Participant's addresses were assigned a Rural-Urban Continuum Code. Pre-program PA was self-reported using the Godin-Leisure Time Exercise Questionnaire, which asks about average weekly frequency and duration of light, moderate and vigorous aerobic exercise, and moderate and vigorous resistance exercise done over the last month. Means, standard deviations, and median values were calculated for all PA variables, and differences in PA between metro and non-metro participants were examined using independent t-tests.

Results: Participants (*N*=54) were *M*=59±10 years old, 96.3% female, and diagnosed with ovarian (58.8%), breast (31.4%) or other (9.8%) cancer. Most participants (75.5%) resided in a metro area vs 24.5% in non-metro, with only *n*=2 classified as rural (i.e., <2,500 population, not adjacent to a metro area). Pre-program resistance exercise was *M*=18.1±38.1, *Median*=0 mins/week. Moderate and vigorous aerobic exercise was *M*=138.4±178.1, *Median*=60 mins/week. Light aerobic exercise was *M*=106.1±133.9, *Median*=60 mins/week, and sitting time was *M*=8.0±3.5, *Median*=8 hours/day. There were no differences in PA between metro and non-metro participants (*p*>.05).

Conclusion: Most participants resided in metropolitan areas, suggesting targeted recruitment and additional community engaged strategies may be needed to reach non-metro and rural cancer survivors. Pre-program PA levels were similar between metro and non-metro survivors, likely reflecting selection bias. Future studies will examine how rurality impacts cancer survivors' PA engagement during and after completion of a videoconference-delivered PA program.

A Distance-based Randomized Controlled Trial for Reducing Sedentary Behaviour among Prostate Cancer Survivors: A Study Protocol

Dr. Linda Trinh[1], Dr. Catherine Sabiston[1], Dr. Shabbir Alibhai[2,3], Dr. Jennifer Jones[4], Dr. Kelly Arbour-Nicitopoulos[1], Dr. Daniel Santa Mina[1], Dr. Kristin Campbell[5], Dr. Guy Faulkner[6]

[1]*Faculty of Kinesiology and Physical Education, University of Toronto, Toronto, Canada, [2]Faculty of Medicine, University of Toronto, Toronto, Canada, [3]Toronto General Research Institute, Toronto General Hospital, Toronto, Canada, [4]Department of Supportive Care, Princess Margaret Cancer Centre, Toronto, Canada, [5]Department of Physical Therapy, University of British Columbia, Vancouver, Canada, [6]School of Kinesiology, University of British Columbia, Vancouver, Canada*

SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Independent of physical activity (PA), high volumes of sedentary behaviour (SED) are associated with risk factors for chronic disease and poorer cancer-specific quality of life (QoL). Simultaneously increasing PA and decreasing SED may be an effective health promotion strategy especially during the COVID-19 pandemic. Given that prostate cancer survivors (PCS) may face several barriers to engaging in supervised programs, there is a need to develop and assess the efficacy of interventions that employ distance-based approaches for behaviour change. The primary aim of this study is to determine the effects of a 12-week intervention (Fitbit + behavioural counselling) vs. Fitbit-only control group in reducing SED among PCS. Secondary outcomes include PA, QoL, motivational outcomes, and patient satisfaction.

Methods: This two-arm, multi-site, randomized controlled trial will recruit inactive PCS (stage I-IV) across Canada who self-report performing >8 hours/day of SED. Participants will be randomized to the intervention (n=60; Fitbit and behavioural support) or active control group (n=60; Fitbit-only). The intervention employs the use of a FitBit® and a series of six behavioural support sessions (two group, four individual) to aid PCS in gradually increasing their daily step counts to 3,000 steps above their baseline values. The videoconference calls will incorporate behaviour change content in line with the multi-process action control (M-PAC) framework targeting motivational processes (perceived capability/opportunity, instrumental/affective attitudes), behavioural regulation (action planning, coping planning, social support, goal-setting), and reflexive processing (self-regulation, habit). The FitBit-only control condition will receive a FitBit and public health PA resources. The primary outcome is change in SED measured objectively using activPAL inclinometers. All secondary outcomes will be measured via self-report, except for PA which will be measuring using Fitbits. Data will be collected at baseline, post-intervention, and at 6-month post-intervention.

Discussion: With cancer survivorship being recognized as an essential cancer care component, greater efforts on maintaining QoL are needed. Reducing SED plays an important, yet often undervalued role in the health and well-being of PCS. This study will create a unique distance-based platform that can be used by clinical and community-based organizations as a low-cost, supportive care tool to improve health outcomes for PCS.

S.2.23 - Youth-informed participatory action research: from preparation to transfer to other contexts

Room 151

May 20, 2022, 4:55 PM - 6:10 PM

Rationale:
Youth-informed participatory action research (YPAR) is a form of participatory research in which children are actively involved as co-researchers, in collaboration with academic researchers (and other relevant stakeholders). Using this innovative approach is believed to increase effectiveness and sustainability of interventions, as they are tailored to the needs and expectations of children and to the setting in which it is applied. Recently, many researchers are convinced about the value of applying a participatory approach, but they struggle with the challenges that comes with it, from the very start to the very end of their YPAR study. For example, how do we plan YPAR sessions in advance, as children's input cannot be predicted ? How do we structure YPAR sessions to make sure the end product (e.g. a ready-to-implement action/intervention) is achieved? How can we evaluate the effects of actions/interventions developed through YPAR e.g. on children's health behaviour and related determinants? And finally, how can we translate the participatory approach to another context?

Purpose:
This symposium aims to cover the entire course of conducting YPAR, starting from how to prepare or plan YPAR sessions and ending with how to transfer the YPAR approach to different contexts. We will present and discuss three different YPAR studies aiming to improve sleep, physical activity, sedentary behaviour and/or dietary behaviour among children. Specific objectives are to present examples of how YPAR studies have been conducted and discuss challenges and solutions with the audience in the (a) planning, (b) conducting, (c) evaluation and (d) transfer of YPAR projects.

Summary:
• Introduction of Youth-informed Participatory Action Research by dr. Maïté Verloigne

• Presentation 1: "Participatory action research with adolescents and teachers to develop an intervention to reduce adolescent's sedentary behaviour at school" by Veerle Van Oeckel
• Presentation 2: "Effect evaluation of a participatory developed healthy sleep intervention for adolescents" by Anneke Vandendriessche
• Presentation 3: "Chic@s en acción: Adapting the Dutch Kids in Action study to the context of Spain" by Pilar De Miguel-Etayo
• Discussion, led by dr. Teatske Altenburg

Format:
Dr. Verloigne will provide a 5-min introduction. This will be followed by three 10-min presentations (followed by 1-2 clarifying questions each). Dr. Altenburg will critically reflect on the different YPAR studies and the different phases. After her reflection, she will facilitate a 20-min interactive discussion with the audience. The symposium will be closed by formulating lessons learned, based on the presentations and discussion.

Participatory action research with adolescents and teachers to develop an intervention to reduce adolescents' sedentary behaviour at school

Ms. Veerle Van Oeckel[1], Assistant Professor Maïté Verloigne[1], Prof. Benedicte Deforche[1,2]
[1]Ghent University, Ghent, Belgium, [2]Vrije Universiteit Brussel, Brussels, Belgium

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Sedentary Behavior

Purpose: Adolescents spend the majority of the day sedentary, especially at school whilst sitting in class. As excessive sedentary behaviour is associated with adverse health indicators in adolescents, effective interventions are needed. To improve effectiveness, literature recommends participatory action research (PAR) in which end-users (i.e. adolescents) and stakeholders (i.e. teachers) are actively involved in the development, implementation and evaluation of the intervention. To structure this participatory process, an evidence-based systematic approach like the Intervention Mapping Protocol (IMP) is suggested. This study aimed to describe how PAR and the IMP were combined to develop an intervention to reduce adolescents' sedentary behaviour at school and during school-related tasks at home, together with adolescents and teachers. Secondly, the participatory process will be evaluated from pupils', teachers' and the researchers' perspectives.

Methods: A secondary school in Belgium has been recruited, in which one class from the 7th grade is selected as the pupils' participatory group. Three teachers from the 7th or 8th grade will form a second participatory group. The IMP will be run through during weekly sessions with the pupils' participatory group and biweekly sessions with the teachers' participatory group (November 2021-February 2022). To evaluate the participatory process, 4 focus groups will be conducted with both participatory groups at four time points during the development process. In addition, the researchers will complete a reflection form after each session. The focus groups will be audiotaped and all data will be processed using a thematic approach in NVivo.

Results: How PAR and the IMP were combined and how we planned and conducted these sessions, will be presented at the conference. Further, we expect that the participatory process will lead to increased empowerment and ownership by pupils and teachers from the participatory groups. The role of the researcher and reflections on the process will be discussed as well.

Conclusion: This study will lead to an intervention to reduce sedentary behaviour at school and during school-related tasks at home, developed via an active collaboration between pupils, teachers and researchers. Therefore, this study can provide guidance to researchers planning to conduct participatory research.

Effect evaluation of a participatory developed healthy sleep intervention for adolescents.

Mrs. Anneke Vandendriessche[1], **Assistant Professor Maïté Verloigne[1]**, Prof. Karlien Dhondt[3], Dr. Jelle Van Cauwenberg[1], Prof. Benedicte Deforche[1,2]
[1]Ghent University, Ghent, Belgium, [2]Vrije Universiteit Brussel, Brussels, Belgium, [3]Ghent University Hospital, Ghent, Belgium

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Sleep

Background: Sleep deprivation and reduced sleep quality are common in adolescents, which negatively impacts their physical and mental wellbeing and cognitive skills. This study examined the effect of a participatory developed intervention to promote healthy sleep in adolescents on their sleeping behavior and behavioral and cognitive determinants of sleep.

Methods: By combining Participatory Action Research with the Intervention Mapping Protocol, a sixteen week long intervention focusing on healthy sleep, regular sleep patterns, screen time, physical activity, nutrition and relaxation was co-created with adolescents and implemented in two intervention schools. Four schools participated to the study as control schools by taking part in the measurements. Data on sleep behavior and its determinants were collected in 1181 adolescents (15.0 ± 0.7 year; 54% boys) through a validated questionnaire using a pre-post-follow-up design. Repeated measures (M)ANCOVA analysis was performed in SPSS.

Findings: Between pre and post measurements, no significant intervention effects were found on adolescents' sleep duration and quality, but a few effects were found on determinants of sleep. There were favorable intervention effects on adolescents' knowledge of importance of sleep and sleep hygiene (F=13.44; p<0.001), physical activity on weekdays (F=5.14; p=0.024), regular sleep patterns on days off (F=5.11; p=0.024) and taking screens to bed (F=6.67; p=0.010). The intervention had an unfavorable effect on self-efficacy towards screen use in the evening (F=10.84; p=0.001) and perceived sleep behaviors of parents (F=4.05; p=0.044). Analysis of the data on follow-up measurements is still ongoing but will be finished by November 2021.

Conclusion: The intervention had some favorable effects on determinants of sleep on the short term but no effects on sleep behavior. However, long term effects still need to be investigated. It should further be explored to what extent the intervention has been properly implemented and has reached all adolescents. A different research design, such as adding a third arm to the study with a standard non-participatory developed intervention would be an added value to evaluate the true added value of developing an intervention via a participatory approach.

Chic@s en Acción: Adapting the Dutch Kids in Action project to the context of Spain

Dr. Pilar De Miguel-Etayo[1, 2], Ms. Laura Belmon[3], Luis Moreno[1, 2], **Assistant Prof. Teatske Altenburg[3]**

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 0-18 yrs
Subject Category: All

Background Participatory action research (PAR) is by its nature locally situated meaning that it is grounded in the reality of daily life and work in a specific place and time [1]. This leads to the question to which extent a previously developed protocol for conducting PAR with children from deprived neighborhoods in Amsterdam, the Netherlands, can be transferred to the context of Zaragoza, Spain.

Methods As part of the GrowH! study [2], we adapted the PAR-protocol that was implemented in the Kids in Action project to be transferred to the context of Zaragoza, Spain. Within the Kids in Action project (2016-2019), a detailed practical protocol was created, explaining the content of the overall project and all participatory meetings with 9-12-year-old children [3]. We adapted this protocol based on 1) lessons learned from the Kids in Action project; 2) insights from recent literature/work in this field; and 3) contextual factors specific for the Spanish context. This resulted in a practical protocol for the Chic@s in Acción project in Zaragoza, which will be implemented from November 2021.

To evaluate whether the adaptations to the PAR-protocol are adequate, we will monitor the process of implementing the adapted PAR-protocol by critically reflecting on the PAR meetings that will be held with 9-11-year-old children in Zaragoza. We will track all adaptations throughout the implementation process and adjust the adapted protocol where necessary.

Results In this symposium we will present the (preliminary) findings of the evaluation of implementing the adapted PAR-protocol in Zaragoza: we will present the final adapted PAR protocol and subsequently discuss which adaptations were made to translate the protocol to the context of Zaragoza.

Conclusions This presentation will provide insight in which aspects of the Kids in Action protocol need translation when applying to another context.

References

[1] International Collaboration for Participatory Health Research (ICPHR) (2013). Position Paper 1: What is Participatory Health Research?

[2] https://www.growh.eu/

[3] Anselma M, Altenburg TM, Chinapaw MJM (2019). Kids in Action: the protocol of a Youth Participatory Action Research project to promote physical activity and dietary behaviour. BMJ Open. 9(3): e025584.

S.2.24 - Carrot or stick?: Incentives versus disincentives to improve dietary behaviors in the United States (Debate)

Room 155

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:

With persistent high rates of diet-related chronic diseases and overweight and obesity in the United States (U.S.), it is paramount to continue to promote optimal diet and physical activity behaviors. For diet, there has been a shift over the past two decades from individual-level to policy, systems, and environmental (PSE) approaches. These PSE strategies aim to tackle behaviors by employing policies to promote change at a macro environmental level. For instance, incentive programs promote more healthful food options at an environmental level (e.g., nutrition incentive and produce prescription programs to increase fruit and vegetables purchases and intake). Whereas parallel disincentive programs exist to decrease less healthful options at an environmental level (e.g., through taxation of sugar sweetened beverages (SSBs) in certain locales in the U.S.).

Rationale:

Although it is undeniable that both incentive and disincentive approaches have merit from a public health nutrition standpoint and both strategies are supported by policy, they are applied uniquely in the food environment. On one side of this debate are incentive programs which will be described through the Gus Schumacher Nutrition Incentive Program (GusNIP). This program was authorized through the U.S. farm bill and administered through U.S. Department of Agriculture grants aimed at increasing spending power of low-income participants to purchase fruits and vegetables by providing incentives at the point of purchase (e.g., grocery, farmers markets). On the opposing side are SSB taxes, which have been used as a fiscal instrument in certain locales across the U.S. to decrease intake of added sugars and aimed at reducing demand for SSBs. The pros and cons of incentive versus disincentive programs will be discussed in light of case studies presented. Ultimately, the debate will center on nuances of incentives and disincentive programs and their potential implications.

Objectives:

1. Describe how incentive and disincentive programs are administered in the U.S. and importance of both as strategies to improve dietary behaviors.

2. Identify nuances between "carrot" (incentive programs aiming to promote healthful foods at an environmental level) and "stick" (disincentive programs aiming to decrease less healthful foods at an environmental level).

3. Discuss concrete examples at national level for incentive programs (e.g., GusNIP) and disincentive programs (e.g., SSB taxation efforts being conducted across the U.S.)

Interaction:

Attendees will be able to ask questions via online platform and vote for strategy that is most feasible, impactful and sustainable to promote optimal dietary behavior.

Incentives to Improve Dietary Behaviors: The Case for Financial Incentives for Fruits and Vegetables

Dr. Carmen Shanks
[1]Gretchen Swanson Center for Nutrition, Omaha, USA

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: Dietary patterns that include fruits and vegetables greatly reduce risk for chronic disease and obesity. Systemic inequities contribute to low fruit and vegetable intake and health disparities among individuals who report low-income. Subsequently, low-income populations are less likely to meet recommended levels of fruit and vegetable intake, report higher food insecurity, and experience higher rates of chronic disease and obesity.

Affordability is a substantial barrier to fruit and vegetable intake among low-income populations. As such, financial incentives for fruits and vegetables are applied as a policy lever to support the purchase of fruits and vegetables among low-income populations. In the United States, the National Institute of Food and Agriculture's Gus Schumacher Nutrition Incentive Program (GusNIP) is the largest source of federal funding to date to support financial incentives for fruits and vegetables through competitive grants to organizations nationwide. The evidence is promising that financial incentives for fruits and vegetables increase fruit and vegetable intake, support food security, and improve health.

Methods: This presentation will first define financial incentives for fruits and vegetables, account the history in federal funding in the United States, describe implementation of programs, and explore preliminary results of participants receiving financial incentives for fruits and vegetables from GusNIP. The extensive evidence-base about the impact of financial incentives for fruits and vegetables on participant outcomes will be explored.

Results: Financial incentives have for fruits and vegetables hold over a decade long history in federal funding in the United States due to promising evaluations conducted about the impact of participation. As an example, GusNIP funded 42 grantees in 2019 and 2020 to partner with food retail sites to distribute financial incentives for fruits and vegetables nationwide. Numerous studies of individual financial incentive for fruit and vegetable projects demonstrate increased fruit and vegetable intake, an impact on food security, and encouraging health outcomes.

Conclusions: Incentivizing individuals to purchase fruits and vegetables is an important policy strategy to improve fruit and vegetable intake, influence food

security, reduce risk for chronic disease and obesity, and address health disparities that have existed for decades.

Disincentives to Improve Dietary Behaviors: The Case for Sugar-sweetened beverage Taxes

Dr. Lisa Powell
[1]*University of Illinois at Chicago, Chicago, USA*

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: Sugar-sweetened beverage (SSB) consumption is linked with obesity, type 2 diabetes, cardiovascular disease, and poor dental health and SSBs are the leading source of added sugars intake in the U.S. diet. As part of a public health strategy to reduce the intake of added sugars and promote health, SSB taxes are used as a fiscal policy instrument aimed at reducing demand for SSBs. Since 2015, SSB taxes have been implemented in eight local (city/county) jurisdictions in the U.S. with one having since been repealed. An extensive body of literature has emerged that provides evidence on the impacts of SSBs taxes and their potential to improve diet.

Methods: This presentation will provide a comprehensive review of U.S. tax evaluation studies that provide evidence on the extent to which SSB taxes increase prices and reduce the demand for SSBs and extent to which there may be tax-related unintended consequences. Meta-analyses will provide an overall estimate of tax pass-through and the impact on demand, including accounting for offsets from cross-border shopping. Additionally, evidence will be assessed based on studies' measure of quantity demanded (i.e., store scanner data on volume sold, purchase data, and consumption data). Literature will also be reviewed to assess other unintended consequences such as substitution, tax regressivity and employment impacts.

Results: Based on meta-analyses of U.S. SSB tax evaluation studies, it was found that, on average, following the implementation of SSB taxes, tax pass-through was 70% and the demand for SSBs fell by 20%, with approximately one quarter of the estimated reduction in demand offset by cross-border shopping. Despite cross-border shopping, results from longer-run studies show that reductions in demand are sustained. Evidence shows limited substitution to other forms of sugar such as from untaxed beverages or sweets. Lower-income individuals are heavier SSB consumers and may benefit most from tax-related reductions in consumption. Finally, there is no evidence of job loss from SSB taxes, including in industries that produce or sell SSBs.

Conclusions: Overall, the results reveal that SSB taxes are a promising policy tool that could yield sustained reductions in the demand for SSBs and associated health harms.

O.3.17 - Impact of COVID on children's nutrition and physical activity

Room 150

May 21, 2022, 8:30 AM - 9:45 AM

The COVID-19 pandemic highlights the importance of structure to address childhood obesity

Dr. Keith Brazendale[1], Dr. Michael Beets[2], Dr. R. Glenn Weaver[2], Dr. Bridget Armstrong[2], Dr. Ethan Hunt[3]
[1]University of Central Florida, Orlando, USA, [2]University of South Carolina, Columbia, USA, [3]University of Texas Health Science Center, Austin, USA

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: All

Background: Societal restrictions during 2020 due to Coronavirus Disease 2019 (COVID-19), such as the closure of schools, childcare centers, and community programs, were implemented to prevent the spread of the disease and to protect the health and well-being of the population. These mitigation efforts, while effective in reducing COVID-19, inadvertently removed youth from structured settings, outside the home, where they spend a majority of their waking hours (e.g., schools, programs, day camps). The pandemic-related mitigation strategies can be viewed as one of the largest natural experiments examining the impact of structured settings outside the home on overweight/obesity (OWOB) and related obesogenic behaviors (i.e., sleep, physical activity, diet, and screen/media time).

Methods: The purpose of this presentation is to 1) summarize the evidence published to-date on OWOB trends and obesogenic behaviors before and during COVID-19, and 2) provide recommendations and strategies to combat the negative consequences of COVID-19 on childhood obesity.

Results: More than 30 studies representing over 1,000,000 unique children from 13 different countries have reported significant increases in weight related outcomes (e.g., increases in body mass index (BMI), zBMI, %OWOB) during pandemic months compared to months or years prior to the COVID-19 pandemic. There is also a large body of evidence reporting children's obesogenic behaviors were less favorable during the pandemic, such as lower physical activity levels, dysregulated sleep patterns, and increased dietary consumption and screen/media time.

Conclusions: Evidence from recent large-scale multi-national studies demonstrate that compared to the years prior to 2020, the prevalence of OWOB among children and youth accelerated during the pandemic unlike any other period over the last 3 decades. Although the development of OWOB is multiecological, the common denominator many children faced during the pandemic restriction efforts was the immediate interruption to their 'typical' day-to-day structure and routines, as schools and school-like environments closed for public access. The COVID-19 pandemic demonstrated to researchers and public health practitioners the importance of regular access to structured settings outside the home and the association with OWOB and related obesogenic behaviors of children.

Differential household dietary diversity and food access due to COVID-19 among families with a child with a disability compared to other community families in Lusaka, Zambia

Dr. Mary Hearst[1], Ms. Lauren Hughey[3], Ms. Mulemba Ndonji[4], Dr. Renee Hepperlen[2], Dr. Jennifer Biggs[1], Dr. Paula Rabaey[1]

[1]St. Catherine University, Saint Paul, USA, [2]St. Thomas University, Saint Paul, USA, [3]SPOON, Portland, USA, [4]CMMB, Lusaka, Zambia

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Households with a child with a disability experience greater disadvantages in meeting family nutritional needs due to the complexities of income, safety, resources, and stigma in low resource areas. This presentation's purpose is to describe differences in household dietary diversity (HDDS) in Lusaka, Zambia, between comparable households with a child with a disability compared to those without a child with a disability in the context of the COVID-19 pandemic.

Methods: Data were collected with surveys in three low-income compounds in Lusaka, Zambia, September 2021. Families with a child with a disability enrolled in Kusamala+, a community-based program to decrease stigma and increase quality of life (n = 444) and convenience sampling of adults living in the same area who do not have a child with a disability (n = 1,027) provided basic demographic information, HDDS, and the extent to which access food changed during the COVID-19 pandemic. Data were collected using REDCap Mobile App and analyzed using Stata v15. Descriptive statistics compared HDDS between families with and without a child with a disability.

Results/Findings: The primary caregiver among families with children with disabilities were significantly older than community members (39.3 v 37.9 years, t= -1.97, p = 0.05) and more likely to be female (95% v 61.2%, p< 0.001). Mean HDDS for the households with a family with a child with a disability was 4.8 (SD=2.1) compared to 6.1 (SD=2.2) among community members (t=11.1, p<0.001). The child HDDS score for households with children with disabilities was 2.6 (SD=1.4) compared to community member households at 3.7 (SD=1.6) (t = 12.4, p< 0.001). A higher proportion of families with children with disabilities indicated that COVID-19 pandemic has impacted their ability to get food to a great extent (32.0% versus 22.0% community members; Chi^2=22.4, p<0.001).

Conclusions: Families with children with disabilities face multiple barriers to health and livelihood, including lower levels of household dietary diversity. The COVID-19 pandemic has differentially impacted families with children with disabilities compared to community members living in the same low-income areas. National policy must assure equitable distribution of resources for the most vulnerable, and often hidden, community members.

Changes in Objectively-Measured Physical Activity and Sedentary Time Among an Ethnically and Socioeconomically Diverse Sample of School-Age Children in the US During the COVID-19 Pandemic

Dr. Leigh Ann Ganzar[1], Dr. Deborah Salvo[2], Ms. Kathryn Burford[1], Ms. Yuzi Zhang[1], Dr. Harold W. Kohl, III[1], Dr. Deanna M. Hoelscher[1]

[1]Michael & Susan Dell Center for Healthy Living,The University of Texas Health Science Center at Houston (UTHealth) School of Public Health, Austin, USA, [2]Prevention Research Center in St. Louis, Brown School, Washington University, St. Louis, USA

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Most of the available evidence on the effects of the COVID-19 pandemic on child movement behaviors is from cross sectional studies using self-report measures. This study aimed to identify change trajectories for objectively-assessed physical activity and sedentary time among an ethnically and socioeconomically diverse sample of school-age children from Central Texas, US, during COVID-19. Additionally, a socio-ecological approach was used to identify factors associated with belonging to change trajectory groups.

Methods: Pre- (Sept. 2019 – Feb. 2020) and during- (Oct. 2020 – March 2021) COVID-19 data were collected for a cohort of school-age children (8 – 11 years) enrolled in the Safe Travel Environment Evaluation in Texas Schools (STREETS) study. Daily time spent in moderate- to vigorous-intensity physical activity (MVPA) and sedentary time were assessed using GT3X-wBT Actigraph accelerometers. Parent surveys were used to assess the socio-ecological characteristics of the children. Latent class linear mixed models were used to identify change trajectories of MVPA and sedentary time. Logistic regression models were used to assess the association between socio-ecological characteristics with physical activity and sedentary time change trajectory groups.

Results: Among children with valid data for both time points (n=157), two trajectory groups were identified for MVPA ('decreasing' and 'maintaining'), with the majority (82.8%) being in the decreasing group. Three trajectory groups were identified for sedentary time ('decreasing, 'moderately-increasing, and 'steeply-increasing'), with most children (77.7%) being in the 'moderately increasing' group. Girls had significantly lower odds of being in the 'maintaining MVPA' group than boys (OR=0.23, 95% CI=0.08, 0.58). Children living in neighborhoods with high perceived social cohesion had significantly higher odds of being in the 'maintaining MVPA' group (OR=1.16, 95% CI= 1.01, 1.36), while those in neighborhoods with low social cohesion had higher odds of being in the 'decrease sedentary time' group (OR=0.84, 95% CI=0.72, 0.97).

Conclusions: This study provides objective evidence of declines in physical activity and increases in sedentary time among most school-age children during COVID-19 in a socioeconomically and ethnically diverse US

sample, especially among girls. These findings highlight the need to counteract the short-term negative changes in movement behaviors in response to COVID-19 among children.

O.3.18 - Children and families

Room 151

May 21, 2022, 8:30 AM - 9:45 AM

Systematic review of community-based child summer nutrition assistance programs and their effects on child nutrition-related outcomes

Assistant Professor Jiwoo Lee[1], Ms. Molly McQuown[1], Ms. Rose Bauer[1], Ms. Silver Moua[1], Ms. Elizabeth Weinfurter[1], Prof. Lisa Harnack[1], Prof. Jayne Fulkerson[1]
[1]University of Minnesota, Minneapolis, USA

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Children from low-income households experience increased food insecurity during summer months when school-based nutrition assistance programs are not readily available. This systematic review aimed to a) characterize current community-based child summer nutrition assistance programs and b) examine their effects on children's nutrition-related outcomes, including food insecurity, diet quality, body mass index (BMI) and percent body fat (BF), to guide program improvements to maximize desired effects on children's summer nutrition-related outcomes.

Methods: CINAHL, ERIC, Ovid Medline and Scopus databases were searched using terms, including "summer," "out of school," "food," "nutrition," "meal," "lunch" or "insecurity," and 659 English manuscripts published since 2000 were identified. Three independent reviewers assessed abstracts and full-texts and 14 manuscripts met the following eligibility criteria: studies evaluated effects of a summer program with a nutrition assistance component on children's nutrition-related outcomes.

Results/findings: Among the 14 studies, 57% to 79% focused on 6- to 12-year-old children, and 86% reported children were from low-income households. The 14 studies were classified into the following intervention types: food, physical activity and behavioral education (43%), food only (29%), food and physical activity (21%), or a monthly payment ($60/child) for food purchases (7%). Regardless of intervention type, most studies reported on diet quality (n=7 of 14). BMI or BF were only assessed by programs with physical activity (n=7 of 9). Only three studies assessed food insecurity. Of the studies that assessed these outcomes, 70% reported an improvement in diet quality, and 100% and 29% reported a reduction in food insecurity and BMI, respectively. However, these outcome measures varied in type and only three studies employed a randomized controlled trial design, the gold standard in the field.

Conclusion: Child summer nutrition assistance programs offer a variety of services, including meals, physical activities and nutrition education. Our review findings are promising and suggest programs may improve children's diet quality and reduce food insecurity among 6- to 12-year-old children from low-income households. However, their effect on reducing BMI/BF was minimal. Further studies with more rigorous design are needed to confirm the findings and evaluate if multi-component programs are critical to improve children's summer nutritional-related outcomes.

Seasonal Shifts in Children's Sedentary Behaviors, Physical Activity, and Sleep: A systematic review and meta-analysis

Dr. R. Glenn Weaver[1], Miss Caroline Hensing[1], Dr. Bridget Armstrong[1], Dr. Elizabeth Adams[1], Dr. Michael Beets[1]
[1]University of South Carolina, Columbia, USA

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sleep

Purpose: Children's (5-12 years) engagement in movement behavior (sedentary, physical activity, and sleep) is related to obesity risk and may vary seasonally. Past systematic reviews of these variations were conducted nearly a decade ago neglected to examine seasonal changes in children's sleep behaviors, and failed to account for the presence or absence of the school day during measurement periods. The purpose of this systematic review and meta-analysis is to summarize current literature on the seasonal variation in movement behaviors in children.

Methods: This review was guided and reported in accordance with the Preferred Reporting Items for Systematic reviews and Meta-analyses checklist. PubMed, PsycInfo, Web of Science and Embase were searched for relevant studies. To be included studies had to (1) measure children and (2) include outcomes related to sedentary behaviors physical activity, and/or sleep during at least two meteorological seasons.

Results/findings: A total 18,542 articles were identified, 8,567 articles were screened after removing duplicates, and 300 full-text studies were reviewed. Movement behaviors were extracted from 47 studies (n=27,093 participants). Most studies were conducted in Europe (k=23) and North America (k=18). Most studies measured physical activity or sedentary behaviors only (k=40) while 5 studies measured sleep only, and 2 studies measured sleep and physical activity or sedentary behaviors. The most measured season was spring (k=40) 20 studies measured 2 seasons only, 14 studies measured 3 seasons, and 13 studies measured all 4 seasons. Children were consistently the most active and least sedentary during spring when compared to fall, winter, or summer. Findings for sleep were mixed between seasons. Compared to other seasons a pattern emerged where sedentary behaviors were higher and physical activity was lower during the months of summer, but only when school was not in session.

Conclusions: Children's movement behaviors fluctuate seasonally and thus, interventions need to be designed to target behaviors during the times when children's behaviors are the least healthy, specifically during the summer (when children are not in school) and winter. A paucity of sleep studies stops the current literature from disentangling seasonal variation in sleep from variation due to changing exposure to structured days.

Examining Adolescents' Obesogenic Behaviors on More and Less Structured Days: A systematic review and meta-analysis.

Dr. R. Glenn Weaver[1], Miss Kristen Zosel[1], Dr. Courtney Monroe[1], Dr. Ethan Hunt[1], Miss Chantal Laflamme[1], Dr. Keith Brazendale[2]
[1]University of South Carolina, Columbia, USA, [2]University of Central Florida, Orlando, USA

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: The structured days hypothesis posits that 'structured days' (i.e., days with pre-planned, segmented, and adult-supervised compulsory environments) protect children (6-11 years) from engagement in obesogenic behaviors (i.e., physical activity, diet, screen time, and/or sleep). Adolescence (12-19 years) is a critical time for the development of obesogenic behaviors as it is a period of developmental milestones and increased autonomy. Thus, structured days may be especially important for adolescents' health behaviors. Therefore, the objective of this systematic review and meta-analysis is to examine adolescents' obesogenic behaviors on relatively more and less structured days.

Methods: This systematic review and meta-analysis was registered prospectively in PROSPERO (registration number: CRD42020169008) and was guided and reported in accordance with the Preferred Reporting Items for Systematic reviews and Meta-analyses checklist. Embase, PubMed, Web of Science, and PsychINfo were systematically searched for cross-sectional, longitudinal, and intervention (i.e., baseline data only) studies that included one or more obesogenic behavior – on more structured days versus less structured days (i.e., weekday versus weekend or school year versus summer/holiday) in adolescents (12-19 years).

Results/findings: Titles and abstracts (k=42,878) were screened with 2,767 full-text articles retrieved. After review of full-text articles, 296 studies were identified (sleep k=147, physical activity k=88, screen time k=81, diet k=8). Most studies were conducted in North America, Europe & Central Asia, or East Asia & the Pacific, used self-report measures, and compared school weekdays to weekend days. Meta analyses indicated that adolescents' physical activity was lower (standardized mean difference [SMD]=-0.25 [95%CI −0.48, −0.03]) and screen time was higher (SMD=-0.48 [95%CI −0.66, −0.29]) on less structured days (e.g., weekend days). Differences did not reach statistical significance for sleep (SMD=-0.23 [95%CI −0.48, 0.02]) and diet (SMD=-0.13 [95%CI −0.77, 0.51]), however sleep timing (SMD=-1.05 [95%CI −1.31, -0.79]) and diet quantity (SMD=-0.29 [95%CI −0.35, -0.23]) were less healthy on less structured days.

Conclusions: Findings aligned with the SDH and indicate that adolescents' obesogenic behaviors are less healthy on less structured days. Interventions to prevent and treat obesity in adolescents may be more successful if they are designed to target times that are less structured.

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ABSTRACT BOOK

Correlates of Adherence to 24-hour Movement Guidelines Among Children in Singapore Aged 10 Years

Miss Sarah Yi Xuan Tan[1], Miss Jia Ying Toh[2], Dr. Wen Lun Yuan[2,3], Prof. Yung Seng Lee[2,4,5], Dr. Benny Kai Guo Loo[6], Associate Professor Fabian Kok Peng Yap[6,7,8], Prof. Keith M. Godfrey[9,10], Prof. Yap-Seng Chong[2,11], Prof. Johan Eriksson[2,11,12], Dr. Mary Foong-Fong Chong[1,2], Associate Professor Falk Müller-Riemenschneider[1,13]

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: All

Purpose: There is limited data on the lifestyle behaviours of school-aged children in Singapore. To bridge this gap, we evaluated adherence to 24-hour movement guidelines and the correlates of this among children from a Singapore mother-offspring cohort.

Methods: My E-Diary for Activities and Lifestyle (MEDAL) is a validated, web-based lifestyle diary. Children aged 10 years in the Growing Up in Singapore Towards healthy Outcomes (GUSTO) study self-reported their daily activities on MEDAL over two weekdays and two weekend days. Median (interquartile range) daily moderate-to-vigorous physical activity (MVPA), screen-viewing and sleep duration were calculated. Adherence to the Canadian/Australian 24-hour movement guidelines was defined as: ≥60min MVPA/day, ≤2h screen-viewing/day, and 9–11h sleep/night. Socio-demographic variables were examined for potential associations with guideline adherence using multivariable logistic regression.

Results/findings: Of 600 children, 369 children (61.5%) recorded at least two valid weekdays and one valid weekend day on MEDAL. The children engaged in 40.7 (16.4–81.8) minutes of MVPA, 3.8 (1.9–6.0) hours of screen-viewing and 10.0 (8.9–11.9) hours of night-time sleep per day. Only 36.3%, 27.4% and 36.0% met MVPA, screen-viewing and sleep guidelines respectively; 5.1% met all three guidelines; and 32.8% did not meet any guideline. Children of Chinese ethnicity were less likely to meet the MVPA guideline, while children of Malay ethnicity and whose mothers were of low (primary/secondary) educational level were less likely to meet the screen-viewing guideline. Children of mothers with post-secondary education and from low household income

were less likely to meet the sleep guideline. Girls were more likely to exceed recommended sleep duration. Children who did not meet the screen viewing guideline were less likely to meet the MVPA guideline and were more likely to exceed the recommended sleep duration.

Conclusions: Most children did not meet the 24-hour movement guidelines, putting them at risk of poor outcomes. Our findings suggest that some groups are less likely to meet the guidelines, warranting targeted interventions. Future interventions that promote adequate screen-viewing may also benefit MVPA and vice versa, however additional strategies may be required to promote adequate sleep among children of this age.

Associations between 24-hour activity behaviours and motor competence in youth: a compositional data analysis

Dr. Richard Tyler[1], Dr. Andrew J. Atkin[2], Dr. Jack R. Dainty[2], Dr. Dorothea Dumuid[3], Prof. Stuart J. Fairclough[1]
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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Research suggests that a positive feedback loop exists, in which youth with greater levels of physical activity, develop better motor competence, leading to further increases in PA engagement. However, very little evidence has been provided on the reallocation of time between physical activity and other activity behaviours, and the effect on motor competence. The study aimed to examine the cross-sectional associations between 24-hour activity compositions and motor competence in children and adolescents, while stratifying by sex and school type, and investigate the predicted differences in motor competence when time was reallocated between activity behaviours.

Methods: Data were collected from 359 participants (aged 11.5±1.4 years; 49.3% boys; 96.9% White British). Seven-day 24-hour activity behaviours (sleep, sedentary time, light physical activity (LPA), moderate-to-vigorous physical activity (MVPA)) were assessed using wrist-worn accelerometers. Motor competence outcomes were obtained using the Dragon Challenge (process, product, time, and overall scores). Linear mixed models examined associations between activity behaviour compositions and motor competence outcomes for all participants and stratified by school type (primary or secondary) and sex. Post-hoc analyses modelled the influence of reallocating fixed durations of time between activity behaviours on outcomes.

Results: In all participants, relative to other activity behaviours, MVPA had the strongest associations with motor competence outcomes and time reallocations to MVPA from any of the other three behaviours was associated with higher overall, process, and time scores (Effect Size (ES) ranged from 0.05–0.07 (5min) and 0.19–0.27 (20min)). The stratified models displayed that MVPA had the strongest associations with outcomes in both sexes, irrespective of school type. The largest positive and negative predicted differences occurred when MVPA replaced LPA or sleep (ES ranged from 0.04–0.10 (5min) and 0.14–0.39 (20min)), and when LPA or sleep replaced MVPA (ES ranged from -0.03–-0.11 (5min) and -0.13–-0.54 (20min)), respectively.

Conclusions: Relative to other activity behaviours, MVPA appears to have the greatest influence overall on motor competence outcomes. Reallocating time from LPA or sleep to MVPA reflected the largest positive predicted changes in motor competence outcomes. Therefore, our findings reinforce the key role of MVPA for children's and adolescents' motor competence.

Food Parenting Behaviors are Associated with Sleep Quality Measures in Children 0-26 Months of Age

Dr. Carolyn Mccabe[1,2], Mr. Craig Wood[2], Dr. Jennifer Franceschelli-Hosterman[3], Dr. William Cochran[2], Dr. Jennifer Savage[4], Dr. Lisa Bailey-Davis[1,2,4]
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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Sleep and nutrition

Poor sleep is increasingly common in children and associated with poor health outcomes, including childhood obesity; suggesting the importance of caregivers establishing healthy sleep hygiene routines early in life. However, sleep and eating behavior likely interact and influence each other to impact health outcomes, with increasing evidence linking sleep duration and dietary quality. Since less is known about these associations in infancy and early childhood, we aimed to evaluate the cross-sectional association between food parenting behaviors and sleep in children 0-26months. We evaluated parent responses (n=10523) to the Early Healthy Lifestyles (EHL) questionnaire completed during Geisinger pediatric care between 2016-2020. Data were categorized by child age in months (mo.): <6 (n=3385), 6-11 (n=2241), 12-17 (n=2278), and 18+ (n=2619). Within each age group, chi-square tests were used to compare food parenting EHL responses (e.g., breastmilk use, consuming higher sugar or higher fat foods, using food to soothe, and pressure to finish bottles/snacks/meals) to sleep parenting behaviors (e.g., bedtime after 8pm ["late bedtime"]; frequent night wakening [2+ times]; and feeding child when wakes at night ["night feeding"]. Significant associations with P-values <0.05 are reported.

On average, 63% of parents indicated, 'yes' to late bedtime after 8pm; 32% indicated their child wakes frequently at night; and 43% indicated feeding their child when they wake at night. At all time points, the use of breastmilk and parent use of food to soothe displayed associations with frequent night wakening and night feeding. Parental pressure to finish foods was associated with frequent night wakening only in <6mo and 18+mo. Lastly, high consumption of sugary foods (except <6mo) and pressure to finish foods (except 6-11mo) was associated with late bedtime.

These results reveal a consistent association between feeding and sleep measures across a population of children aged 0-26months. Notably, the use of breastmilk and using food to soothe were two items consistently associated with sleep measures across all ages. Recent studies suggest eating behaviors may mediate sleep-obesity associations that develop in late-childhood, and as such, the EHL tool may be a useful screener for tailored anticipatory guidance to improve sleep in infancy and childhood.

O.3.19 - Food and physical activity insecurity

Room 152

May 21, 2022, 8:30 AM - 9:45 AM

Dietary intake of low-income Adults in South Africa

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The aim of this study was to critically evaluate dietary quality and adequacy of low-income South Africans using the NOVA food processing classification system and World Health Organization (WHO) dietary guidelines

Methods: 2546 participants (18-50 years) from three low-income neighborhoods in two provinces in South Africa (SA) (Langa and Khayalitsha in the Western Cape, and Mount Frere in the Eastern Cape) were included. Fieldworkers trained in standardized techniques collected household data, anthropometry measurements and a 1-day 24-hour recall, which was analyzed according to the SA Medical Research Council food composition manual. Foods reported consumed were classified according to the NOVA food processing classification system. Compliance with WHO dietary guidelines and trends in ultra-processed food (UPF) consumption was evaluated.

Results/findings: Participants had a mean energy intake of 7734kJ/day. Females were more likely to be living with obesity (43.9%) than males (7.9%). Most (79.81%) participants were within the acceptable WHO guideline range for saturated fat (mean intake of 11.6g/day), total fat (67.8%, mean: 39.4g/day), sodium (72.5%, mean: 1845mg/day) and free sugar (60.3%, mean: 12.8g/day). Only 7.2% of participants met the WHO guideline for fruit and vegetables (>=400g/per day), and 18.1% met the guideline for fiber (>=25g/day). UPF consumption accounted for 13.0% of the total energy consumption for the lowest quartile of UPF consumers, and 63.6% of the total energy for the highest quartile, who were also the highest energy consumers overall (mean energy intake of 11042kJ/day). Those within the highest quartile remained within acceptable WHO consumption range for sugar and saturated fat (although mean saturated fat intake of 26.7g/day was 17.7g higher that the lowest quartile). The highest quartile consumed excessive total fat and sodium, and inadequate fiber, fruits and vegetables.

Conclusions: UPF consumption is prevalent amongst low-income consumers in SA. Highest UPF consumers have higher overall energy consumption, higher sodium and higher fat intake. Most low-income South Africans assessed in this study had inadequate intake of fiber, fruits and vegetables. Policy measures are urgently needed in SA to protect against the proliferation of harmful UPF, and to promote and enable the consumption of whole and less processed foods.

Who shops at their nearest grocery store? A cross-sectional exploration of disparities in geographic food access among a low-income, racially/ethnically diverse cohort in Central Texas

Dr. Kathryn Janda[1, 2], Dr. Deborah Salvo[3], Dr. Nalini Ranjit[1, 2], Dr. Deanna Hoelscher[1, 2], Mrs. Aida Nielsen[1, 2], Dr. Pablo Lemoine[4], Dr. Alexandra van den Berg[1,2]
[1]UTHealth School of Public Health, Austin, USA, [2]Michael and Susan Dell Center for Healthy Living, Austin, USA, [3]Brown School, Washington University in Saint Louis, Saint Louis, USA, [4]Centro Nacional de Consultoría, Bogotá, Colombia

SIG - Primary Choice: I. Socio-economic inequalities
Age Category: All ages
Subject Category: Nutrition

Purpose: The purpose of the cross-sectional analysis was to examine whether residents of a diverse, low-income urban community shop at their nearest supermarket, and if not, how far they travel for groceries. Differences in overall distance travelled for groceries, and excess distance beyond nearest store, by race/ethnicity and food insecurity status were explored.

Methods: This study employed a cross-sectional study design, analyzing 2018-2019 baseline data from the FRESH-Austin cohort (n=393), all supermarkets/grocery stores in Travis County and participant home addresses were geocoded. Network distances to the nearest store from each participant's home, and to the stores where they shop for groceries, were calculated using GIS. We categorized participants as using a) their nearest supermarket, b) a supermarket somewhat further than their nearest store (1.1-5 times the distance), or c) a supermarket very far from their nearest store (>5 times the distance). Race/ethnicity was self-reported and food insecurity status was measured using a validated screener. Linear regression and chi-squared tests were used to determine differences in distance-based outcomes by race/ethnicity and food insecurity status.

Results: Under 19% of the sample reported shopping at the supermarket closest to their home (mean distance closest supermarket=1.66 miles, mean distance to self-reported supermarkets=5.26 miles). There were no significant differences in the unadjusted linear regression models assessing the distance to the closest supermarket by race/ethnicity or food insecurity status, or distance to self-reported location by food insecurity status. However, individuals who identified as Hispanic (Beta=1.26, SE=0.51, $p<0.05$) and Black (Beta=2.71, SE=0.84, $p<0.01$) traveled further to their self-reported than non-Hispanic White cohort members. Similarly, the chi-squared tests found there were not significant differences in the ratio categorical variable by food insecurity status, but there were significant differences by race/ethnicity ($p<0.05$).

Conclusion: Our study presents more nuanced evidence of racial/ethnic disparities in food access. Although some researchers and policymakers focus on strategies to improve geographic food access, other domains of access (affordability, quality, cultural adequacy) need greater consideration.

Use of emergency food resources among low-income, food insecure households during 2020

Dr. Patrick Brady[1], Dr. Lisa Harnack[1], Dr. Rachel Widome[1], Mrs. Kaitlyn Berry[1], Dr. Sruthi Valluri[2]
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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: All ages
Subject Category: Nutrition

Purpose: In response to the COVID-19 pandemic, government agencies and community-based organizations pursued multiple strategies to provide food to in-need households, with a major component being increased support and expansion of the emergency food system. Our aim was to examine the extent to which food insecure, low-income households received emergency food from a church, food pantry, or food bank during 2020 and whether the reach of this part of the food safety net was equitable.

Methods: We used data from the 2020 Current Population Survey Food Security Supplement. We produced population estimates for the receipt of emergency food in the previous year by food insecure households earning below 185% of the federal poverty level (n=2,097). We then modeled emergency food receipt with demographic (primary respondents' age, sex, race, Hispanic ethnicity, education, marital status, and employment and disability status) and household (low vs. very low food security, SNAP participation, perceived monetary amount required to meet food needs, number of children, income, and metropolitan status) characteristics using logistic regression and calculated predicted probabilities of receiving emergency food.

Results: The overall proportion of low-income, food insecure households receiving emergency food was 40.3%. The predicted probability of receiving emergency food was 46.5% for Hispanic versus 38.2% for non-Hispanic (p=0.01); 36.5% for employed versus 42.2% for unemployed (p=0.20) or 50.7% for not working, living with a disability (p<0.001); 35.1% for low versus 48.8% for very low food security (p<0.001); and 48.8% for SNAP participants versus 32.2% for non-participants (p<0.001). There were no significant differences in the predicted probability of receiving emergency food based on the other variables in the model.

Conclusions: Even with a crisis providing increased media attention to emergency food resources and governmental and community-based organizations working to increase availability, a substantial proportion of low-income, food insecure households did not use these resources during 2020. Despite low overall use of these services, there did not appear to be disparities in receipt of emergency food

with regard to historically marginalized groups. These results suggest that barriers to accessing emergency food must be identified and addressed to increase the proportion of households accessing these resources.

Farmers Market Use and Dietary Intake Among SNAP Participants in Oklahoma

Ms. Stephanie DeBerry[1], Mr. Ezekiel Kresie[1], Dr. Karla Finnell[2], Ms. Meredith Scott-Kaliki[2], Ms. Erin Eckart[3], Dr. Susan Sisson[1]

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To understand facilitators, barriers, and awareness of farmers market (FM) usage among Oklahoma Supplemental Nutrition Assistance Program (SNAP) participants, and determine how FMs are associated with fruit and vegetable (FV) intake and food literacy.

Methods: This cross-sectional study included email and in-person recruitment of SNAP participants living within 10 miles of 5 SNAP-accepting FM representing different Oklahoma counties (n=20,798). In-person, convenience recruitment at each FM was used to include actual FM shoppers due to low SNAP participant FM shopping in the literature. Independent sample t-tests were used to compare food literacy scores, and FM awareness scores, and a Fischer's exact test to compare demographic characteristics between shoppers and non-shoppers. Frequencies were calculated for facilitators and barriers. Independent sample t-test was used to determine differences in FV intake.

Results/findings: Response rate for online surveys was 0.97% (n=127) and 69.6% for in-person (n=32). The median participant (n = 159) was 40 years and 82.1% of participants were female. The majority of participants identified as non-Hispanic/Latino (85.7%) and white (68.0%). Shoppers had higher rates of education, employment, and marriage compared to non-shoppers (p < 0.0001). Shoppers reported a median distance of 6 miles (IQR of 3.0, 12.0) and 10 minutes (IQR of 5.0, 20.0) travel. Shoppers were not significantly more aware of FM location than non-shoppers in any county (p = 0.2128, 0.4646, 0.9090, 0.7490). The top facilitator in FM shopping was "fresher produce available at FMs" (43.3%). The top barrier was "I don't know where any markets are" (31.6%). FM shoppers had significantly higher FV intake (16.3 ± 3.6, p = 0.0006) and food literacy (27.7 ± 4.9, p = 0.0025) compared to non-shoppers (14.2 ± 3.7 and 25.0 ± 5.5 respectively).

Conclusions: Results can be used to improve SNAP-Ed interventions and FM initiatives that address the diet quality of low-income groups by incorporating food literacy and encouraging the use of FM produce. The difference in food literacy scores suggest that higher food literacy may positively influence FM shopping among SNAP participants. Future research should investigate differences in barriers and facilitators to FM shopping in rural versus urban settings.

Influence of food insecurity on gut microbiome and metabolome profiles in a college-based sample

Mr. Alex Mohr[1], Dr. Paniz Jasbi[1], Dr. Irene van Woerden[2], Dr. Kiley Vander Wyst[3], Dr. Haiwei Gu[4], Dr. Meg Bruening[1], Dr. Corrie Whisner[1]

[1]Arizona State University, Phoenix, USA, [2]Idaho State University, Pocatello, USA, [3]Midwestern University, Glendale, USA, [4]Florida International University, Port St. Lucie, USA

SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Food insecurity (FI) is a persistent public health concern that is particularly problematic during the behavior- and health-formative period of young adulthood. Dietary patterns and specific nutrients have been shown to alter the gut microbiome (GM) and its function with important implications on overall health. Due to the paucity of research related to FI, the purpose of this study was to assess the relationship between FI and the GM. We hypothesized that FI college students would have microbial and metabolomic features distinct from food secure (FS) college students.

Methods: Based on food security status within the last 30 days, 60 participants from a cohort of diverse college students were classified as FS (n=38) or FI (n=22). As a cross-sectional study design, the fecal microbiome and metabolome were analyzed using 16S amplicon sequencing, targeted liquid chromatography-tandem mass spectrometry (MS/MS), and targeted detection of short-chain fatty acids using gas chromatography-MS. The functional profile of the GM was predicted via the PICRUSt 2 pipeline and mapped to the KEGG database.

Results: The overall community of the GM between FI and FS students showed significant separation as informed by beta-diversity analysis (Jaccard metric, $p=0.05$). Moreover, FI students had significantly greater alpha diversity values compared to those who were FS (Pielou's evenness, $p=0.05$; Shannon index, $p=0.04$). FS students had a greater abundance of the taxa *Clostridia*, *Megasphaera*, and *Holdemanella* (log-FC > 2.0; p's < 0.05), whereas FI students had a greater abundance *Enterobacteriaceae* and *Eisenbergiella* (log-FC > 2.0; p's < 0.05). Output from PICRUSt suggested that FI students had greater metabolic pathway activity for hydrolysis reactions, energy substrate biosynthesis, and macronutrient metabolism (e.g., proteins) (p's < 0.05). Metabolomic data revealed three significant between-group metabolites: Picolinic acid, phosphocreatine, and 2-pyrrolidinone (p's < 0.05).

Conclusions: The GM of FI college students showed distinct differences in overall community structure, key microbes, predicted metabolic pathways, and objective metabolites, when compared to FS counterparts. This study provides one of the first omic-informed works in elucidating the critical influence of FI on the GM, highlighting the significance of this behavioral mechanism for future research.

![ISBNPA Phoenix Arizona, USA May 18–21, 2022 logo]

College Students with Food Insecurity Show Brain Connectivity Differences at Rest

Mr. Nicolas Guerithault[1,3], Assistant Professor Chinedum Ojinnaka[1], Prof. Samuel M McClure[2], Assistant Professor B. Blair Braden[1,4], Associate Professor Meg Bruening[1,4]
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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Food insecurity (FI), inconsistent access to adequate, healthy food, is associated with poorer cognitive function. College students are known to report the highest rates of food insecurity in any population. Despite this, no studies have ever investigated possible neural mechanisms which may account for cognitive differences associated with FI and which may impact FI students' nutrition behaviors. This cross-sectional study examined executive function (EF) and resting-state brain connectivity associations with FI in college students.

Methods: FI was assessed via the USDA Adult Food Security Survey Module, and forty students experiencing either very low food security (FI; n = 20) or high food security (FS; n=20) were recruited and matched by sex and age. Participants completed the Behavior Rating Inventory of Executive Function (BRIEF) and Adverse Childhood Experience (ACEs) Questionnaire. Resting-state functional magnetic resonance imaging (rs-fMRI) scans were taken. Images were preprocessed using Statistical Parametric Mapping, and group differences in functional connectivity were analyzed using Independent Component Analysis in CONN Toolbox. All models were adjusted for ACEs.

Results: FI was associated with poorer Global BRIEF scores (adjusted b=8.36; 95% CI: 2.32, 14.40) and five BRIEF subscales: Inhibit, Initiate, Working Memory, Plan, and Organize (p's<0.05). For rs-fMRIs, FI students showed greater connectivity between the frontoparietal network (FPN) and left middle temporal gyrus (L-MTG; Cluster size p-FWE = 0.029), the salience network (SN) and precuneus (Cluster size p-FWE < 0.001), and the SN and right middle frontal gyrus (R-MFG; Cluster size p-FWE = 0.016) as compared to FS students. Greater connectivity between the FPN and L-MTG was associated with poorer EF on the Organize subscale (p=0.024), and greater connectivity between the SN and R-MFG was associated with poorer EF on the Inhibit subscale (p=0.038) for FI students.

Conclusion: Research has previously linked anti-connectivity between networks at rest (i.e. greater network segregation) to healthy cognitive functioning. This rs-fMRI study of college students with FI reveals greater between network connectivity, which might be a mechanism contributing to EF impairment and poorer behavioral choices.

O.3.20 - Reaching and intervening underrepresented populations using e- & mHealth

Room 153

May 21, 2022, 8:30 AM - 9:45 AM

Food Insecurity and Healthcare Information Technology Use among Individuals Living with Chronic Diseases

Dr. Chinedum Ojinnaka, Dr. Meg Bruening
[1]Arizona State University College of Health Solutions, Phoenix, USA

O.3.20 - Reaching and intervening underrepresented populations using e- & mHealth, Room 153, May 21, 2022, 8:30 AM - 9:45 AM

SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Nutrition

Purpose: The purpose of this study was to explore the relationship between food security status (FSS) and health information technology (HIT) use among adults (≥18 years) living with chronic diseases. We also explored determinants of HIT use among food insecure individuals. This study is relevant given the HIT expansion that has occurred during the COVID-19 pandemic. Further, there is a gap in the literature regarding HIT use and FSS.

Method: The 2011-2018 National Health Interview Survey data was used. We had four outcomes: any HIT use, email communication with healthcare provider, scheduling appointments online, and online prescription refills. Bivariate and multivariable logistic regression analyses were used to analyze the relationship between FSS and the outcome measures, and determinants of HIT use among food insecure individuals.

Results: In 2011, about 15% and 8% of food secure and food insecure individuals reported any HIT use, respectively, compared to 31% and 21% in 2018. On bivariate analyses, there was a decreased likelihood of any HIT use among those who experienced food insecurity (OR: 0.53; 95% CI=0.50, 0.56) compared to those who were food secure. On multivariable analyses, there was a reversal in the direction of the relationship between any HIT use and food insecurity (OR: 1.10; 95% CI=1.03, 1.18). Among food insecure individuals, there was a decreased likelihood of HIT use with increasing poverty, among Blacks and Hispanics and among those who were not privately insured. Compared to those who were at ≥350% of the federal poverty level (FPL), individuals at 200-349% (OR: 0.59; 95% CI=0.48, 0.73), 100-199 (OR: 0.42; 95% CI:0.34, 0.52) or <99% FPL (OR: 0.33; 95% CI=0.26, 0.42) were less likely to use any HIT.

Conclusion: The recent telehealth expansions offer a unique opportunity to address health inequities among food insecure individuals. Our findings of increased HIT use among food insecure individuals highlights the feasibility of telehealth interventions to address health outcomes among this sub-population. Our findings of persistent socio-demographic disparities in HIT use shows that such interventions could further widen health disparities, and highlights the need for targeted interventions to increase HIT use among food insecure individuals.

Exploring connected health technologies for home-based exercise class delivery in a rural cohort: Findings from a qualitative study

Dr. Matthew Fraser[1], Dr. Daniel Crabtree[1], Dr. David Muggeridge[2], Prof. Trish Gorely[1], Dr. Oonagh Giggins[3]
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SIG - Primary Choice: D. e- & mHealth
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Connected health technologies can be used to reduce geographical health inequalities which are a worldwide issue. Further research into telemedicine within rural populations to increase physical activity, specifically qualitative research exploring participant experiences, is warranted. The purpose of this study was to assess the feasibility, acceptability, and experience of using 'connected health' technologies within an older, rural cohort. The research objectives were to (1) investigate participants' experience of online home-based exercise classes delivered by telehealth (videoconference) and (2) examine participants' perception of the usability and acceptability of wearable technology (Fitbit Charge 3) that was provided to support the classes.

Methods: A pilot study using a randomised, controlled wait/-list design was conducted. Twenty participants identified as conducting low-to-moderate levels of physical activity were recruited (mean±SD age: 62.5 ± 6.2 years, 16 females). Ten participants completed a 1 -hour, circuit style online exercise class twice per week for 6-weeks and 10 participants maintained their habitual physical activity. A focus group and semi-structured interviews were conducted after the intervention exploring the participants' experience of the technologies. A content analysis was used to analyse the qualitative data.

Results: Adherence to the online home-based exercise classes was 71.6%. Themes under 3 predetermined topics ('wearable technology', 'exercise class experience' and 'telehealth experience') were explored. Participants reported several benefits from attending the exercise classes including improved confidence, fitness and self-esteem. However, online classes were found to lack a human experience in terms of social connections and a community feel. Issues and challenges were also reported with Microsoft Teams, used to deliver the online exercise classes. Mixed findings regarding the wearable technology were cited. Some participants noted they utilised the technology daily, whereas some highlighted privacy and functionality issues.

Conclusions: This is one of the first studies to examine participant experience of connected health technologies to increase physical activity and/or exercise participation within a rural population. The findings demonstrate the importance of high-quality service delivery and the social aspect of online exercise classes. Future research should consider investigating methods to enhance the participant experience through improved service delivery and social elements in a larger cohort

Using mobile Ecological Momentary Assessment to understand adolescents' use of the food environment and relationships with their independent food purchases and diet

Miss Sarah Shaw[1,2], Dr. Sarah Crozier[1,3], Prof. Cyrus Cooper[1,2], Prof. Mary Barker[1,2], Dr. Dianna Smith[4], Dr. Christina Vogel[1,2,3]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Background: Adolescence is a period when many individuals experience increased exposure to factors outside the home and begin to make more of their own food choices. Little is known about how community and consumer food environment factors influence the independent food purchasing decisions in this age group. Real-time data collection using both ecological momentary assessment (EMA) and global positioning systems (GPS) can provide nuanced and detailed novel information.

Methods: A one-week observational study was conducted with 52 adolescents, aged 11-18 years, living in and around the city of Southampton, UK. Participants completed a validated 20-item FFQ from which a dietary quality score was calculated. They also downloaded and used a smartphone application (app) which incorporated EMA data collection techniques. The app automatically recorded GPS tracking data and participants were asked to use the app to record details of all food outlets they visited and all food purchases they made. Participants also recorded details of three consumer environment factors associated with each purchase: use of promotions, price, and store placement. The GPS data were used to create activity space maps which incorporated food outlet locations from Ordnance Survey Points of Interest data. An adolescent community nutrition environment score was calculated to represent the overall healthfulness of the food outlets adolescents were exposed to within their activity space. The purchasing data were used to create an overall healthfulness score for each participant which reflected adherence to UK healthy eating guidelines.

Results: Statistical analyses are ongoing. Linear regression models will be used to investigate associations between the healthfulness of the community food environment, diet quality and the healthfulness of adolescents' food purchases. Multi-level regression models will be used to understand which consumer environment factors are most strongly associated with the healthfulness of food purchases.

Conclusions: Findings from this study will provide novel insights into adolescents' use of the community and consumer food environments and on which aspects of these environments influence the healthfulness of

independent food purchasing decisions in this age group. These data could help to identify areas on which to focus future interventions to support healthier food choices among young people.

Physical Activity and Cardiometabolic Risk Outcomes of a Culturally Tailored Smartphone-delivered Physical Activity Intervention for African American Women

Dr. Rodney Joseph[1], Dr. Barbara Ainsworth[1,2], Dr. Sonia Vega-Lopez[1], Dr. Marc Adams[1], Mr. Kevin Hollingshead[1], Dr. Michael Todd[1], Dr. Glenn Gaesser[1], Dr. Colleen Keller[1]
[1]Arizona State University, Phoenix, USA, [2]Shanghai University of Sport, Shanghai, China

SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: To report physical activity (PA) and cardiometabolic risk outcomes of a 4-month, two-arm randomized controlled pilot trial testing the effects of *Smart Walk,* a culturally tailored smartphone-delivered PA intervention for African American (AA) women with obesity.

Methods: Sixty insufficiently active (i.e., <60 minutes/week of moderate-to-vigorous PA [MVPA]) AA women with obesity were assigned to either the *Smart Walk* PA intervention (n=30) or a wellness control condition (n=30). *Smart Walk* was delivered through our researcher-developed smartphone application and text messages. Features available on the app included personal profile pages, multi-media (video and low literacy text) PA promotion modules, discussion board forums, and an activity tracking feature that integrates with Fitbit activity monitors. Self-reported MVPA was assessed by the Exercise Vital Sign questionnaire. Cardiometabolic disease risk outcomes included brachial blood pressure, fasting serum lipids (total-, HDL-, and LDL-cholesterol; triglycerides), fasting plasma glucose, cardiorespiratory fitness assessed by a maximum treadmill test, and aortic pulse wave velocity. Multiple imputation was used to account for missing data at follow-up. Effect sizes (Cohen's ds) were calculated for all outcomes and alpha was set at .05.

Results/Findings: Participants, on average, were 38.2 years old with a BMI of 40.5 kg/m^2. Eighty-five percent (n=51) were retained at the end of the 4-month intervention period. Women receiving the *Smart Walk* intervention increased MVPA by a reported 70.5 min/week, compared to an increase of 20.5 min/week the control arm (d = 0.69, p=.02). *Smart Walk* participants also demonstrated clinically relevant, although not statistically significant, improvements in cardiorespiratory fitness (+1.1 ml/kg/min vs. -0.8 ml/kg/min in the control group; d=0.40, p=.09), systolic blood pressure (-3.8 mmHg vs. -1.0 mmHg in control group; d =0.22, p=.35), diastolic blood pressure (-4.3 mmHg vs. -0.6 in control group; d =0.23, p=.38), and pulse wave velocity (-0.3 meters/second vs. +0.2 in control group; d=0.34; p=.28). Fasting lipids and glucose were largely unchanged (ds<0.20).

Conclusions: Findings provide preliminary support for *Smart Walk* increasing PA and improving numerous cardiometabolic risk factors. Ongoing efforts include refining the intervention to elicit greater improvements in PA and reductions in cardiometabolic disease risk prior to larger-scale testing.

How to tell a story? The differential impact of serial vs. episodic narratives on physical activity behaviors among children

Dr. Amy Lu[1], Dr. Caio Sousa[1], Dr. Melanie C. Green[2], Dr. Junyung Hwang[3], Dr. I-Min Lee[4], Dr. Debbe Thompson[5], Dr. Tom Baranowski[5]

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SIG - Primary Choice: D. e- & mHealth
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Narratives, or stories, are pervasive across multiple media platforms and have been found to influence health behaviors such as physical activities through active video games. Most of the existing narrative research, however, has focused on the incorporation of narratives as an independent variable. Different narrative presentation formats have seldom been compared to explore their differential effect on physical activity motivation and behavior.

Objective: We have worked with a professional media production company to investigate the effects of narrative presentation formats (serial or episodic) on children's narrative immersion, physical activity intention, as well as physical activity behaviors.

Methods: Children ages 8-12 years old (N=44) were randomly assigned to watch a 12-episode animation series designed for an existing active video game in which the story plot was delivered either continuously across multiple episodes (serial) or in multiple yet relatively independent self-containing episodes (episodic). Children's narrative immersion and physical activity intention were assessed with self-report. Their physical activity behaviors were assessed with two tri-axial Actigraph GT9X accelerometers on their hips and wrist along with a Polar H7 heart rate monitor. After an initial familiarization session, children were visited three more times to assess the longitudinal effect.

Results: Controlling for social desirability, we found that children who watched the serial narrative had significantly more moderate to vigorous physical activity behavior (MVPA and Step Count) during three visits over three weeks (ps < 0.05). This finding was corroborated by both wrist- and hip-worn research-grade accelerometers. Heart rate increased significantly throughout the visits for both groups. Alternatively, we did not detect any difference regarding narrative immersion and physical activity intention via self-report.

Conclusions: While the increased heart rate over visits corroborated the narrative's motivational effect, we have found that serial narratives can result in more MVPA than episodic narratives. Future health narrative designers should identify optimal creative strategies in plot design to encourage all types of children to participate in PA with engaging stories to maximize the narrative's behavioral potential.

O.3.21- Implementation and dissemination science in school-based settings

Room 154

May 21, 2022, 8:30 AM - 9:45 AM

The long-term effects of primary school-based obesity prevention interventions in children: a systematic review and meta-analysis

Mr. Michel Smit[1], Miss Mirte Boelens[1], Dr. Famke Mölenberg[1], Prof. Hein Raat[1], Dr. Wilma Jansen[2]
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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: A recent Cochrane review with 153 randomized controlled trials (RCTs) investigated the effectiveness of overweight prevention interventions. However, whether primary school-based interventions have a long-term effect on obesity-related outcomes in children, is currently largely unanswered. We aim to investigate these long-term effects on body mass index (BMI), body mass index z-scores (zBMI), waist circumference (WC), waist circumference z-scores (zWC) and weight status.

Methods: A systematic review and meta-analysis were done. Four databases were searched for RCTs and controlled studies from date of inception until June 8th, 2021. We included articles investigating the long-term effects (≥12 months post-intervention) of primary school-based interventions containing a diet, a physical activity, or both components on outcomes of interest. Articles were assessed on their risk of bias and methodological quality. Meta-analysis was performed on eligible studies and furthermore narrative results were summarized. The quality of evidence was assessed with the GRADE tool.

Results: 19 articles were included, of which 9 were pooled in meta-analysis. Follow-up post-intervention ranged between 12 and 168 months. No effects were found on BMI, zBMI and on WC in the pooled analysis. The pooled mean difference between intervention and control groups was 0.08 kg/m^2 (CI = -0.23, 0.39; N = 7153, Z = 0.50) for BMI, was -0.06 (CI = -0.15, 0.02; N = 3349, Z = 1.51) for zBMI, and was 0.66 cm (CI = -0.23, 1.55; N = 1653, Z = 1.46) for WC. In non-pooled studies, mixed findings were reported regarding the long-term intervention effects on the outcomes BMI, zBMI and weight status and no effects were reported on WC and zWC. Certainty of evidence was rated as either low or very low for all outcomes.

Conclusions: There is no consistent evidence for the long-term effects of primary school-based obesity prevention interventions in children on obesity-related outcomes. Based on the results we recommend policy makers and intervention developers to implement prolonged school-based interventions or additional interventions for children and adolescents for the promotion of healthy lifestyles. Finally, we emphasize the need for more high quality research in this research field.

Using process evaluation and booster strategies for implementation success of school-based nutrition education and physical activity programs: The Brighter Bites Approach

Dr. Ru-Jye Chuang[1], Ms. Jacqueline Noyola[2], Mr. Mike Pomeroy[2], Ms. Katherine Hearne[1], Dr. Christine Markham[1], Dr. Shreela Sharma[1]

[1]UTHealth School of Public Health, Houston, TX, USA, [2]Brighter Bites, Houston, TX, USA

SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: School is an effective venue to improve children's diet and physical activity through health promotion programs, yet sustaining long-term, school-based program implementation can be challenging. This study aims to describe and evaluate the implementation strategies of the Coordinated Approach To Child Health (CATCH), a teacher-led coordinated school health program proven to improve dietary behaviors and prevent obesity among school children.

Methods: Brighter Bites is a 501c3 non-profit that provides sustained access to fresh produce plus nutrition education in the form of the CATCH program to low-income schools in 6 U.S. cities. CATCH implementation is evaluated annually at the end of each school year through teacher self-reported survey. Data from spring 2016 showed low CATCH implementation, hence Brighter Bites subsequently initiated several strategies to boost implementation, including: setting campus- and class-specific action plans, providing web-based access to CATCH materials and tracking system, providing monthly reports to school leadership, providing annual teacher training and ongoing technical assistance.

We used a serial cross-sectional study design to assess changes over time in implementation outcomes with teacher reported data from two timepoints - end of 2015-2016 (49 schools) and 2017-2018 (65 schools) school years. We used 22 questions to measure implementation on CATCH program activities (15 questions) and other non-CATCH nutrition and physical activity activities in the schools (7 questions). Percent implementation score was computed to standardize scores for each item in both CATCH implementation index and Overall implementation index (CATCH plus non-CATCH activities). Mann-Whitney U-test was used to compute significant changes in implementation indices scores between 2016 and 2018.

Results/Findings: We observed significant increases in %scores of various CATCH implementation activities from spring 2016 to spring 2018, including: identifying healthy foods for students (73.0-95.0, p<.001), posting CATCH/health-related work in classroom/hallways (39.3-50.8, p=.004), discussing CATCH/health-related message with parents (37.4-46.3, p=.026), and using recipes from curriculum or Brighter Bites (23.8-59.8, p<.001). We also observed significant increases in school-level Overall implementation index %mean score (35.6 to 43.6, p=.044), and non-CATCH implementation index %mean score (25.5 to 35.2, p=.002).

Conclusions: Our result suggests developing a comprehensive implementation toolkit was especially successful to sustain CATCH implementation efforts.

The optimisation of PACE: improving schools' implementation of a physical activity policy at scale

Ms. Cassandra Lane[1,2,3], Dr. Alix Hall[1,2,3], Prof. Luke Wolfenden[1,2,3], Mr. Adam Shoesmith[1,2,3], Dr. Nicole Nathan[1,2,3]
[1]School of Medicine and Public Health, University of Newcastle, Newcastle, Australia, [2]Hunter New England Population Health, Hunter New England Local Health District, Newcastle, Australia, [3]Hunter Medical Research Institute, New Lambton Heights, Australia

SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: The multi-strategy *Physically Active Children in Education (PACE)* intervention effectively increases schools' implementation of physical activity policies. However, PACE may be improved by enhancing its capacity to reach a larger portion of the population (scale-up) while reducing its relative cost. Our aim is to describe the optimisation process we are using to improve PACE for scale-up.

Methods: Optimisation is an emerging field within implementation science involving a cyclical and data-driven process to improve health interventions to achieve pre-specified objectives. The intent is to identify an intervention that is as effective as possible within the resource constraints of end-users (delivery providers and/or target setting). The optimisation of PACE involves sequential stages of research inclusive of randomised controlled trials (RCTs) conducted in NSW, Australia. Within each stage, quantitative and qualitative data from assessments of intervention effectiveness, costs and processes (e.g., acceptability, implementation and mechanisms of action) are used to identify opportunities to incrementally improve PACE for delivery at scale.

Results: Optimisation stage I comprised two randomised and controlled trials of PACE: (i) a 2017 pilot trial in 12 primary schools showed the feasibility and preliminary effectiveness of PACE for improving both schools' policy compliance and students participation in physical activity; (ii) a 2018 implementation trial in 62 primary schools established the effectiveness and cost-effectiveness of PACE as it was originally designed, for improving schools' implementation of a mandatory physical activity policy. Optimisation stage II involved a 2019 randomised and controlled noninferiority trial in 48 primary schools, exploring an adapted PACE model with reduced in-person contact from external support personnel. Findings showed that adapted PACE minimized the relative cost of delivery without adversely impacting on the effect.

Conclusion: The resultant 'optimised' PACE intervention is an effective, cost-effective and scalable model for service delivery. It may set precedence for other jurisdictions where physical activity policy implementation by schools remains an issue. Moreover, the optimisation of PACE is the first of its kind to apply an optimisation process to improve an implementation strategy; thus, providing important information for researchers and policy makers seeking to improve the impact of health interventions.

Which implementation strategies are essential for supporting schools' compliance with a physical activity policy? A mixed methods process evaluation

Ms. Cassandra Lane[1,2,3], Prof. Patti-Jean Naylor[4], Mr. Adam Shoesmith[1,2,3], Prof. Luke Wolfenden[1,2,3], Dr. Alix Hall[1,2,3], Dr. Rachel Sutherland[1,2,3], Dr. Nicole Nathan[1,2,3]

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Many effective public health implementation interventions employ multiple strategies however little is known about the relative contribution of each discrete strategy in achieving desired effects. A mixed methods process evaluation was conducted alongside a cluster randomized noninferiority trial to explore eight discrete implementation strategies used in a multi-strategy intervention (PACE) that increases schools' implementation of a physical activity policy. The objectives were to evaluate: (A) quantitatively, strategy dose, adherence, adoption and acceptability; (B) qualitatively, implementation barriers and facilitators; and (C) integrating both data sets, the importance of each discrete PACE strategy.

Methods: Participating schools were randomly assigned to receive PACE or an adapted model with reduced in-person contact from external support personnel. Data were collected from both active trials arms for between-group comparison. Descriptive statistics were produced using surveys of principals, in-school champions and teachers; and project records maintained by PACE project officers. Thematic analysis was performed using in-school champion and project officer interviews. Both data sets were integrated ('mixed methods') via a triangulation protocol.

Results/findings: Eleven in-school champions and six project officers completed interviews; 33 principals, 51 in-school champions and 260 teachers completed surveys. Regardless of group allocation, each strategy had high outcomes for dose (100%); adherence (≥95%); adoption (≥83%); acceptability (≥50%); and several implementation barriers and facilitators were identified within three broad categories: external policy landscape, inner organizational structure/context of schools, and intervention characteristics and processes. All strategies were considered important as use varied by school; however support from a school executive and in-school champions' interest were suggested as especially important for optimal implementation.

Conclusions: This study highlights the importance of both executive support and in-school champions for schools' successful implementation of physical activity policies. In particular, identifying and supporting an in-school champion with high power and high interest is recommended. This may reduce the need for intensive external support, thus improving intervention scalability. The PACE implementation strategies are commonly

employed to improve the implementation of policies and practices in community settings, therefore the findings may contribute to improving implementation of health interventions broadly.

O.3.22 - Food policy and taxes on sugar-sweetened beverage and red meat purchases

Room 155

May 21, 2022, 8:30 AM - 9:45 AM

Food policies for climate and health co-benefit: the impact of taxes and warnings on red meat purchases in a randomized controlled trial

Dr. Lindsey Smith Taillie[1], Mr. Maxime Bercholz[1], Ms. Carmen Prestemon[1], Ms. Isabella Higgins[1], Dr. Anna Grummon[2], Dr. Marissa Hall[1], Dr. Lindsay Jaacks[3]
[1]University of North Carolina-Chapel Hill, Chapel Hill, USA, [2]Harvard University, Boston, USA, [3]The University of Edinburgh, Edinburgh, United Kingdom

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The US is one of the world's top consumers of red meat. Red meat consumption is associated with increased greenhouse gas emissions and non-communicable diseases. Policies to reduce red meat intake are critical for mitigating climate change and improving public health. The purpose of this study was to test the impact of two common public policies, warning labels and taxes, on red meat purchases.

Methods: We recruited 3,518 US adults (≤18 years) to participate in a shopping task in a naturalistic online supermarket in November 2021. Participants were randomized to one of 4 arms: 1) control (no warning labels or taxes), 2) warning labels (health and environmental warning labels next to products containing red meat), 3) taxes (30% price increase on products containing red meat), or 4) combined warning labels and taxes on products with red meat. Participants were asked to buy 9 items from a pre-specified shopping list. The primary outcome was the proportion of items purchased that contained red meat. Secondary outcomes measured via a post-shopping survey included perceived health and environmental risks, perceived healthfulness, cognitive elaboration, behavioral intentions, and support. We used t-tests to compare the unadjusted group means.

Results: The sample was, on average, 48.8 years old, 60.4% were women, 82% white, and 42.8% had a university degree or higher. Compared to participants in the control arm, participants in the warning, tax, and combined arms had lower red meat purchases, with the largest reduction observed for the combined arm. On average, 39% (95% CI, 38-40%) of control arm participants' purchases contained red meat, compared to 36% (35-37%) in the warning arm, 34% (33-35%) in the tax arm, and 31% (30-32%) in the combined arm (p-values<0.01 for each intervention arm vs. control). The warning and combined arms had a bigger effect on perceived health risk and perceived sustainability of red meat items, while the tax and combined arms had a bigger impact on perceived cost.

Conclusions: Warning labels and taxes led to statistically significant decreases in red meat. Additional research will clarify the potential implications of such reductions for health and environmental outcomes.

Changes in food purchasing practices of French households during the first COVID-19 lockdown and associated individual and environmental factors

Mrs. Daisy Recchia[1], Mrs. Pascaline Rollet[1], Dr. Marlène Perignon[1], Dr. Nicolas Bricas[1], Dr. Simon Vonthron[2], Dr. Coline Perrin[2], Dr. Caroline Méjean[1]

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose : During COVID-19 lockdowns, mobility restrictions and closure of non-essential public places (restaurants, canteens, open-air markets etc.) affected peoples' food environment (FE) and thus their food purchasing practices (FPP). This study aimed to explore changes in FPP of French households during lockdown and their associations with individual and environmental factors.

Methods: In April of 2020 households from the Mont'Panier cross-sectional study (N=306), a quota sampling survey conducted in the south of France, were asked to complete an online questionnaire about their FPP during lockdown and other related factors, including their perceived FE (distance to closest food store, perception of increased food prices etc.). The objective FE (presence, number, density and proximity of multiple food outlet types) was assessed around participants' home using a geographical information system. Multiple correspondence analysis based on changes in frequency of use and quantity of food purchased by food outlet type, followed by a hierarchical cluster analysis resulted in the identification of clusters. Logistic regression models were performed to assess associations between identified clusters and households' sociodemographic characteristics, perceived and objective FE.

Results Five clusters were identified: *cluster "Supermarket"* (38% of the total sample)*,* made up of households who reduced frequency of trips, but increased quantity bought in supermarkets during lockdown, associated with lower incomes and the perception of increased food prices; *cluster "E-supermarket"* (12%)*,* in which households increased online food shopping with pick up at supermarket, associated with higher incomes; *cluster "Diversified"* (22%)*,* made up of households who reduced frequency of trips to diverse food outlet types, associated with the perception of increased food prices; *cluster "Organic Food Store"* (20%)*,* in which households did not change frequency of trips, nor quantity purchased in organic food stores, associated with being older (35-50 vs <35 years); and finally, *cluster "Producer"* (8%)*,* including households who regularly purchased food from producers, but mostly reduced these purchases during lockdown, associated with the presence of an organic food store within a 1-km walking distance around home.

Conclusion: This study highlighted diverse changes in FPP of French households during lockdown and overall more significant associations with perceived than with objective FE indicators.

Association between retailer marketing strategies and customer purchasing of sweetened beverages in convenience stores

Dr. Megan Winkler[1], Ms. Kathleen Lenk[2], Dr. Darin Erickson[2], Dr. Melissa Laska[2]
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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Marketing strategies for sugar- and artificially-sweetened beverages are pervasive features across convenience and other small food stores. Yet, few studies have been able to examine the ways different strategies (e.g., advertisements, product placement) and customers' cumulative exposure to them associate with planned and unplanned sweetened beverage purchases. The purpose of this study was to examine whether customers with a greater exposure to sweetened beverage marketing strategies are more likely to make sweetened beverage purchases and whether this varied by customer demographics (e.g., age).

Methods: We used objective (observed) purchase and store assessment data from a sample of 1604 food and beverage customers at 144 randomly-sampled stores in Minneapolis-St. Paul, MN, USA. Store assessments of sweetened beverage marketing included advertisements, in-store product placement, and shelf space. Sweetened beverage purchasing included any ready-to-drink sugar- and/or artificially-sweetened beverage of at least 4 fluid ounces. Associations between sweetened beverage marketing strategies and customer purchasing were estimated using mixed regression models, which controlled for customer demographics and accounted for customers nested within stores.

Results: Fifty-six percent of customers purchased a sweetened beverage and 14% also specified that it was an unplanned purchase. We found that customers were more likely to purchase a sweetened beverage when there were exterior store advertisements of unhealthy products (p<.0001) and when sweetened beverage advertisements were hanging from the ceiling (p<.0001). We also identified that customers with moderate and high cumulative exposure to any sweetened beverage retail marketing were significantly more likely to purchase sweetened beverages (51.2% and 54.9%, respectively) than those with lower exposure (34%) and that this effect was particularly prominent among men. There were no significant associations identified between the retail marketing strategies and making an unplanned sweetened beverage purchase.

Conclusions: Findings demonstrate that multiple strategies are needed to address sweetened beverage marketing and purchasing within convenience and other small food stores. Both priming and cumulative marketing approaches were associated with higher purchasing, and men were disproportionately influenced by these marketing tactics. Feasible and sustainable approaches are required from policymakers and other public health professionals to shift store environments away from cues that promote unhealthy beverage selections.

How do pictorial warnings affect purchases and perceptions of different sugar-sweetened beverage categories? An experiment with US parents

Ms. Aline D'Angelo Campos[1], Dr. Lindsey Smith Taillie[1], Ms. Gabriela Vatavuk Serrati[1], Dr. Anna H. Grummon[2], Ms. Isabella C. A. Higgins[1], Dr. Marissa G. Hall[1]

[1]University of North Carolina Gillings School of Global Public Health, Chapel Hill, North Carolina, USA, [2]Harvard T.H. Chan School of Public Health, Cambridge, Massachusetts, USA

SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Consumption of sugar-sweetened beverages (SSBs), especially beverages other than soda, remains high among US children, perhaps because parents may view certain SSB categories as healthier options. Evidence from tobacco control indicates that pictorial warnings reduce smoking, but few studies have assessed the impact of pictorial warnings on SSBs. This study examined the effects of pictorial warnings on parents' purchases and perceptions of different SSB categories.

Methods: Parents of children ages 2-12 (n=326, 25% Black, 20% Hispanic) participated in a shopping task in a naturalistic store laboratory in North Carolina. Participants were randomly assigned to an intervention arm (SSBs displayed pictorial warnings about type II diabetes and heart damage), or a control arm (SSBs displayed control labels). Parents then purchased a beverage for their child and completed a survey about their perceptions of different SSB categories.

Findings: Among participants in the pictorial warnings arm, 28% bought a sugar-sweetened beverage for their child, compared to 45% in the control arm (p<.001). Pictorial warnings led to the largest reductions in likelihood of purchasing fruit drinks (-10.6 percentage points), flavored milk (-3.7 percentage points), soda (-3.1 percentage points) and sports drinks (-1.3 percentage points). Pictorial warnings increased perceived added sugar content of SSBs compared to the control label, an effect that was largest for sweet teas (d=.22, p<.05), followed by smaller and non-significant differences for sports drinks (d=0.18, p>.05) and fruit drinks (d=0.16, p>.05). Pictorial warnings also led to lower perceived product healthfulness compared to the control label, an effect that was largest for flavored water (d=-0.34, p<.05), flavored milk (d=-0.28, p<.05), and sports drinks (d=-0.25, p<.05). Similarly, pictorial warnings led to the largest reductions in purchase intentions for sports drinks (d=-0.30, p<.05), flavored water (d=-0.24, p<.05) and sweet teas (d=-0.22, p<.05).

Conclusions: In our study, warnings had the largest effect on reducing purchases of fruit drinks, followed by flavored milk and soda. In terms of perceptions, the largest effects of warnings were generally observed on sports drinks, sweet teas, and flavored water. Future warning label studies should stratify analyses by SSB category to determine if findings are replicated in different contexts.

KEYNOTE BY PROF. VALARIE BLUE BIRD JERNIGAN

Community-based participatory interventions to supply Indigenous food sovereignty and health

Ballroom

May 21, 2022, 9:55 AM - 10:55 AM

Indigenous communities experience disproportionality high rates of food insecurity and chronic disease as a byproduct of settler-colonial activities, which included forced relocation to rural reservation lands and degradation of traditional subsistence patterns. Many Indigenous communities have worked to revitalize their local food systems by pursuing food sovereignty, regularly expressed as the right and responsibility of people to have access to healthy and culturally appropriate foods, while defining their own food systems. Food sovereignty is a promising approach for improving health. However, virtually no scientific interventions have incorporated this approach into community based research studies to improve diet and reduce chronic disease risk. This presentation will share the process and outcomes from two randomized control trial studies guided by a food sovereignty framework with Indigenous communities in Oklahoma.

Coffee Break and Posters P3

May 21, 2022, 11:20 AM - 12:20 PM

P3.01 Individual and country-level factors behind accelerometer-based physical activity in old age: A cross-national analysis of ten European countries

Dr. Tiia Kekäläinen[1], Assistant Professor Martina Luchetti[2], Prof. Angelina Sutin[2], Prof. Antonio Terracciano[3]
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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Both individual characteristics and country-level macro-environmental factors have been associated with self-reported physical activity. In old age, most physical activity comes from light daily activities that are better captured by accelerometers. This study aimed to investigate country-level differences in accelerometer-based physical activity within European countries. The association of both individual factors (i.e., personality traits and quality of life) and country-level macro-environmental factors (i.e., GDP and health expenditure) with physical activity were investigated.

Methods: The data from the Survey of Health and Retirement in Europe (SHARE) collected in 2019–2020 were used. Tri-axial accelerometers captured physical activity from a subsample in ten countries (n=855). Outcomes were overall physical activity level (average acceleration over a measurement period) and intensity distribution (intensity gradient from the log-log regression line between time and intensity, more negative gradient indicates less distribution). Personality traits were assessed with BFI-10 and quality of life with CASP-19. Country-level indicators (GDP per capita and health expenditure) were collected from World bank. Mixed-model regressions with two levels (individuals nested within country) were used for analyses. All analyses were controlled for age, gender, and education.

Results/findings: Average acceleration was lowest in Czech Republic (mean=23.38, standard deviation=1.67) and highest in Denmark (M=32.31, SD=1.63). Intensity gradient was lowest in Poland (M=-2.50, SD=0.14) and highest in Sweden (M=-2.34, SD=0.17). Mixed models indicated statistically significant variability (likelihood ratio tests p<0.01) in average acceleration (the intraclass correlation coefficient=0.035) and intensity gradient (ICC=0.019) between countries. None of the individual or country-level variables was associated with average acceleration. Higher quality of life (B=0.01, p=0.004) and GDP (B=0.001, p=0.035) were associated with higher intensity distribution.

Conclusions: Both accelerometer-based overall physical activity level and intensity distribution among older adults varied between European countries. Accelerometer-based measures of physical activity were unrelated to personality traits. Individuals with higher quality of life had higher intensity distribution. In addition, GDP was associated with higher intensity distribution.

P3.02 Knowledge, levels and barriers to physical activity amongst adults with chronic conditions.

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SIG - Primary Choice: A. Ageing
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Purpose: Cancer, heart disease, Chronic obstructive pulmonary disease, depression, diabetes, stroke, and hypertension are among leading causes of death and disability in US. Physical activity (PA) has proven to be a mechanism for both prevention and management of chronic conditions. Although there is a strong association of PA and reduced risk and severity of chronic conditions, PA statistics and barriers among individuals with chronic conditions are unknown. The purpose of this study was to determine the differences in knowledge of physical activity recommendations (KPA), PA levels and perceived barriers to PA in healthy individuals (HI) and those with one or more of the above-mentioned chronic conditions (CI).

Methods: As a part of a larger ongoing-RCT, 116 older adults (mean age-63.76) completed self-reported measures of KPA and Perceived PA Barriers scale and wore an accelerometer to assess PA levels. Participants who self-reported having at least one of the chronic conditions were categorized as CI.

Results: N=44 HI, N=72 CI were analyzed. No significant differences regarding age, BMI and KPA were observed between the groups. Independent T-test showed a significant difference in accelerometer-measured moderate-vigorous intensity PA levels (MVPA), (p=.015) with the HI groups reporting 21.7 mins/day as compared to the CI group reporting 13.7 mins/day. Common barriers reported in both groups were procrastination, lack of self-discipline, exercise not a priority, lack of interest, exercise is boring, not in routine and fatigue. The prevalence of these barriers were significantly different across groups, with higher percentage of CI reporting frequent encounter with these barriers. Overall 64% of CI reported procrastination, 58% lack of self-discipline and 26% fatigue, compared to only 27%, 32% and 4.5% HI respectively.

Conclusion: Results demonstrated that, although CI's report similar knowledge to PA guidelines as HI's, they engage in significantly lower levels of MVPA. They also reported more barriers related to time, motivation, and energy levels which could be a function of their chronic condition. Future interventions targeting CIs should incorporate an educational component to promote strategies for overcoming these barriers, such as encouraging light PA, frequent breaks in sedentary-time, and shorter bouts of MVPA throughout the day.

P3.03 Case Worker's Perceptions of Older Adults' Food Access During COVID-19: A Qualitative Examination

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Nutrition

Purpose: The study's aim is to understand case workers' perceptions of how the COVID-19 pandemic shaped older adults' access to food. Older adults disproportionately experience food insecurity and are understudied.

Methods: From February to May 2021, in-depth interviews were conducted with 21 professionals from 13 public and private social service agencies across Oregon. Participants served in program coordination, case management, client services, outreach, and community health worker roles. A semi-structured protocol included questions about the pandemic's impact on social service agencies and their clients, how the Supplemental Nutrition Assistance Program (SNAP) and other programs can be improved for older adults, and older adults' food security and SNAP participation. Qualitative data were analyzed using thematic analysis. Two authors identified data relevant to the research question, coded to identify case workers' perceptions of the specific ways in which older adults' access to food and services changed during the pandemic, and organized the codes into themes.

Results: Participants reported changes for older adults' food access during the pandemic, largely related to constraints resulting from social distancing. These reported changes occurred across three levels: 1) *Personal capacities* - Older adults faced new constraints concerning shopping, travel, or employment. Additionally, their access to and knowledge of technology became more important for accessing resources. 2) *Social support and relationships* - Older adults had more trouble accessing their social support networks and experienced isolation and loneliness. At the same time, these informal networks increased in importance as formal programs closed or suspended service. 3) *Formal safety net programs* - Many programs supporting older adults' access to food and related resources were discontinued or experienced interruptions; however, many programs were also expanded or innovated. Two program changes often cited by caseworkers as being of consequence to seniors' food access were the acceptance of verbal signatures for the Department of Human Services and increased SNAP minimum benefit amounts. However, it is important to note that innovation and expansion of public programs only benefit those who can access them.

Conclusions: Findings inform our understanding of food insecurity among older adults and how programs can support food access and overall wellbeing.

P3.04 Healthy Grandparenting Project: Differences in levels of physical activity, sedentary behaviour and body composition between caregiving grandparents, non-caregiving grandparents and non-grandparents

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Belgium has one of the highest prevalence rates of grandparents among people aged ≥50 years compared to other European countries. This rate will rise due to the increasing life expectancy and aging society. In general, the aging population is prone to not meeting physical activity (PA) and sedentary behaviour (SB) recommendations. As grandchild care comprises physical tasks and playful activities, this study investigated PA and SB levels as well as body composition in caregiving grandparents as compared to non-caregiving grandparents and non-grandparents.

Methods: In this case-control study, data collection was performed through home visits. Actigraphs GT3X(+) were used to objectively measure participants' PA and SB over a one-week period. Anthropometrics (i.e. height, weight, waist and hip circumference) and body composition (i.e. fat%, TANITA MC-780) were determined. ANOVA analyses were conducted to establish differences between the three subgroups in all outcome measures, while controlling for participants' age, sex and socio-economic status (SES).

Results: Two-hundred fifty-three participants were included in the analyses of which 98 were caregiving grandparents, 64 non-caregiving grandparents and 91 non-grandparents. The total sample (65.6 ± 5.8 years, 64.6% females) had a mean body mass index (BMI) of 25.7 ± 4.1 kg/m². Concerning PA, a significantly higher amount of light intensity PA was found between caregiving (1808.6 ± 413.8 min/week) and non-caregiving grandparents (1642.9 ± 528.4 min/week) ($p=0.004$) as well as between caregiving grandparents and non-grandparents (1670.4 ± 430.6 min/week) ($p=0.015$), whereas no differences were observed between non-caregiving grandparents and non-grandparents ($p=0.509$). No subgroup differences were found in MVPA ($p=0.275$), total counts ($p=0.638$), SB ($p=0.311$), BMI ($p=0.119$), waist-to-hip ratio ($p=0.169$) or fat% ($p=0.329$).

Conclusion: Caring for grandchildren on a regular basis might have a beneficial effect on levels of light intensity PA. Despite this beneficial outcome, no differences were found for MVPA, nor for SB or any body composition measures. Future research should examine whether caregiving grandparents obtained these higher amounts of light intensity PA in presence or in absence of the grandchildren.

P3.05 Women Who Walk Together

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Louisiana has some of the lowest rates of physical activity in the United States (ranking 46 out of 50, with an inactivity rate of 30.8%) and these rates are even lower for women. Understanding what motivates women to engage in physical activity can help researchers and public health practitioners address inactivity in this population. The purpose of this study is to describe walking group behaviors, facilitators and barriers for women who live small towns (less than 5,000) and consistently exercise with a partner.

Methods: Women were recruited through local Extension SNAP-Ed agents in 4 counties with high adult obesity rates (35-42%). Inclusion criteria included being at least 18 years old, and walking with a partner at least once a week for a minimum of 2 months. Due to COVID-19, women were given the option to complete the interview over Zoom, outdoors, or distanced with masks indoors. Seven interviews were completed, with a total of 14 participants, as well as a demographic intake form and informed consent. Interview recordings were transcribed and coded for like themes.

Results: Participants ranged in age from 33-77 years old, with a mean age of 54.2. Eleven participants were Black, 3 were White (all non-Hispanic). Three women reported participating in food assistance programs. Accountability and encouragement from their walking partner emerged as a primary theme in each interview. Themes also included lack of sidewalks and fear for safety from traffic as a barriers and parks with walking trails and personal concerns about chronic diseases as facilitators.

Conclusions: Social support is critical for maintaining physical activity habits among women in small towns. A walking partner was viewed as essential for maintaining consistency and remaining motivated. Promoting ways to meet other women to walk together through community partnerships, local libraries, or faith communities could be a low cost-way to increase physical activity levels in women living in small towns.

P3.06 Social Cognitive Theory and Physical Activity Interventions in African American Women: A Systematic Review

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Background: African American (AA) women report the lowest levels of physical activity (PA) compared to any other racial/ethnic and gender group and are more likely to be sedentary. This is significant given the pattern of health outcomes observed in AA women. AA women are disproportionately impacted by cardiometabolic diseases when compared to women of other racial/ethnic groups. Given the relationship between inactivity and disease risk, health educators must consider effective PA interventions in an effort to improve health outcomes in AA women and achieve health equity. Social Cognitive Theory (SCT) has been successfully used to explain the process of behavior change across several health behaviors, including PA behavior. This analysis addresses two specific research questions: 1) Do PA interventions targeting AA women influence SCT psychosocial variables; 2) Are increases in SCT psychosocial variables followed by PA increases in interventions for AA women?

Methods: A literature search of three databases was conducted using the following search terms – Social Cognitive Theory, Physical Activity, African American Women, Black Women – to identify behavioral interventions targeting PA in AA women.

Results: Our search returned 43 articles; 14 studies met search criteria and were included in this systematic review. The most frequently targeted SCT psychosocial variables were social support, self-efficacy, and outcome expectations. Social support and self-regulation/goal setting were the variables most frequently associated with increases in PA behavior.

Conclusions: Our systematic review revealed that social support and self-regulation were associated with positive changes in PA behavior. Future research should further explore the relationship between SCT psychosocial variables and PA in AA women. Culturally-tailored programming was incorporated into three of the studies we reviewed. Further investigation is needed to better understand the utility of culturally-tailored programs to promote PA in AA women. Given the relatively small sample sizes and short-duration of studies included in this review, larger and more long-term studies will be needed to better understand correlates of adoption and adherence of PA in AA women.

P3.07 A physical activity behavior change intervention for post-menopausal breast cancer survivors on aromatase inhibitors (PAC-WOMAN): Protocol and baseline preliminary findings from a multi-centric randomised controlled trial

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Aromatase inhibitors (AI) are frequently used to treat hormone-receptor-positive breast cancer. AI has multiple adverse effects, resulting in premature therapy discontinuation or switch. Physical activity (PA) is safe and can attenuate these negative effects. However, most cancer survivors fail to perform/sustain adequate PA levels, especially in the long-term. This study aims to test the long-term effectiveness and cost-effectiveness of two 4-month group-based interventions on promoting sustained changes in PA, sedentary behavior, and quality of life, by implementing a randomized controlled trial (RCT). We will also study the impact of both interventions on secondary outcomes like AI therapy continuation, treatment adverse events, disease-free survival, body composition, tumoral biomarkers, limb perimeters, joint amplitudes, physical (eg, strength, aerobic capacity, physical function) and psychosocial indicators (eg, body image, depression).

Methods: This is a 3-arm, 2-cohort, multi-centric, RCT, comprising a 4-month intervention and a 12-month follow-up. Group 1 – PAC – will have access to a brief group-based PA counseling (8 sessions, 90-minute each), provided in an autonomy-supportive way (based on Self-Determination Theory), and aimed at fostering self-regulation and sustained adherence to an active lifestyle. Group 2 – SEP – will receive a tailored structured exercise program encompassing aerobic, strength, and flexibility training, delivered in small groups. Patients allocated to the control group will receive the standard medical care plus a formatted informational packet containing general PA and health facts and will be offered the structured exercise program at the end of the study follow-up. We expect to enroll at least 100 (3:3:1 ratio) post-menopausal women (< 65 years), with hormone-receptor-positive breast cancer (stage I-III), on AI therapy for at least 1 month, and ECOG-Performance Status 0-1. Measures of objective and self-reported PA, quality of life, healthcare services, psychosocial, clinical and physical indicators, will be collected.

Results/Conclusions: Full study protocol and theoretical rationale, approved by the Ethics Committee, will be presented. Participant's recruitment and baseline assessments are ongoing. Preliminary baseline data of this

first of two cohorts will be presented. Results from this trial will help identifying cost-effective solutions that can be delivered by qualified exercise professionals and integrated in Health Care Systems.

P3.08 Nutrition Information & Intervention Preferences of Irish Cancer Survivors

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Introduction: At present, very little is understood about how best to deliver nutrition information and support to Irish cancer survivors. Ascertaining cancer survivors' specific needs and preferences regarding nutrition information delivery is an important step in the development and design of future health interventions in oncology. Therefore, the aim of this study was to explore the nutrition information needs of Irish cancer survivors and their preferences regarding intervention delivery.

Methods: This was a mixed methods study. An online survey was circulated to and promoted by cancer support groups and centres as well on social media. Focus groups were conducted with twenty individuals.

Results: The majority of individuals who completed the survey were female (n=50, 89.3%) breast cancer survivors (n=42, 75%). Eleven (19.6%) had received nutrition advice with 7 of these reporting that advice came from a dietitian. The majority have an interest in receiving nutrition advice (n=52, 92.9%), however there was variability in how this should be delivered. The most popular additional resource desired was recipes (n=26, 46.4%). In addition to nutrition there was an interest in information on improving sleep quality (n=35, 62.5%), how to make positive lifestyle changes (n=28, 50%) and access to cancer specific physical activity classes (n=27, 48.2%). The best time to deliver information was throughout the cancer journey (n=31, 55.4%). Time and motivation (both n=15,26.8%) were deemed to be the main barriers to taking part with the main facilitators being keeping healthy (n=42, 75%), and weight maintenance (n=31, 55.4%). Four themes emerged from the qualitative data; lack of nutrition guidance, abundance of misinformation, one size does not fit all and dietitians as preferred source of advice.

Conclusion: There was a keen interest in receiving nutrition advice regularly throughout the cancer journey. There was also an interest in additional information to support improvements in sleep and physical activity. It is clear however that one size does not fit all in terms of how this information should be delivered. Understanding the barriers and facilitators to accessing this information will ensure the development of useful and desired resources.

P3.09 Online nutrition information for cancer survivors

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Background: The current study aims to systematically review a comprehensive sample of websites in the English language that provide information on nutrition after a cancer diagnosis.

Methods: In consultation with cancer survivors and experts we developed search strings for an internet search (google incognito mode) to be completed in six English speaking countries (Ireland, UK, Australia, New Zealand, Canada, United States using the google specific search engine for each and the first 10 results for each page). Websites/pages were included if the links related to sites/content that provided information on health post diagnosis, in English and aimed at adults (aged 18+). To assess the quality of the websites the International Patient Decision Aids Standards (IPDAS) and JAMA were used. Flesch– Kincaid Reading Ease Score (FRES) and the Flesch–Kincaid Grade Level Score (FGLS) were determined using online software (www. readabilityformulas.com). useability was assessed using the Health Communication and Health Information Technology tool.

Results: In total, 720 links were found in the initial search with 159 of these eligible for inclusion. The majority of web-links eligible for review were Charity/Support/NGO type web-links (49.1%), originated from the USA (42.8%) and did not specify a particular cancer type (65.4%). Only one third (n=59, 37.1%) contained nutrition guidance however there was a lack of practical strategies for implementation. The majority of the websites/pages were not HON certified and were lacking in overall quality with a mean IPDAS score of 20.4/40 and JAMA score of 1/4. Readability also failed to meet ideal levels. In terms of usability, only 31% were usable for those with disabilities, 45% minimized vertical scrolling and 45% visually grouped related topics.

Conclusion: Cancer survivors seeking nutrition information online may find it difficult to locate advice, and where they do it is unlikely to contain guidance on how to implement the guidance into day-to-day life. This is a concerning finding, given the important role nutrition can play in cancer survivorship.

P3.10 Predefined domain specific embeddings of food concepts and recipes

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SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Nutrition

Objective: Learning high-quality domain word embeddings is critical for obtaining good performances in Machine Learning (ML) tasks. Typically, word embeddings are pre-trained on massive general-purpose data. However, for domain-specific applications, general-purpose embeddings learned are frequently inadequate. Although domain-specific tasks rarely have extensive in-domain corpora to train high-quality embeddings, embeddings trained on domain-specific corpora outperform those trained on general-purpose corpora. Hence, we provide a pre-trained corpus of domain specific embeddings of food concepts and recipes (by fusing food concept embeddings, with a heuristic defined using domain knowledge).

Methods: The data was accumulated from heterogenous publicly available recipe datasets. As these datasets came in different formats, data harmonization was necessary – defining a data format and transforming the datasets to fit that format. For the food concepts we obtain embeddings in two ways: applying word embedding algorithms on each word and merging the vectors; and applying paragraph embedding algorithms on the whole food concept. The recipe embeddings were obtained by fusing the food concept embeddings with a heuristic incorporating the quantities.

Results: For the food concept embeddings, the ingredients were needed, and for the recipe embeddings quantities and measurement units – all extracted using Natural Language Processing techniques on unstructured text. From the 2589277 ingredients contained in all datasets, after pre-processing, and lemmatization, 338824 unique ingredients were extracted, and food concept embeddings were learned on them. With embedding fusion on the food concept embeddings 230980 recipe embeddings were obtained. As one of the most important data information for ML tasks on food data is nutritional information, we enrich the data with nutrient values by mapping it to a nutrition database (FoodData).

Conclusion: As most recent work in ML takes advantage of textual representation using data mining and predictive techniques, we provide a predefined corpus of representations for food concept and recipes. With the captured semantic information in the embeddings the performance for domain-specific prediction tasks can be improved. Having such corpus reduces the development time of a ML pipeline for food predication tasks, by skipping the process of representation learning, and transferring the learned embeddings as input data in the modelling process.

P3.11 Weight loss among underserved patients improves weight-related quality of life: Results from the PROPEL pragmatic trial

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose. Over 40% of adults in the United States have obesity. Obesity is associated with leading causes of preventable death, including heart disease, and psychosocial challenges, including lower quality of life (QOL). Weight loss of 5-10% of body weight significantly improves health and quality of life, though these findings are primarily derived from studies conducted in centers of excellence. It is unclear if similar improvements in quality of life are achieved during pragmatic trials that treat underserved patients. The present analysis tested the hypothesis that, compared to a usual care (UC) control group, qualify of life would significantly improve among underserved patients who received an intensive lifestyle intervention (ILI) for weight loss.

Methods. Data from a 24-month pragmatic cluster-randomized trial were evaluated. Of 18 clinics enrolled, 9 were randomly assigned to provide patients with UC and 9 to deliver an ILI for weight loss (N=803). Assessments occurred at baseline and months 6, 12, and 24. Weight-related QOL was assessed with the Impact of Weight on Qualify of Life – Lite (IWQOL) and health-related QOL was assessed with the PROMIS-29. Using an intent-to-treat approach, change on the outcome variables was examined with a linear mixed effects multi-level model, with intervention group, clinic, assessment time, and their interactions included in the model.

Results. The sample was predominantly Black (67.3%) and female (84.4%). Mean$\pm$SD age and body mass index were 49.4$\pm$13.1 years and 37.2$\pm$4.7 kg/m^2, respectively. Weight loss at month 24 was significantly greater in the ILI (-4.99%) vs. the UC (-0.48%) group. Compared to UC, the ILI group experienced significant improvements in weight-related QOL, measured with the IWQOL's Total score and Physical Function scale, at months 6, 12, and 24. Self-esteem, measured with the IWQOL, increased significantly in the ILI vs. UC group at months 6 and 12. With one exception at month 6 (Social Functioning), change in PROMIS scores did not differ by group.

Conclusions. Weight loss induced by an ILI improved weight-related QOL among underserved patients in a pragmatic trial, extending findings from previous clinical trials. Improvements in health-related QOL were modest, possibly due to poor sensitivity of the PROMIS.

P3.12 Rural Play Streets implementation characteristics that promote sustainability: Qualitative findings from community partners

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Play Streets have demonstrated feasibility and physical activity benefit in rural U.S. areas, yet information is needed to identify implementation characteristics that promote sustainability. This study examined rural Play Streets implementation characteristics that can impact sustainability from local partners' perspectives.

Methods: Play Streets are community-led environmental initiatives where public spaces/streets are temporarily closed to create safe, low-cost physical activity opportunities.

This study explored perceptions of 16 local partners who implemented Play Streets in rural U.S. communities (rural-urban commuting area code ≥4.0) in the summers of 2017 and 2018. Participating communities were in Maryland, North Carolina, Oklahoma, and Texas. Eligible interview participants included Play Streets implementation team members. Semi-structured in-person individual (n=4) and group (n=5; 2-3 participants each) interviews were conducted in the fall of 2018. Interviews were recorded and transcribed verbatim. A coding protocol was developed collaboratively by two researchers. Transcripts were coded using iterative inductive and deductive approaches based on the Public Health Program Capacity for Sustainability Framework (NVivo). The coding process included peer review for maximum quality.

Results/findings: Characteristics perceived as facilitating Play Streets implementation aligned with the Public Health Program Capacity for Sustainability Framework: funding stability, political support, partnerships, organizational capacity, program adaption, and communication. In addition to capacity characteristics, results revealed that public health impacts (e.g., social, physical benefits) were both positive outcomes of Play Streets and factors that could influence future implementation and sustainability. For instance, partners identified community connectedness/engagement and availability of public spaces (e.g., recreational facilities, parks) as key to implementation. Participants noted community connectedness/engagement as reciprocally impactful, since it was noted as an impact of Play Streets implementation and also a motivator/facilitator for future efforts: "For me, it was more community. I mean, this year's overall thing was about community and what

each individual community, the resources they had within their community and that was kind of just a difference."

Conclusions: Play Streets implementation characteristics noted by community partners align with capacity factors known to impact sustainability. In addition to considering capacity characteristics, future research should examine the reciprocal role of public health impacts: as both outcomes and factors influencing sustainability.

P3.13 The influence of early- and late-maturation on 13- to 16-year-old adolescent boys' and girls' physical activity: Growth Study

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SIG - Primary Choice: F. Early care and education
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

It is well known that physical activity (PA) decreases dramatically during adolescence, thus indicating that maturation has an effect on adolescents' PA. However, only a few studies focused on the differences between early and late maturing girls' and boys' PA over a longitudinal period.

The aim of the study was to investigate the influence of early- and late-maturation on adolescent boys' and girls' PA during the mid-adolescence over a 3-year longitudinal period.

One hundred and thirty (58 girls and 72 boys) learners with a mean age of 13.08±3.40 years (girls) and 13.60±4.01 years (boys) at baseline, from one Quintile 5 High School were selected to participate in the 3-year longitudinal study. Gender groups were divided into early-, average- and late-maturing groups based on their maturation status (maturity offset score), classified by maturation differences of more than 6 months above or below the mean maturity offset score. Anthropometric measurements (ISAK protocol) and PA levels (PAQ-C Questionnaire) were used to collect the data. Basic statistics, independent t-testing (p<0.05), effect size (Cohan's d-value), breakdown and one-way ANOVA with a Tuckey adjustment was used to analyse the data.

Early developing girls and boys were taller, heavier, had longer sitting height, arm span and a higher BMI during baseline measurements. Early maturing groups in girls and boys were found to be more physically active, especially at a younger age. In Grade 8 (13 years of age), small to medium practically significance was found between early and late maturation groups' PA, although these findings were statistically insignificant (p>0.05), these differences decreased (p>0.05) in both girls and boys during Grade 10 (15-16 years of age). Late developing groups also surpassed the early developing groups in certain aspects of PA with increased age (p>0.05, d>0.5).

Maturational differences do have an influence on girls' and boys' PA respectively. Although early maturation initially is beneficial to PA, it seems that late maturation has a better lasting effect on higher PA levels in boys and girls at a later age. As a result, boys', and girls' PA respectively, can only be adequately compared after having reached puberty

P3.14 The effects of the first Covid-19 lockdown on motor skills of Dutch primary school children

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SIG - Primary Choice: F. Early care and education
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Motor skills are important for the physical, social and cognitive development of young children. The development of these motor skills is stimulated by physical activity. However, due to the Covid-19 pandemic, primary schools were closed and organized sports were cancelled. Hereby possibilities for guided physical activities (PhysicalEducation and organized sports) were diminished. In Amsterdam sport participation (4 times per month or more) for children aged 5-12 years was 49% instead of the expected 81%. In contrast, the group of children who did not participate in sports increased from the expected 10% to the actual 42%. Possibly, this could result in a decreased development of motor skills in young children. Therefore, the aim of this study is to investigate the effects of the first Dutch lockdown on the motor skills of Dutch primary school children.

Methods: We compared data on the motor skill development from 6 years old (6,59 ± 0,43) to 7 years old (7,54 ± 0,40) for three groups: 2017 to 2018 (control group 1 (CG1), n=293), 2018 to 2019 (control group 2 (CG2), n=259) and 2019 to 2020 (lockdown group (LG), n=239). Motor skills were measured using the 4 Skills Test and led to a score of Motor Age which was used to determine the Motor Lead (ML) (Motor Age –Calender Age). A 3x2 RM-ANOVA-analysis was carried out to compare the 3 groups over time.

Results: Preliminary results show that the change in ML between ages 6 and 7 years is dependent on the group (change ML: 0,01 years, 0,14 years, and -0,09 years for CG1, CG2, and LG, respectively ($p=0,019$). The LG showed less progress in ML than CG2 ($p=0,016$), but not than CG1 ($P>0,05$).

Conclusions: The results indicate that the imposed lockdown restrictions might have had a negative effect on children's motor skills development. Further analysis is needed because there is considerable variation in the change in ML between years, which could mean that the observed difference between CG2 and LG is within the standard variation in ML-change. Therefore, we will extend our analyses to both extra control groups and a second lockdown group.

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ABSTRACT BOOK

P3.15 Food Insecurity Associated with Increased Stress and Frequency in Eating Out among Households with Children during the COVID-19 Pandemic

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose The COVID-19 pandemic impacted life for many households, disrupting access to adequate food and increasing economic stressors. These impacts may have downstream effects on food choice and perceived stress, especially for parents; yet existing evidence is limited. Restaurant eating behavior, in particular, is associated with poor diet quality and chronic disease risk. This study sought to determine associations between food insecurity, parental stress, and restaurant eating behaviors during the COVID-19 pandemic.

Methods A cross-sectional survey among low-income parents of 2-11 year-olds who frequently ate food from restaurants prior to the pandemic was administered through the participant sourcing platform, CloudResearch, from November 2020 through February 2021 (n=1480). Participants reported how often they went out to eat in the last week and what their child ordered at the "most recent" restaurant they visited. Child orders were classified as healthy vs unhealthy for entrees, sides, and beverages. The validated Hunger Vital Signs screener measured food insecurity and the validated perceived stress scale measured stress. Chi2 tests were conducted to compare differences in perceived stress by food insecurity status. Negative binomial regressions tested associations between food insecurity and frequency eating food from restaurants, adjusting for stress, sociodemographics, and reasons for eating from restaurants. Child ordering behaviors were analyzed through logistic regression.

Results: About 82% of respondents reported food insecurity. Preliminary findings demonstrate that parental stress levels were significantly higher among food insecure individuals compared to food secure individuals (p=0.0000). Food insecure individuals also reported increased frequency eating food from restaurants when adjusted for covariates (IRR=1.129, p<0.05). Food insecurity was not significantly associated with child food orders.

Conclusions: Outreach services targeting food insecure families should consider higher levels of stress these families experience and higher rates of eating food from restaurants compared to food secure families. Given that food insecurity and stress are associated with reduced diet quality as well, higher rates of eating food from restaurants may further increase risk of weight gain and related chronic diseases for both parents and children. Efforts to improve diet quality in this population should consider restaurant eating behaviors.

P3.16 Feeding in the context of sibling children: A grounded theory study

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Interventions that promote responsive feeding in early childhood have been shown to reduce obesity risk. However, interventions mostly target parent-child dyads without considering the complexities of feeding multiple children within a family unit. This study extends existing knowledge on feeding relationships by exploring how mealtimes are enacted in families with more than one child.

Methods: This mixed-methods study was undertaken in South East Queensland, Australia. Preliminary data were collected from *n*=15 families, comprising of mealtime observations, semi-structured interviews, field notes, and memos. Data were analysed using constructivist grounded theory methods of open and focused coding, and constant comparison.

Results: The sample included two-parent households with siblings aged 12 to 67 months (mean age difference=24 months). A model was generated to explain transactional feeding processes in the sibling context. Parents may adapt their feeding practices in response to the individual characteristics of siblings, and mediate dynamics between them to facilitate or limit their food intake. Within a family unit, how parents feed each sibling is also interdependent, operating through processes such as resource dilution and learnt experience, and eliciting certain spill-over effects.

Conclusions: The findings elucidate the complexities of feeding that give shape to the overall family food environment. The theoretical model emerging from the data highlights intricate processes that may explain how parents coordinate mealtimes and manage feeding in the context of siblings. This model has the potential to inform the design of family-based feeding interventions that aim to nurture the development of healthy eating behaviours during early childhood.

P3.17 "That sort of went out the window when COVID hit": A qualitative exploration of family health behaviours during changing pandemic restrictions

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: The purpose of this study was to gain an understanding of child (12-14 years) health behaviours prior to the COVID-19 pandemic, during strict pandemic restrictions (March – May 2020), and following the loosening of pandemic restrictions (June 2020) through qualitative interviews with children and their parents.

Methods: Interviews with 29 parent/child (mean age: 13.3, 51% female) dyads were conducted via Zoom in summer 2020. Interviews were transcribed and data were categorized into health behaviour (diet, screen time, physical activity), relevant family information (parenting practices, family context), social interactions, emotional state, and pandemic-specific information. Following the categorization of information, we used thematic analysis to identify commonalities.

Results: Thematic analysis revealed that strict pandemic restrictions negatively impacted physical activity and screen behaviours in most of our sample of children, but mixed results around eating behaviours. Six major themes were identified (1) shift to permissive parenting, (2) pandemic closure impact, (3) pandemic fear, (4) lack of schedule, (5) increased family time, and (6) an opportunity for autonomy. Parents described shifting to a more permissive parenting style, particularly around screen behaviours due to concerns around their children's mental health or a lack of familial resources to manage screen use. Closures of schools and recreation facilities reduced physical activity, which parents supplemented with co-participation in family walks. Activity intensity (if not time) decreased for most children. During strict restrictions, there was an increase in home cooked meals, and reduced purchasing of meals and snacks due to fears around COVID-19. However, diet quality went down for some children because food was always available to them. When restrictions were loosened physical activity and screen behaviours improved for most children, but did not reach pre-pandemic norms. Purchasing of meals and snacks increased, but also did not reach pre-pandemic heights.

Conclusion: COVID-19 restrictions resulted in deterioration of health behaviours in most children, with greater impacts on physical activity and screen behaviours. Greater fear around the pandemic resulted in greater impacts in these health behaviours when parents restricted their children's independent mobility. Families will need support in resuming and improving health behaviours as the pandemic evolves and eventually subsides.

P3.18 Neighborhood Environment and Meeting 24-hr Movement Guidelines among Children

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: All

Background: Meeting 24-hour movement guidelines (24hr-MGs, MVPA >1 hour, Sleep duration 9-11hrs, Screen time duration<2 hours) is associated with positive health outcomes among children(5-17 years). Recent literature shows reduced structure may impact changes in children's movement behaviors between the school year and summer. This observational study estimated changes in the prevalence of meeting 24hr-MGs among elementary-age children at three, structurally different timepoints (Fall 2020 [remote learning-pandemic], Spring [in-person school-pandemic] and Summer of 2021) during the COVID-19 pandemic. Due to school closures, the effect of neighborhood environment on 24hr-MG adherence was explored.

Methods: Children's (n=841, mean age=8.4(1.7), 50% female, 33% Black) physical activity and sleep patterns were estimated using Actigraph GT9X for 14-days at each timepoint. Parents completed daily time diaries via SMS-text message for 14-days to report child's total recreational screen time (ST). Children were classified as meeting each guideline if the daily guideline was met on $\geq$75% of measured days at each timepoint. Area Deprivation Index (ADI) was used to group (i.e., 1-3 Low-ADI; 4-7 Mid-ADI; 8-10 High-ADI) GIS-mapped census blocks by socioeconomic disadvantage. The prevalence of meeting combinations of guidelines (e.g. at least 3, 2, or 1) are reported by ADI at each timepoint.

Results: On measured days (mean=11.5[3.7]), few children met all three 24hr-MGs (Fall=2%, Spring=5%, Summer=2%). Across timepoints, a greater proportion of children living in Low-ADI neighborhoods met at least two 24hr-MGs than children in Mid/High-ADI neighborhoods (Fall: Low-ADI[22%], Mid-ADI[7%], High-ADI[13%]) (Spring: Low-ADI[29%], Mid-ADI[14%], High-ADI[12%]), (Summer: Low-ADI[21%], Mid-ADI[13%], High-ADI[15%]). Marginal differences in meeting at least one 24hr-MG were observed (Fall: Low-ADI(37%), Mid-ADI[34%], High-ADI[28%]) (Spring: Low-ADI(36%), Mid-ADI[36%], High-ADI[34%]), (Summer: Low-ADI(37%), Mid-ADI[35%], High-ADI[34%]).

Conclusion: Consistent with previous literature, few children met all three 24hr-MGs. Notably, the prevalence of children who met at least two 24hr-MGs was considerably impacted by neighborhood socioeconomic disadvantage and disruptions in school schedules. These findings suggest that transformative community-level interventions are needed to promote children's adherence to 24hr-MGs throughout the year.

P3.19 Adverse Childhood Experiences and Obesogenic Behaviors Among a Representative Sample of U.S. Children and Adolescents

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Sleep

Background: Adverse childhood experiences (ACEs) are stressful traumatic events experienced in childhood or adolescence. ACEs are associated with obesity risk and psychosocial conditions in childhood and subsequent adulthood. Less is known regarding how ACEs impact obesity-contributing behaviors (i.e., sleep and screen use). The purpose of this study was to examine the association between Parent-reported ACEs and their children's obesogenic behaviors (sleep and screen time) in a representative sample of U.S. children and adolescents.

Methods: This study utilized data from the 2019-2020 National Survey of Children's Health, with a sample of 70,553 aged 6-17 years. Separate multinomial logistic regressions were used to examine the odds of meeting screen-time and sleep guidelines given a reported total ACE score. A secondary analysis explored the exposure to individual ACE measures and each outcome of interest.

Results: Of the final analytic sample, 17,320 children (48% female, 38% non-White) experienced two or more ACEs, representing 24% of the final sample. Parents reported that covering basics such as food and housing was the most prevalent ACE (41%). Crude models show that children and adolescents with no ACEs are more likely to meet the sleep (OR 2.00 95%CI = 1.83, 2.19) and screen-time (OR 2.92 95%CI = 2.63, 3.25) guidelines compared to children with two or more ACEs. After adjusting for race/ethnicity, sex of the child, highest education in the household, and child age, we found that children and adolescents with no ACEs are significantly more likely to meet the sleep (OR 1.70 95%CI = 1.54, 1.87) and screen-time (OR 1.73 95%CI = 1.54, 1.96) guidelines compared to children with two or more ACEs. Finally, when examining individual ACEs independently and each outcome (i.e., sleep, screen-time), we found that each of the nine ACEs captured was significantly associated with a 20-60% reduction in odds of meeting both screen and sleep guidelines.

Discussion: Parent-report of children and adolescents meeting recommended sleep and screen-time guidelines are associated with previous exposure to trauma. Screening for ACEs may better inform interventionists and practitioners when attempting to improve obesogenic behaviors among children and adolescents.

P3.20 Effects of the Sleep SAAF Responsive Parenting Intervention on Rapid Infant Weight Gain: A Randomized Clinical Trial of African American Families

Dr. Justin Lavner[1], Dr. Jennifer Savage[2], Dr. Brian Stansfield[3], Dr. Steven Beach[1], Ms. Michele Marini[2], Ms. Jessica Smith[1], Ms. Megan Sperr[1], Dr. Tracy Anderson[1], Dr. Erika Hernandez[2], Dr. Amy Moore[2], Dr. Alice Caldwell[3], Dr. Leann Birch[1]

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Sleep and nutrition

Purpose: Responsive parenting (RP) interventions such as INSIGHT (Paul et al., 2014) reduce rapid infant weight gain, but their effect for underserved populations is largely unknown. The Sleep SAAF (Strong African American Families) study is a two-arm randomized clinical trial for primiparous African American mother-infant dyads that compares an adapted version of the INSIGHT RP intervention to a child safety control. Here we report on intervention effects on rapid infant weight gain during the first 16 weeks of life and trial implementation, including recruitment, retention, participant engagement, and intervention fidelity.

Methods: Families were recruited from a mother/baby nursery shortly after delivery. Community research associates (CRAs) conducted two intervention home visits at 3 and 8 weeks postpartum, and data collection home visits at 1, 8, and 16 weeks postpartum. Conditional weight gain (CWG), the primary outcome, and upward crossing of 2 or more weight-for-age major percentile lines were calculated.

Results/findings: Among the 212 mother-infant dyads randomized, 194 completed the trial (92% retention). Randomized mothers averaged 22.7 years, 10% were married, and 49% participated in the Supplemental Nutrition Assistance Program (SNAP). Adjusting for covariates, mean CWG was lower among RP infants (-0.10, 95% CI [-0.41, 0.20]) compared to the control group (0.14, 95% CI [-0.16, 0.45]), reflecting non-significantly slower weight gain (p=0.14, effect size d=.23). RP infants were also nearly half as likely to experience upward crossing of weight-for-age percentile lines (14.1%) compared to control infants (24.2%), p=0.09, odds ratio=1.94 (95% CI [0.91, 4.13]). Implementation data revealed that participating families were engaged in the intervention visits and CRAs demonstrated high levels of fidelity to intervention materials.

Conclusions: Findings show that RP interventions can be successfully implemented among African American families while suggesting the need for modifications (e.g., intervention content, dose, duration) to yield stronger effects on infant weight outcomes. Ongoing work from the Sleep SAAF trial examining group differences in sleep, soothing, and feeding outcomes will advance understanding of the RP intervention's effects and inform future studies aimed at promoting healthy development and preventing obesity among African American children.

P3.21 Recruiting and Retaining Latino Parents in Child Weight-Related Studies: A Systematic Review

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Numerous barriers exist that prevent many Latinos from engaging in research studies including acculturation status, language proficiency, time, trust, and cultural values. Multiple recruitment and retention strategies are used to increase Latino participation in health research, including person-to-person recruitment, culturally tailoring interventions for the sample population, and trust-building. Understanding the recruitment, retention, and engagement practices of Latino parents is critical to improve intervention effectiveness in studies that address Latino children's weight-related behaviors. Thus, the purpose of this study is to summarize the current literature regarding recruitment and retention in Hispanic/Latino child weight-related interventions.

Methods: Literature searches were conducted from six databases: CINAHL, Cochrane, ERIC, PubMed (MEDLINE), PsychInfo, and SocIndex. Two reviewers independently screened titles/abstracts and full texts for inclusion; any disagreements were resolved by a trained third reviewer. Of the 1,692 articles pulled from the databases, 19 were included in the final analysis.

Results: Recruitment duration ranged from 8 to 36 months, with an average enrollment of 5% for Latino fathers. Recruitment locations included local hospitals/health clinics (40%), schools (20%), community organizations (20%), schools (20%), social media (4%), and WIC/SNAP offices (16%). Recruitment strategies were consolidated into three categories: Direct-Personal, Direct-Not Personal, Indirect. Direct-personal recruitment strategies included *promotoras*, word-of-mouth, telephone calls, and community events. Direct-not personal recruitment strategies incorporated targeted messages to a specific audience directly, but did not include any personal contact (e.g., email, letters). Indirect recruitment strategies incorporated broad-reaching, untailored messaging techniques that did not include personal contact (e.g., flyers/brochures, newspaper advertisements, posters, websites, radio commercials). Indirect recruitment was most frequently used. Retention at the end of the intervention was reported by all 19 studies (average retention rate of 79%) and three studies reported retention rates at the end of the study follow-up (76% retention).

Conclusions: Latino fathers are not equally represented in child weight-related studies, which negatively influence our understanding of the true etiology of child obesity. Future research needs to address barriers and facilitators for Latino fathers to increase effective intervention delivery. This may include recruitment at locations that Latino fathers frequent, along with strategies that specifically target men, including personal contact at recruitment locations.

P3.22 Latino Fathers' Stress and their Children's Obesity Risk: An Ecological Momentary Study Rationale and Protocol

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: The majority of parent-based interventions address maternal practices and behaviors, excluding fathers and their role within the family. Failure to assess fathers' parenting practices leaves a critical gap in understanding the etiology of childhood obesity. Additionally, there is little to no research examining how fathers' stress may contribute to obesogenic behaviors in children. The purpose of this pilot project is to evaluate the effects of Latino fathers' stress and parenting behaviors on their child's dietary, physical activity, and sedentary behavior over the course of a single-wave, 7-day ecological momentary assessment (EMA) study.

Methods: Latino father-child participants (n= 50 dyads, children ages 8-12 years) will be recruited using snowball sampling methods, including church services, men's faith groups, social media, and email fliers shared through elementary and middle schools. Study participants will complete a 7-day, single-wave EMA study that includes additional measures of salivary cortisol, anthropometric measures, 24-hr dietary recalls, measures of parental support of child healthy eating and physical activity, accelerometry, and paper surveys. The EMA protocol will include up to 4 prompts per day on weekdays in the afterschool hours (3 PM- 9 PM) and up to 8 prompts per day on weekend days (8 AM- 9 PM).

Results: Multi-level modeling through random-effect regression models will be used to test the within-day effects of father's stress on children's obesogenic behaviors within any given day, taking into account clustering of observations within persons. Outcomes will be children's dietary behaviors and time spent sedentary and in physical activity (measured through EMA, accelerometry, and 24-hour diet recalls) in specified time windows (+120 min., +180 min., +240 min.) after fathers' EMA survey or saliva collection. Between-subject and within-subject predictors will allow distinction of time-varying predictors and the ability to examine temporal effects.

Conclusions: The results of this study will inform future R01 observational studies utilizing EMA to explore triadic relationships amongst parents and their children. Future work could qualitatively examine how to identify challenges related to parenting and supporting child healthy behaviors, stress and its impact on parenting, and best practices for recruitment and retention of Latino fathers in child health studies.

P3.23 Characterizing household food security status, perceived neighborhood food environment, and food shopping behaviors among U.S. Hispanic/Latino families using latent class analysis

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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: U.S. Hispanic/Latino households disproportionally experience food insecurity, a risk factor for poor diet and diet-related chronic diseases. Perceived food environments are associated with food security status and food purchasing behaviors in U.S. Hispanics/Latino households. However larger, heritage-diverse data are needed to inform generalizable strategies to promote food security, diet quality, and health. We sought to identify latent food security-environment-shopping classes among a sample of U.S. Hispanic/Latino households with youth (8-16y).

Methods: We used cross-sectional data from the multisite HCHS/SOL Youth Ancillary Study (n=1020 households). Caregivers responded to the 18-item Household Food Security Survey; we categorized each household as 1) high, 2) marginal, 3) low, or 4) very low food security. Caregivers also responded (from strongly disagree to strongly agree) to a 5-item questionnaire on perceived neighborhood availability, selection, and affordability of fresh produce and low-fat products. Caregivers reported typical shopping frequency (from never to always) at five store types: supermarkets, ethnic food stores, non-ethnic food stores, convenience stores, and farmers' markets. We identified the best-fitting solution of latent classes by examining standard fit criteria in Mplus.

Results: We identified a 6-class solution: three classes of food-secure shoppers and three classes of shoppers at mixed food security levels. Class 1 (21.2%) were food-secure supermarket shoppers with perceived high-quality (availability and selection), affordable food environments. Class 2 (7.4%) were food-secure mixed food store shoppers (non-ethnic and ethnic food stores, convenience stores, and farmers' markets) with perceived high-quality, expensive food environments. Class 3 (18.2%) were food-secure supermarket and ethnic food store shoppers with perceived medium-quality, somewhat affordable food environments. Class 4 (17.0%) were mixed food security supermarket shoppers with perceived high-quality, somewhat affordable food

environments. Class 5 (21.1%) were mixed food security supermarket shoppers with perceived high-quality, expensive food environments. Class 6 (15.2%) were mixed food security convenience store shoppers with perceived low-quality, expensive food environments.

Conclusions: U.S. Hispanic/Latino households with youth 8-16y demonstrated distinct combinations of food security status, perceived neighborhood food environments, and food shopping behaviors. Future research should investigate these relationships to inform multi-level, targeted approaches to promoting food security, diet quality, and health equity among U.S. Hispanic/Latino families.

P3.24 Do first-time parents of one- to two-year-olds in the UK use portion size guidance? Qualitative exploration of portioning practices and awareness of portion size guidance

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Aim: The study aimed to explore parental awareness of and opinions on six portion size guidance resources for feeding preschool children in the UK. The study also aimed to understand the portioning practices of first-time parents of one- to two-year-olds and the factors influencing these practices.

Background: Consumption of large portions has been prospectively associated with excessive weight gain during the preschool years. However, little is known about how first-time parents decide the portions to serve their preschool children or whether they follow portion size recommendations.

Methodology: Online interviews with first-time parents of one- to two-year-olds were conducted in the UK. During the interviews, parents were shown images of six portion size guidance resources to facilitate discussion. Data was analysed in NVivo using Reflexive Thematic Analysis.

Results: 27 interviews with first-time parents were conducted (25 mothers, 2 fathers). Most first-time parents did not recognise the six portion size guidance resources. Parents liked when resources were short, concise, used bold colours and images of food portions, and were available in a range of accessible formats. However, most parents expressed they preferred to be child-led rather than follow the portion size recommendations within guidance resources. First-time parents used dishware and package size (physical indicators of portion size), as well as experience of previous feeding occasions to decide served portions, rather than following guidance recommendations. Parents used a number of practices along a spectrum from encouraging self-regulation of intake to restriction of foods. These practices were influenced by the food type, child appetite and hunger, and parental concerns about feeding.

Conclusions: Portion size guidance resources available online in the UK have not been effectively disseminated to reach parents and may not be the most effective strategy to promote age-appropriate portion sizes. Future research should focus on promoting age-appropriate portions and healthy weight gain through the use of dishware and packaging, which aligns with parents' current portioning practices.

P3.25 Impact of Behavioral-based Interventions on Cardiometabolic Outcomes among Youth at-risk for Diabetes: A Systematic Review

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: All

Purpose: The aim of this systematic review was to examine the impact of behavioral-based interventions on cardiometabolic outcomes (weight status, glucose, HbA1c, blood pressure, cholesterol) among youth at risk for diabetes.

Methods: This systematic review was guided by the Preferred Reported Items for Systematic Reviews and Meta-analyses and managed using Covidence, a systematic review workflow platform. Searches across four online databases in October 2021 using key terms including: type 2 diabetes mellitus, cardiometabolic outcomes, behavioral intervention, diet, and child were conducted. Eligible studies were published between September 2011 through September 2021, included youth 6-12 years-old at-risk for diabetes, implemented a behavioral-based intervention, had a randomized study design, and included ⏴1 cardiometabolic outcome. If reported, dietary quality data were extracted, but did not impact inclusion criteria. Two reviewers independently screened, reviewed, and extracted data. Any disagreements were solved by a third reviewer. Risk of bias was assessed using the revised Cochrane risk-of-bias tool for randomized trials.

Results: Of the 2,386 records identified, 8 met inclusion criteria. Studies ranged from 10 weeks to 24 months in length with sample sizes ranging from 53-247 for participants who engaged in the intervention. All studies included measures of weight status with only three finding significant between group differences. Five studies assessed fasting glucose and three assessed HbA1c, none found significant changes within or between groups. Of the four studies reporting blood pressure outcomes, one found significant between group difference for systolic blood pressure. Two studies reported cholesterol and found no changes. No studies included measures of dietary quality. Five of the eight studies had 'some concerns' in terms of bias and three had 'high' risk of bias.

Conclusions: These findings suggest that behavioral-based interventions can change weight status in youth at-risk for diabetes; however, evidence of further health effects such as cardiometabolic outcomes remains limited. Examining more intermediate outcomes such as diet quality may help elucidate the lack of cardiometabolic outcomes.

P3.26 Association between Leisure-Based Screen Time and Sleep Quality among Adolescents during the COVID-19 Pandemic

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Sleep

Purpose. The COVID-19 pandemic would have contributed to increase adolescents' leisure-based screen time (LBST). Excessive screen time would be associated with sleep problems, and inadequate sleep would be linked to physical and mental health issues among adolescents. The objective of this study was to verify if LBST was associated with sleep quality among adolescents during the COVID-19 pandemic.

Methods. Data collection took place in four high schools in one region of Quebec (Canada) from the end of April to mid-May, 2021. LBST was measured using the validated Screen-Time Based Sedentary Behavior Questionnaire. A question asking adolescents if they often use multiple screens simultaneously was added to verify if measuring time spent using different screens separately could overestimate LBST. Sleep quality was measured using the validated short version of the Adolescent Sleep Wake Scale. French versions translated by a certified translator of both questionnaires were used given our population was French-speaking. A linear regression analysis was computed to determine if LBST was associated with adolescents' sleep quality.

Results. A total of 258 French-speaking adolescents answered the questionnaires on LBST and sleep quality. Adolescents (14-18 years; 66.3% girls) reported a mean of 5 hours and 52 minutes/day of LBST. Only 5.0% of participants mentioned never using multiple screens simultaneously and 4.7% respected the Canadian public health recommendation of a maximum of 2 hours/day of LBST. Sleep quality's mean score was 4.03 ± 0.87 on a maximum of 6, suggesting good sleep quality. LBST ($\beta = -0.57$; $p < 0.0001$) and being a boy ($\beta = 0.47$; $p < 0.0001$) were significantly associated with sleep quality while age was not ($p = 0.3510$), and this model explained 11% of the variance. Boys reported better sleep quality compared to girls (4.19 ± 0.93 vs. 3.95 ± 0.83, $p = 0.0364$).

Conclusions. To our knowledge, this is the first study on the association between LBST and sleep quality in adolescents during the COVID-19 pandemic. LBST was high and it was negatively associated with adolescents' sleep quality. Girls also seemed at higher risk for poorer sleep quality. Public health interventions during and after the COVID-19 pandemic could target LBST—and especially girls—to possibly improve sleep quality and promote optimal physical and mental health in adolescents.

P3.27 Physical activity volume and intensity distribution profile in relation to bone, lean and fat mass in children: cross-sectional findings from the Physical Activity and Nutrition in Children Study

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Physical activity volume and the distribution of physical activity intensity may provide a novel comprehensive profile for bone mineral content, lean mass, and fat mass. This study aimed to assess the physical activity volume and intensity distribution profile with total-body-less-head bone mineral content, lean, and fat mass in pre- and early-pubertal children.

Methods: This study utilised data from the Physical Activity and Nutrition in Children (PANIC) Study, an ongoing longitudinal study in a population sample of 290 Finnish children (290 children (158 females) aged 9 to 11 years). Physical activity was assessed with Actiheart, a combined heart rate and movement sensor, and the uniaxial acceleration was used to calculate average-acceleration (a proxy metric for physical activity volume) and intensity-gradient (a metric of physical activity intensity distribution). Linear regression was used to examine the independent and interactive associations of physical activity volume and intensity with dual-energy X-ray absorptiometry assessed total-body-less-head bone mineral content, lean, and fat mass.

Results: In females, physical activity volume was positively associated with bone mineral content (unstandardised regression coefficient (ß) = 0.26, p = 0.035) but not with lean or fat mass. Physical activity intensity was not associated with any outcome in females. In males, physical activity volume was positively associated with bone mineral content (ß = 0.47, p = 0.002) and lean mass (ß = 7.33, p = 0.014), and negatively associated with fat mass (ß = -20.62, p = 0.013). Physical activity intensity was negatively associated with bone mineral content in males (ß = -0.13, p = 0.015), and was not associated with lean or fat mass. There was no interaction between physical activity volume and intensity in females or males for any outcome.

Conclusions: In conclusion, a greater volume of physical activity may be associated with improved bone mineral content in females and males, and with increased lean mass and reduced fat mass in males. The volume of physical activity may be crucial for the development of bone health in pre- and early-pubertal children.

P3.28 Combinations of Physical Activity, Sedentary Behavior, and Sleep and their Associations with Health and Non-health Outcomes in Children and Adolescents: A Systematic Review

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: All

Purpose: In recent years, research on the combination of physical activity, sedentary behavior, and sleep has grown. Interestingly, these behaviors affect more than just physical outcomes. Therefore, the objective of the systematic review is to evaluate different combinations of physical activity, sedentary behavior, and sleep duration and their associations with health and non-health outcomes in children and adolescents.

Methods: MEDLINE, CINAHL, PsychINFO, SPORTDiscus, PubMed, EMBASE, and ERIC were searched in June 2020. Studies needed to quantitatively analyse the association of two or more movement behaviors (i.e., physical activity, sedentary behavior, sleep) with an outcome, the average age of participants needed to be between 5-17 years old, and include an abstract published in English.

Results : We identified 141 studies that met the inclusion criteria. Most studies included the combination of physical activity and sedentary behavior in their analyses. Sleep was studied less frequently. High physical activity and low sedentary behavior was associated with the best physical health, psychological health, and education-related outcomes. When sleep was analysed it was often the most important factor associated with favorable outcomes. The role of sedentary behavior had a stronger influence in adolescents than children and tended to be associated more negatively with outcomes when it was defined as screen time compared with overall time spent being sedentary.

Conclusion : Researchers are recognizing the importance of studying movement behaviors in combination as opposed to in isolation. Sleep has been understudied, but consistently showed a positive association across many outcomes. More initiatives and guidelines combining all three movement behaviors will benefit adiposity, cardiometabolic risk factors, cardiorespiratory fitness, muscular physical fitness, well-being, health-related quality of life, mental health, academic performance, and cognitive/executive function.

P3.29 Prospective associations between later eating rhythm and obesity in school-age children from the Avon Longitudinal Study of Parents and Children (ALSPAC)

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Later eating rhythm (LER), termed night eating in adult studies, refers to a later timing, greater energy intake (EI), and higher meal frequency in children in the evening. The role of eating later in obesity development is emerging, but most evidence is cross-sectional, considers just one feature of LER and is rarely studied in children. Therefore, we investigated associations of LER at age 7 with adiposity over 2 years of follow-up.

Methods: A total of 4029 children aged 7 years with complete 3-day food diaries from the ongoing UK birth cohort (ALSPAC) were included. Diaries recorded the exact time of, and energy consumed in each eating occasion (EO). An individual EO was separated by the unique time of food intake. Bedtime was parent-reported via questionnaire. "Last mealtime" was the time of the last reported EO; "Eating before bedtime" was the percentage of total energy intake (%TEI) consumed within 2 hours before bedtime; "Eating frequency" was the counts of EOs for 5pm-12am; all variables were averaged over 3 days. Outcomes (body mass index (BMI); overweight/obesity) were assessed at 9 years. Multiple linear and logistic regression was used for estimating the association between LER and each outcome. Interaction analysis was used to assess gender differences. Adjustment was made for age, gender, ethnicity, parental education, maternal age, TV watching and parental late eating.

Results: Average last mealtime was 7.10pm (SD 56mins), boys ate 6.0 mins (SE 1.8 mins) later than girls (p=0.001). Children consumed 17.2% (SD 11.9%) of TEI before bedtime with no gender differences (p=0.858). Average eating frequency was 2.3 (SD 0.9) EOs, 2.4 in boys vs. 2.2 in girls (p<0.001). Last mealtime was positively associated with BMI (b(95% CI) =0.12(0.01, 0.23) kg/m2 per hour later). Eating more before bedtime was associated with lower outcomes (BMI: b(95% CI) =-0.10(-0.19, -0.01) kg/m2 per 10%TEI; overweight/obesity: OR(95% CI)=0.91(0.83,0.99) per 10%TEI). No other associations or strong gender interactions were found.

Conclusions: We observed that the timing and EI, but not frequency, of later eating occasions was prospectively associated with obesity in children. Therefore, LER should be considered when developing dietary guidelines in children.

P3.30 Prospective association between later eating and obesity in school-age children from the China Health and Nutrition Survey (CHNS)

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Eating later in the day (dinner and evening snacks) may have a role in the development of obesity. However, most studies are cross-sectional and rarely focus on children in Eastern countries. Therefore, we investigated associations between dinner/evening snacks intake and later obesity in a nationally representative Chinese sample.

Methods: A total of 1292 children participating in the ongoing open cohort (CHNS) from 1997 to 2011, with complete 24-hour dietary recall for three consecutive days at 7-8 years and anthropometric data over 2-4 years of follow-up, were included. Dietary recalls recorded food names and size (grams) for each meal or snack consumed. Chinese food composition tables were used to capture energy intake (kcal). "Dinner/evening snack size" was the percentage of total energy intake (%TEI) for dinner or evening snack. "Dinner/evening snack frequency" was the total number of dinners or evening snack over 3 days (0-3 dinners, 0-3 evening snacks). Outcomes (body mass index (BMI); overweight/obesity) were assessed at 10.5 years. Multiple linear and logistic regression was used for estimating the association between later eating and each outcome. Interaction analysis was used to assess gender differences. Adjustment was made for age, gender, residency, parental education, maternal age, physical activity, maternal BMI, snack frequency, TEI and baseline BMI.

Results: Children had 36.0% (SD 9.4%) and 2.1% (SD 5.8%) of TEI for dinner and evening snacks respectively. Average dinner frequency was 3.0 (SD 0.2) times over 3 days, and 98% of children ate dinner every day; average evening snack frequency was 0.3 (SD 0.8) times over 3 days, only 6% of children ate evening snacks on all 3 days, 10% ate them once or twice, and 84% did not have any. Having evening snacks was associated with higher outcomes (BMI: b (95%CI) =0.50 (0.18 0.83) kg/m^2 per time/3 days; overweight/obesity: OR (95%CI) =1.74 (1.19 2.55) per time/3 days). No other associations or interactions were found.

Conclusions: We observed that consuming evening snacks, but not dinner, were prospectively associated with obesity. Therefore, it is worth considering later eating behaviours in preventing obesity in children in Eastern countries.

P3.31 A Descriptive Analysis of Emergency Food Assistance Programs in Response to COVID-19 in the US

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: The COVID-19 pandemic caused significant food supply chain and economic disruptions. As a result, there was an unprecedented and sustained increased demand for emergency food assistance program services (programs that provide food free of charge). Emergency food assistance programs (i.e. food banks, food pantries, and others) had to make significant adjustments to their previous food distribution models to assure client/staff/volunteer safety during COVID-19. However, little research has been done to document the breadth of innovative programming developed by these organizations. Therefore, the purpose of this research was to identify and describe a diverse sample of innovative emergency food assistance programs that operated during COVID-19 across the US.

Methods: A brief survey, developed in partnership with an expert advisory board, was sent out through multiple listservs (listservs for food banks, dietitians and nutrition professionals, school foodservice workers, social service providers and more). The survey collected the organization name and type, along with the population served, and a brief description of innovative emergency food assistance program(s) they operated during COVID-19. Descriptive statistics were used to summarize the survey results.

Results: 101 responses to the survey were collected. After data cleaning 81 unique responses remained. Of the respondents 29.6% were food banks/pantries, 13.5% were universities/school systems, 18.5% were food-based non-profits, 9.9% were social service agencies, and 28.5% were other organizations. Most organizations reported serving all populations (54.3%), others reported serving specific priority groups including children/families (19.7%) and the elderly (25.4%). Programs provided community members with food in various formats including prepared meals (25.9%), groceries (64.2%), and fresh produce (29.6%). Common COVID-19 related safety modifications included 38.3% of programs providing home food delivery, and 17.3% having contact-free curbside pick-up options. Other innovative but less widely implemented COVID safety options include online food package ordering, and outdoor mobile food markets or community gardens.

Conclusions: Emergency food assistance programs from a variety of organization types, serving diverse and vulnerable populations, created innovative programming to feed communities during the COVID-19 pandemic. By examining the response to COVID-19 improved strategies for daily operations as well as best practices for future crisis/disaster situations can be identified and expanded.

P3.32 Psychosocial Predictors of Public Transit Use: The Houston Travel-Related Activity in Neighborhoods Study

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Despite the potential of public transit use to increase transportation-related physical activity through walking or biking to and from transit stops, public transit ridership in many areas within the United States remains low. To increase public transit use, multiple influences of behavior associated with public transit use must be identified. The purpose of this study was to determine the associations between psychosocial constructs and public transit use among a racially and ethnically diverse sample of adults living in Houston, Texas, USA.

Methods: This cross-sectional analysis was conducted using baseline data from Houston Travel-Related Activity in Neighborhoods (TRAIN), a natural experiment involving more that 800 participants on the effect of new light-rail transit on transit use and physical activity (2013-2018). All variables were self-reported by participants using a questionnaire. Independent variables were psychosocial constructs guided by the Social-Ecological Model (SEM), which included subjective norm, perceived behavior control, attitude, self-efficacy, and decisional balance pros/cons. The dependent variable of interest was reported public transit use for transportation in their lifetime, dichotomized into user vs. non-user. A multivariable logistic regression model was used to test the hypothesis that SEM psychosocial constructs variables were associated with public transit-use, while adjusting for socio-demographics.

Results: The 388 adults (M=48.9 years) in the analytic sample were diverse (38.5% White, 28.9% Black, 25.8% Hispanic or Latino), primarily female (60.1%), and living at or above the federal poverty level (92.8%). Most participants (83.2%) reported that they had used public transit for transportation in their lifetime. In general, adults with higher subjective norm scores (OR = 2.75, 95% CI [1.43, 5.41]) and attitude scores (OR = 2.30, 95% CI [1.24, 4.37]) had a greater odds of reporting public transit use for transportation in their lifetime.

Conclusion: Results suggest that to encourage public transit ridership, and perhaps the physical activity associated with transit use, efforts to improve attitudes (perceptions of pleasantness and usefulness) and subjective norms (supported by others) towards public transit use may be an effective public health strategy.

P3.33 Promoting Active Play Through Physical Activity Stencils: A Process and Outcome Evaluation

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The LSU AgCenter SNAP-Ed program implements a variety of policy, systems, and environmental (PSE) changes according to needs identified by local community members and partners. One PSE change that is often made to promote physical activity in parks and playgrounds lacking other equipment is stenciling of concrete spaces using designs that prompt active play, demonstrate yoga poses, and promote other forms of activity. Stencils are a low-resource way to promote physical activity, but little prior work has evaluated their acceptability and effectiveness. This cross sectional, mixed methods evaluation sought to identify how these stencils are being used, preferred types of stencils, the reach of stencil projects, and the general perception of stencil projects.

Methods: SNAP-Ed staff distributed surveys to teachers and administrators at locations where stencils had been placed in the past year. Surveys asked respondents to report observed changes in student activity after stencil placement, the number of students at the school, and the types of stencils that were most used and preferred by students. Open ended questions asked respondents to describe how stencils were used, how students' physical activity changed, and suggestions for improvement and additional comments.

Results/Findings: Surveys were completed by respondents at 20 locations where stencils were placed, with an estimated reach of 5236 students. Half (n=10) of respondents reported that students' activity levels stayed the same, and nine respondents (45%) reported an increase in activity levels. The most frequently observed exercises at stencil sites were jumping (n=16, 80%), walking (n=11, 55%), and muscle strengthening exercises (n=10, 50%). A majority of respondents stated students were primarily interested in hopscotch stencils (n=12, 60%). Qualitative themes included the importance of making physical activity spaces inviting and attractive and the importance of stencils during the pandemic.

Conclusions: Despite the limitations of the cross-sectional survey design, our results indicate that stencils may be a low-resource PSE change that can support active play for a large number of school children.

P3.34 SchoolHEAT: Racial and Ethnic Disparities in School Heat Exposure

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical activity and sleep

Purpose: This study examined the relationship between school demographics and satellite-measured temperature. While significant deviations in temperature have been identified between neighborhoods throughout the world, research on schools is limited. Schools, as centers of activity and exposure for children and families, represent focal points of community life and key exposure locales. Exposure to chronic high temperatures has been shown to negatively affect school performance, sleep, and engagement in physical activity. We hypothesized that schools with higher proportion of Black, Hispanic, or non-White students would have high afternoon temperatures relative to regional means.

Methods: We processed land surface temperatures derived from NASA's Aqua satellite for the continental United States for each cloudless day in September for the years 2013-2016 to create a single average afternoon temperature at 1kmX1km resolution which we aggregated to school point (e.g., 9 sq km surrounding school location) and catchment area (e.g., geographic area in which resident students are assigned to the school). Our analysis included 47,061 elementary, 31,729 middle, and 16,303 high schools nested inside 12,145 districts. We used OLS regression with fixed effects to control for local conditions, then used interaction terms to investigate city- and district-specific associations between student demographics and temperature in the biggest cities and districts.

Results: Controlling for local conditions at state, city, and distance-buffer levels, we found that student demographics are predictive of school temperature deviations. Nationwide, a 10% increase in the student population of Black, Hispanic, or non-White students was associated with 0.44-0.64 degrees higher temperature when controlling for state, 0.38-0.46 degrees when controlling for city, and 0.19-0.25 degrees when controlling for a 25-mile buffer, relative to the area mean. Large differences in associations were identified by city and district. Amongst the 8 largest cities (16.1% of schools; 19.6% of students), city-specific associations between an increase in 10% of the students ranged from -0.27 degrees (Black, high school, Los Angeles) to 0.77 degrees (Hispanic, high school, Philadelphia).

Conclusions: Schools are the workplace for the job of learning, but different populations are faced with different conditions. Racially-patterned disparities can be addressed through appropriate school, district, and city-level interventions.

P3.35 Simultaneous investigation of social and built environment influences on physical activity: A systematic review

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: As hypothesized in the social ecological model, one's built and social environments play an important role in physical activity (PA) behavior. Further, these environments have critical overlap and influence one another. A thorough review of studies assessing these influences is needed to identify similarities as and gaps in the literature to leverage future change. This review aims to examine articles that simultaneously assessed influential aspects of the built and social environments on PA.

Methods: A comprehensive search of the literature was performed using PsycINFO, MEDLINE, PubMed, and Web of Science databases. To be included in the final sample, articles needed to: 1) include a measure of PA either self-reported or objectively measured, 2) include a measure of the built environment such as walkability or accessibility to parks, 3) include a measure of the social environment such as social networks, social support, or social norms, and 4) conduct an analysis between built environment, social environment, and physical activity. An initial search of 4,358 articles resulted in 87 articles which met inclusion criteria.

Results: Several populations were present within the sample including various age groups and countries. As previously established, the built environment and social environment were consistently associated with PA; however, mediating factors and associations between these two layers were less clear. Additionally, while measurement of PA was relatively homogenous, the constructs and methods of measurement for built and social environments were less consistent. Further, there was a lack of longitudinal and causal methodologies as well as examination of these associations across groups with noted health disparities.

Conclusions: Results here call for more longitudinal and causal designs with more validated and granular social and built environment measures. Examining these associations in correspondence with related health disparities would promote greater understanding of policies and environments which may exacerbate these disparities. As communities recover from the COVID-19 pandemic, a thorough understanding of how built environment factors enhance or detract from social connectedness and how this reciprocal relationship impacts PA behavior is needed for future policy, environment, and systematic change.

P3.36 Adolescent diet and physical activity patterns across environmental and socioeconomic contexts in urban Cameroon, Jamaica and South Africa: A multi-country cross national analysis

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Adolescents living in low- and middle-income countries (LMICs) may be affected by various socioecological factors affecting their food and built environments and thereby influencing dietary intake and physical activity. We explored how adolescents' food and built environments influenced nutrition knowledge and practices and self-reported physical activity.

Methods: A cross sectional study of 528 adolescents (10-18 years old) from 3 urban communities in LMICs (Yaoundé (n=227), Kingston (n=158) and Cape Town (n=143)) was conducted. The environmental socio-economic exposure (ESE) for each participant was determined using neighbourhood and school characteristics and adolescents grouped into 3 ESE categories (low-low (LL), low-high (LH) and high-high (HH)). Dietary behaviours (frequency of consumption of country-specific healthy and unhealthy foods, breakfast consumption and snacking) and nutrition knowledge was determined by questionnaire. The physical activity questionnaire (adapted from South Africa) captured information on the frequency and intensity of informal, school-related and extra-curricular physical activities and travel activity. Anthropometric measurements were obtained by trained researchers. Site-specific ordinal and binary regression analyses were used to explore the associations of ESE with dietary behaviours (low, moderate and high scores) and total moderate to vigorous physical activity (MVPA) behaviours (low engagement and high engagement) respectively.

Results: Of the 528 adolescents, 69.3% were female and 55.9% were over 15 years old. Over two-thirds of the adolescents (68.0%) resided in low-income neighbourhoods, and 63.3% attended schools in high income settings. Country effects were not significant. Overall, higher ESE was associated with better dietary behaviours (p=0.041) and nutrition knowledge (p=0.001) but after adjusting for age and BMI-for-age, only the adolescents residing in high-income settings attending schools in high-income settings (HH) showed significantly higher nutrition knowledge (OR=1.90, 95% CI 1.29-2.79, p=0.001). Overall, only travel-related physical activity was

associated with ESE (p=0.002) but after adjusting for sex, age, BMI-for-age, and engagement in each PA domain, only the adolescents residing in low-income settings attending schools in high-income settings (LH) showed significantly lower odds of highly engaging in MVPA (OR=0.45, 95% CI 0.27-0.75, p=0.002).

Conclusion: ESE specific interventions are needed to address issues of adolescent obesity risk focused on dietary behaviours and physical inactivity in LMICs.

P3.37 Walkable Destinations and Social Capital: Does Community Type Matter?

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Walkable communities benefit individuals and society and enhance social capital. Perceived walkable destinations have been shown to benefit social capital, but little is known about how community type (urban, suburban, or rural) may impact this relationship.

Methods: This study uses the Survey of the Health of Wisconsin, a probability sample (N = 1957) with measures including four social capital scales (community participation, sense of belonging, leadership competence, and policy control), perceived walkable destinations within a 10-minute walk (additive scale of 18 possible destination categories), and moderation analysis by urban, suburban, or rural community. Moderation analyses tested main hypotheses using Process (model 2). A multiple linear regression model for each social capital scale was tested using perceived walkable destinations as the main predictor variable, with two binary variables indicating rural and suburban residence as moderators, while covariates included sex, race/ethnicity, household income, neighborhood safety, and education.

Results: Destinations within a 10-minute walk from home support social capital in all community types. Urban and suburban residents benefited in 4 social capital scales; rural residents were associated with higher social capital for 3 scales (no benefit for community participation). For sense of belonging, leadership competence, and policy control, participants in urban, suburban, and rural communities report a .02 higher social capital per category of walkable destination within 10 minutes. This effect is additive. For community participation, only urban and suburban participants saw a .02 benefit per category of perceived walkable destinations.

Conclusions: Living within a 10-minute walk of different types of destinations relates to higher reports of social capital in the forms of community participation, sense of community, leadership competence, and policy control. Findings revealed that the relationship between 10-minue walkable destinations and community participation was conditional on the type of community participants lived in. For participants living in urban and suburban communities, increases in 10-minute walkable destinations was associated with increases in community participation. However, this was not the case for individuals living in rural communities where community participation was stable, regardless of perceived walkable destinations. These findings indicate walkable destinations bolster social capital, moderated by rurality for community participation.

P3.38 A Scoping Review of Policies to Encourage Breastfeeding, Healthy Eating, and Physical Activity Among Rural People and Places in the United States

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition

Purpose: Rural U.S. residents have higher chronic disease mortality rates compared to urban residents. Diverse policy approaches for chronic disease prevention have been implemented to address barriers to breastfeeding, healthy eating (HE), and physical activity (PA). Therefore, the purpose of this scoping review was to identify policy supports for breastfeeding, HE, and/or PA among rural Americans.

Methods: A scoping review for policies was conducted March-June 2020 as part of a larger project about Policy, Systems, and Environment (PSE) Change approaches for breastfeeding, HE, and PA promotion in rural America. Search procedures were guided by the PRISMA-ScR, Arksey & O'Malley's work (2007), and a science librarian. Medline, PubMed, Web of Science, and Agricola were used to identify peer-reviewed research. ProQuest Dissertations and Theses A&I were used to identify dissertation research. Gray literature searches included Google, Google Scholar, government pages, and public health, federal nutrition assistance program, Cooperative Extension Services, and related webpages. Inclusion criteria included: (1) breastfeeding, HE, and/or PA focus; (2) about policy factors (for this presentation); (3) specific to U.S. rural populations/places; and (4) English language. Outcomes (study/source design, objective(s), methods/measurement, setting, population characteristics, behavioral focus, PSE-specific results) were extracted to a standardized Excel document.

Results/findings: Breastfeeding policy results focused on hospitals (n=17) and workplaces (n=6), with Baby-Friendly Hospital initiatives most commonly reported. HE policy results focused on schools/childcare settings (n=35), food retail/local food producers (n=13), and charitable/food assistance programs (n=10). HE school recommendations included support for national school lunch programs, for rural schools to improve compliance with nutritional standards and implement mandated nutrition policies. PA policy results focused on initiatives in schools/childcare (n=41), streets (26), and parks/trails/recreation facilities (n=19). Rural communities overcame potential barriers to PA policy efforts by adapting policy approaches. For example, using remote drop-offs for Safe Routes to School allows children to congregate and walk from the drop-off to

school. Other recommendations included joint/shared use agreements and including PA breaks policies throughout school days (e.g., recess, classroom PA sessions).

Conclusions: Results from this scoping review compile and offer commentary on existing policy solutions to improve breastfeeding, HE, and/or PA in rural America.

P3.39 A Scoping Review of Subjective Environmental Factors related with Breastfeeding, Healthy Eating, and Physical Activity Supports in the rural United States

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical activity and nutrition

Purpose: There is a growing body of research identifying environmental strategies that address low rates of breastfeeding, healthy eating (HE), and physical activity (PA) among rural U.S. residents. The purpose of this scoping review was to identify subjectively measured environmental factors that encourage breastfeeding, HE, and/or PA practices within rural U.S. communities.

Methods: A scoping review was conducted using the Policy, Systems and Environmental (PSE) Change framework. A scientific librarian guided the search strategy. Searches occurred February-July 2020. Gray literature searches spanned Google, Google Scholar, government pages, and public health, federal nutrition assistance program, Cooperative Extension Services, and related webpages. Four academic databases (Medline, PubMed, Web of Science, Agricola) were selected to identify peer-reviewed research, and ProQuest Dissertations & Theses A&I was used to identify dissertation research. Inclusion criteria included: (1) breastfeeding, HE, and/or PA focus; (2) about environmental factors; (3) specific to U.S. rural populations/contexts; and (4) English language. Outcomes were extracted using Excel and included study/source design and objective(s), methods/measurement, setting, population characteristics, behavioral focus, and PSE-specific results.

Results: Breastfeeding environment results focused on workplace settings (n=3). Breastfeeding environment initiatives/recommendations in workplaces included increasing compatibility for breastfeeding, by addressing environment (e.g., spaces for breastfeeding) and culture (e.g., acceptability by peers/superiors) barriers. HE environment results focused on initiatives in retail (n=65) and schools/childcare (n=33) settings. HE environment change initiatives/recommendations in retail settings included increasing the availability of fruits/vegetables in existing establishments (e.g., convenience stores) or prevalence of grocery stores and/or farmers markets. In schools, HE environmental initiatives/recommendations increased fruits/vegetables served and/or reduced unhealthy food access. PA environment results focused on initiatives in recreation (including parks, playgrounds, facilities; n=54), streets/sidewalks (n=44), or school (n=33) settings. PA environmental initiatives/recommendations in recreation settings included increasing transport/accessibility

or addressing geographic disparities, in street/sidewalk settings included improving/installing walkability features, and in school settings included integrating PA into lessons or improving PA equipment/spaces.

Conclusions: Results from this scoping review were used to create recommendations to improve breastfeeding, HE, or PA environments in rural U.S. settings. Researchers and practitioners can use our recommendations to inform rural public health efforts, such as by identifying high-impact settings.

P3.41 Prevalence of Meeting Aerobic, Strength, and Combined Physical Activity Guidelines by Rural-Urban Status and Region -- United States 2020

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: All ages
Subject Category: Physical Activity

Purpose: Identify variations in prevalence of US adults meeting the aerobic, muscle-strengthening, and combined aerobic and muscle-strengthening physical activity (PA) guidelines by rurality and region.

Methods: National Health Interview Survey (NHIS) 2020 public-use data were analyzed. Rurality was determined using a four-category version of the Urban-Rural Classification Scheme for Counties from the National Center for Health Statistics. Region was determined using the four-category US Census household region for each respondent. Self-reported frequency and duration of moderate, vigorous, and muscle-strengthening PA was used to categorize respondents as meeting or not meeting the 2018 PA guidelines for aerobic PA (≥150 minutes/week of MVPA), muscle-strengthening activity (≥2 days per week), and the combined PA guidelines. Multivariate logistic regression analyses were used to model predicted population probabilities of the three PA variables by rurality and region for adults 18-84 years old controlling for sex, age, race/ethnicity, education, and income-to-poverty ratio. Least-squares means estimates were produced to calculate predicted population margins for all categories of rurality and region. Analyses were performed with SAS 9.4© with parameters adjusted for population weights, clusters, and stratification.

Results/findings: Adults in the most rural county classification (Nonmetropolitan) were less likely to meet aerobic, muscle-strengthening, and combined PA guidelines compared to adults in the three other county classifications (AORs 0.67 – 0.88). Adults in the Medium and Small Metropolitan county classification were more likely than adults in the Nonmetropolitan counties to meet the PA guidelines but were less likely to meet PA guidelines than adults in the two most urban county classifications (i.e., Large Central Metro, Large Fringe Metro; AORs 0.85 – 0.88). Adults in the Northeast, Midwest, and South were all less likely to meet each of the PA guidelines when compared to adults in the West region (AORs 0.74 – 0.82).

Conclusions: These analyses are the first to identify with this level of rural-urban specificity where disparities exist in US adults meeting each of the three PA guidelines. Developing, testing, and implementing effective

population-level interventions are desperately needed to increase PA in rural populations experiencing pernicious and pervasive PA and health disparities.

P3.42 Socio-economic position, the built environment and physical activity: a systematic review of mediating and moderating effects

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Background/purpose: Physical activity behaviors are socioeconomically patterned. Understanding if, and how, the built environment contributes to socioeconomic inequalities in physical activity among children and adolescents and for whom built environments are most important, can lead to the identification of intervention entry points to reduce inequalities in physical activity. Therefore, this systematic review aims to summarize the existing evidence among children and adolescents on a) whether the built environment mediates the association between socioeconomic position (SEP) and physical activity and b) whether SEP moderates the association between the built environment and physical activity.

Methods: PubMed, Embase, PsycINFO and Web of Science were searched from inception to the 4th of August 2021. Two independent reviewers screened articles for eligibility and extracted information from the included studies. The Quality Assessment Tool for Observational Cohort and Cross-Sectional studies was used for risk of bias assessment. We performed a narrative evidence synthesis considering the totality of the evidence and by study characteristics such as geographic region, age-group, and exposure-outcome assessment methodology.

Results/findings: The search yielded 28 papers eligible for the review. Based on three studies, there was no evidence to support the built environment functions as a mediator in the relationship between SEP and physical activity. Conflicting evidence was found for SEP as a moderator in the association between the built environment and physical activity. Five studies reported stronger associations between built environment and physical activity behaviors among high SEP youths, while seven studies reported stronger associations among low SEP youth. Fourteen studies found no difference in the associations. We observed different moderation patterns across geographical regions (Europe vs US), but not across younger vs older children or exposure-outcome assessment methodology. The evidence base consists of cross-sectional studies with insufficient control for putative confounding sources.

Conclusions: Current evidence does not support a strong interplay between built environment and SEP on physical activity in youth, however, given the quality of the evidence, firm conclusions cannot be made, and additional high-quality research is likely to have a substantial impact.

P3.43 Impact of COVID-19 Pandemic on Health Behaviors Among Older African Americans

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Older adults 65+ yrs
Subject Category: All

Purpose: Modifiable health behaviors place many older African American (AA) adults at increased risk for chronic diseases. AA women face even greater health disparities. The COVID-19 pandemic has exacerbated health disparities but few studies have documented this impact in AAs. This study investigated changes in older AAs physical activity, eating, and sleep behaviors during the COVID-19 pandemic.

Methods: A nationwide sample of AAs aged 65 to 85 (N = 624) participated in an online health behavior survey in which participants reported health behavior changes from before the pandemic to the beginning of 2021. Outcome measures included moderate-to-vigorous physical activity (MVPA), eating, and sleep behaviors, and predictors were gender, COVID-19 history, and their interaction. Ordinal logistical regressions examined predictors of change while controlling for covariates including age, socioeconomic status, marital status, employment status, and education level.

Results: Most AA participants reported no change in their MVPA (59%), eating (64%), or sleeping (71%) behaviors. Participants experiencing change were more likely to report decreases in MVPA and sleep and increases in eating. AA females reported increases in eating (odds ratio [OR] = 1.67, $p < 0.01$) and decreases in sleep (OR = 0.67, $p < 0.05$) compared to AA males. Contracting COVID-19 predicted decreases in eating (OR = 0.48, $p < 0.01$) for AA males and females. There were no significant predictors of MVPA, and no interactions.

Conclusions: About two-thirds of older AAs reported no change in their health behaviors. However, for the one-third experiencing changes, they were more likely to be maladaptive. Consistent with previous findings assessing COVID-19 effects on health behaviors (Maness et al., 2021), we found that AA women had greater odds of increased eating and decreased sleeping behaviors. Covariates did not provide insights about subgroups of AA men or women at greatest risk. Our findings suggest that in order to offset the effects of the COVID-19 pandemic, systematic efforts should be made to promote health behaviors for older AAs, particularly AA women.

P3.44 Association between the perceived neighbourhood walkability self-reported physical activity and body mass index of adolescents in South Africa.

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity
Purpose: The aim of the study was to investigate the associations between perceived built environment features, self-reported physical activity (PA) and body mass index (BMI) of South African adolescents across socio-economic groups.

Methods: Adolescents (N=143, 13-18 years) in low or middle/high socioeconomic areas (SEAs) were conveniently recruited from three high schools located in low and middle/high SEAs in Cape Town. Anthropometry was measured using standardised methods. A demographics questionnaire, a validated adolescent PA questionnaire and the Neighbourhood Environment Walkability Scale (NEWS)-Africa were administered. PA behaviours were categorised as low (LPA), moderate (MPA) or vigorous (VPA) intensity. MVPA was assessed in different domains: informal (during school breaks or outside school); physical education (structured classes); school sports (school-related extracurricular activities); private club (sports outside school); active travel (walking/cycling to school) and household chores. Data on selected NEWS survey domains included: residential density, land use diversity, street connectivity, infrastructure and safety for walking and cycling, aesthetics, traffic safety, and safety from crime and personal safety. Data were analysed using descriptive analyses and multivariate linear regression.

Results: Two-thirds (65%) of the participants (median age 15 years) were female and 34.5% were overweight. Approximately half (48.3%) did not meet recommended adolescents MVPA levels regardless of residential SEAs. Compared to adolescents residing in low SEAs, those from middle/high SEAs had significantly higher walkability index values (p<0.001) in more than half of the NEWS domains indicating a PA-conducive environment. Regression analysis, adjusted for sex, home and school SEA, showed that land use diversity was significantly associated with private club MVPA (ß = 0.28 ;95% CI =0.66 to 3.64; p=0.05), street connectivity was significantly

associated with school sports MVPA (ß = 0.17 ;95% CI =0.03 to 2.54; p=0.04) and personal safety with private club MVPA (ß = -0.22 ;95% CI = -3.18 to 0.19; p=0.03). BMI was not significantly associated with the NEWS variables and PA levels.

Conclusion: The findings, of varying associations between neighbourhood-built environment features and PA across socio-economic gradients highlight the need for evidence-based approaches to inform the design of adolescent-focused PA interventions, tailored to different socio-economic contexts within cities.

P3.45 Association of social contexts with meal length in Young Australian Adults (18-30 years old) assessed using wearable cameras.

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: This study examined associations between social contexts (screen use and social interactions), length of time eating and energy intake in young Australian Adults (18-30 years old) using wearable camera technology.

Methods: A subsample (n = 133) from a large cross-sectional study wore a camera that captured point of view images every 30 seconds over three consecutive days. Images (n = 487,912) were reviewed to identify length of time spent eating and social context (screen use and social interactions) of each eating episode. Energy (MJ) per meal was determined using the Automated Self-Administered 24-hour Dietary Assessment Tool. Socio-economic status (SES) was assigned using residential postcode. Body Mass Index (BMI) was calculated from self-reported weight and height. Mixed linear regression models were applied with eating time as the dependent variable and social interactions, screen usage, energy, SES, BMI and gender included for all eating occasions and stratified by meal type.

Results/Findings: 1599 eating occasions were included in analysis (n = 235 excluded as meal length could not be determined and n = 6 excluded as meal components were unclear). The median time spent eating was 28.8 minutes per day (IQR: 18.0 – 42.0). Food consumption occasions with screen use were longer than those without screens for breakfast ($\beta = 3.2$, $p < 0.001$), lunch ($\beta = 3.2$, $p = 0.007$), dinner ($\beta = 4.2$, $p = 0.001$) and snacks ($\beta = 2.9$, $p < 0.001$). Food consumption occasions with social interactions were longer than those consumed alone for lunch ($\beta = 5.0$, $p < 0.001$), dinner ($\beta = 4.2$, $p < 0.001$) and snacks ($\beta = 1.8$, $p < 0.001$). As meal length increased energy intake for all eating occasions increased ($\beta = 1.8$, $p < 0.001$)

Conclusions: Among young adults social interactions and screen use increased meal length. Longer meals were associated with higher energy intake. Screen usage may act as a distraction during meals contributing to increased energy intake and could be targeted for behaviour change interventions. Social interactions led to longer lunches, dinners and snacks but its effects on the quality of meals should be investigated.

P3.46 I'll Be There for You: The effects of exercise engagement on social support provision within undergraduate students' personal networks

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical Activity

Purpose: Despite its contribution to a healthy lifestyle, undergraduate students often do not engage in recommended levels of exercise. Research suggests college students' health, including exercise and mental health outcomes, are impacted by their social support networks. This study examined how exercise participation potentially impacts the health and wellness support undergraduate students receive through their personal networks.

Methods: An egocentric network analysis was conducted on a sample of undergraduate students (n=465) and their social support networks defined as people they felt closest to at their institution (n=1,925). Participants reported their personal leisure-time exercise (LTE) habits, campus group exercise (GX) involvement, and mental health scores. Participants also reported perception of their social connections' LTE habits and GX involvement as well as the degree of health/wellness support each network connection provided. Multilevel modeling assessed factors related to students receiving health and wellness support through their social connections.

Results: Students who reported lower stress levels (β=-0.01, p=.01), and more engagement in LTE (β=0.13, p>.01), received more health and wellness support through their social ties. Social connections who were female (β=0.12, p>;.01) and who exercised more often (β=0.45, p>.01), were perceived as more supportive. While the main effects of GX membership (either by the individual (β=0.03,p=.59) or their connection (β=0.09, p=.13)) connections were not significant, results showed significantly more support was perceived when both the participant and their connection were involved in the campus GX program (β=0.18, p=.04).

Conclusions: This study suggests the importance of exercise, at the individual and dyadic level, in making undergraduate students feel supported in their health and wellness. Additionally, this study adds to existing evidence that exercise and social support are both independently associated with wellbeing and suggests social support within personal networks can contribute to increased exercise habits. Findings support campus GX programs as a potentially ideal environment to create reciprocal supportive ties for college students. Increased GX participation enhances individual LTE and allows for additional support through expanded networks. Future research could further explore the ways exercise and social support, particularly in group settings, affect health and wellbeing.

P3.47 Daily self-weighing as compared to an active control group resulted in increased depression after three months in emerging adult women

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical activity and nutrition

As compared to tracking multiple health indicators, weight is one metric that can be monitored. Repeated weight measurements over time represent the balance between intake (nutrition) and expenditure (physical activity). Daily self-weighing is recommended as a weight-monitoring strategy though concerns exist about vulnerable populations. The purpose of this study was to investigate the short- and long- term impacts of daily self-weighing in a sample at risk for both weight gain and disordered eating. Emerging adult women (ages 18 – 26) participated in a 3-month randomized controlled trial comparing daily self-weighing with an active control condition, daily temperature-taking. The Patient-Reported Outcomes Measurement (PROMIS) anxiety and depression scales were administered at baseline, two weeks (for comparison with published literature), and three months (end-of-treatment). Generalized linear mixed models were used to analyze data for within-participant changes in anxiety and depression T-scores and compare differences between groups using all available data. Controlling for baseline scores, at 2 weeks, the daily self-weighing group had significantly higher anxiety T-scores (but not depression T-scores) than the daily temperature-taking group (n = 64; self-weighing: M = 58.2, SE = 1.2, n = 34; temperature-taking: M = 53.2, SE = 1.2, n = 30; β_{group} = 5.0, SE = 1.7, p = .003). Controlling for baseline scores, at 3 months, the daily self-weighing group had significantly higher depression T-scores (but not anxiety T-scores) than the daily temperature-taking group (self-weighing: M = 53.6, SE = 1.1; temperature-taking: M = 49.1, SE = 1.1; β_{group} = 4.5, SE = 1.5, p = .003). Results indicate that daily self-weighing may cause short-term elevations in mild anxiety and longer-term minor increases in depression scores in some populations. Thus, caution is advised when considering daily self-weighing as a weight management strategy.

P3.48 Development and Implementation of a Nutrition Security Plan within a large public university

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: To develop a Nutrition Security Plan to improve equitable and sustainable access to healthy foods among young adults in college. Prior research shows that college students struggle with food insecurity and without an inclusive and holistic framework to address it long-term, conditions such as the current health pandemic would continue to exacerbate both food and nutrition security.

Methods: Using a community engaged participatory research approach, we employed a mixed method design in the development of the nutrition security plan. University partners such as university administration, students, food service contract staff, county health department nutrition staff, the North Carolina Department of Health and Human services nutrition staff worked together to develop a Nutrition Security Plan for our University. First, food purchasing behaviors and barriers to nutrition security on campus were assessed. This included analysis of data generated on student purchases and interviews with staff of Chartwells-the university's food service contractor. Second, existing nutrition supporting services on campus (e.g. food pantry, Swipe out Hunger, student garden) were documented and reviewed. Third, nutrition support programs and initiatives in operation at other universities were researched and considered for implementation.

Results/findings: We developed a 12-item nutrition security plan and carried out a process evaluation of the implementation of the recommendations in the plan. To date, 3 of 12 recommendations have been implemented successfully. These are 1) a centralized resource center for student nutrition needs was created and posted on the university student support website; 2) the implementation of a university bus route that stops at a grocery store; and 3) a Supplemental Nutrition Assistance Program (SNAP) Eligibility Screener for Students that was developed and disseminated among student financial aid and student support services.

Conclusion: Providing equitable access to healthy foods for young adults has both short and long- term benefits for public health and social outcomes. Implementing a Nutrition security plan on university campuses is a step towards achieving this goal. Nutrition educators are encouraged to collaborate with university partners to develop Nutrition Security Plans for their campus community.

P3.49 Independent and joint prospective associations of diet quality and accelerometer-assessed moderate-to-vigorous physical activity with adolescent mental health

Dr. Andrea Smith[1], Dr. Eleanor Winpenny[1], Mr. Stephen Sharp[1], Dr. Sharon Neufeld[2], Prof. Peter Jones[2], Prof. Ian Goodyer[2], Dr. Esther van Sluijs[1]

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SIG - Primary Choice: J. Young Adults
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Moderate-to vigorous physical activity (MVPA) and diet may play a role in the prevention of depression. Previous observational research has shown limited associations, but benefits may become more apparent later in adolescence or when the combination of both behaviours are considered synergistically. This study aimed to investigate the independent and joint prospective associations of diet quality and MVPA in adolescence with mental health into early adulthood.

Method: Data collected in 2005-2007 were from ROOTS, a longitudinal cohort study of adolescents (n=1238; 14.5 years at recruitment; 45.6% male) in England. Four-day diet diaries collected at baseline were used to derive the 9-point Mediterranean Diet Score (MDS) and ActiHeart monitors worn over four days measured MVPA (min/day) at baseline. The MDS index is created by scoring individuals on their dietary intake of nine key aspects that characterise a high-quality diet (e.g., vegetable intake). Mental health was measured using the self-reported 33-item Mood and Feelings questionnaire (MFQ) at age 14.5, 16, 17.5 and 25 years. Prospective associations of MVPA and MDS with MFQ were examined using two-level mixed effects multi-level regression, adjusted for baseline covariates. Multiple imputation by chained equation (MICE) was applied to handle missing data up until age 17 (n=1170). Separate analyses were repeated in a subset of participants with MFQ at age 25 (n=133).

Results: There were significant negative association of time with average MFQ in all models, (MDS β=-0.69; p<.01). MDS (β=-.18; p=.27) and MVPA (β=-.01; p=.84), were not independently associated with MFQ, nor when both behaviours were jointly modelled. There was no interaction between MDS and MVPA (β=-.01; p=.40). Analyses in those with MFQ at age 25 revealed similar patterns of null associations.

Conclusion: This study showed that MVPA and diet quality in early adolescence, alone or synergistically, were not associated with mental health into later adolescence and early adulthood. The potential role of diet and MVPA in the prevention of mental health problems in adolescence remains a key research priority.

P3.50 Sport Participation in Middle School, High School and College, and Wellness Report Cards for College Athletes and Non-Athletes

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SIG - Primary Choice: J. Young Adults
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Physical activity (PA) participation changes across the life span and tends to decrease with age. Due to the positive relationship between sport participation and PA, younger adolescents may obtain higher levels of PA than older adolescents because they are more likely to be enrolled in organized sport. The purpose of this study was to compare middle school, high school and college sport participation (percentage and number of sports played) between college athletes and non-athletes enrolled in a private Division III, US college. A secondary aim was to compare self-reported PA levels, fruit and vegetable intake, BMI, happiness, sleep duration and stress between college athletes and non-athletes.

Methods: 156 college students (71 athletes (31 male: 40 female) and 85 non-athletes (60 male: 25 female), mean age of 20.8±2.4 years) completed a survey that asked about sports participation in
middle school [grades 6-8], high school [grades 9-12], and college. Also, current PA levels, fruit and vegetable intake, BMI, happiness, sleep duration and stress were collected. Mann Whitney U tests compared responses between college athletes and non-athletes.

Results: Overall sports participation declined with age (80.8% in middle, 78.8% in high school, and 45.9% in college). College athletes were more likely to play sports in middle (97.2% verses 67.1%) and high school (100% verses 61.2%), participate in more sports in middle (1.73±1.1 verses 1.0±1.2) and high school (1.9±1.2 verses 1.1±1.3), and report greater minutes per week of moderate (288±251 versus 144±190) and vigorous PA (478±259 versus 191±212) compared to non-athletes (all p<0.05). College athletes also
reported greater happiness (8.8±1.5 versus 8.0±2.0), longer sleep duration (6.8±0.9 versus 6.3±1.3), and less stress (23.3±8.6 versus 27.3±7.4) compared to non-athletes (all p<0.05). There were no differences in BMI (mean=26.3±5.5), or fruit and vegetable intake (mean=3.4±2.9).

Conclusions: This study supports a decline in PA from middle school through college. Due their current involvement in sport, compared to non-athletes, college athletes may spend more time in moderate and vigorous PA and may be more likely to score favorably on numerous wellness indicators including PA levels, happiness, sleep duration and stress that could comprise a wellness report card.

P3.51 Design and implementation of a laboratory-cafeteria to improve the food environment in the Faculty of Medicine Mexicali.

Miss Anna Karen Acosta Montano[1], Dr. Daniela Guadalupe Gonzalez Valencia[1], Dr. Carlos Olvera Sandoval[1], Dr. Vianey Mendez Trujillo[1], Dr. Cesar Omar Sepulveda Moreno[2]
[1]universidad Autonoma De Baja California, Mexicali, Mexico, [2]universidad De Sonora, Hermosillo, Mexico

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adults 19+ yrs
Subject Category: Nutrition

The purpose was to establish a healthy food environment provided by this laboratory-cafeteria in the Faculty of Medicine Mexicali (FMM) promoting a positive healthy change in the diet and lifestyle of its users.

We developed 30 healthy menus for lunch with a total of 600 calories using the ESHA software. We also developed Focus groups where nine participants, users of the laboratory-cafeteria, voluntarily debated about the food environment and service, modulated by the Author, data obtained awaiting analysis with the Nvivo software. And two questionnaires developed for voluntary users of the laboratory-cafeteria, the first one to evaluate food perception, quality, taste among others; and the second one to record the eating habits and physical activity.

Stage one of the project, thirty healthy and balanced menus with a total of 600 calories created and provided in La Cafe 1600 prepared in the FMM dietetic laboratory. The questionnaires; the one for feedback regarding the menus, portion size, and taste, the results obtained were positive. The second questionnaire 30 participants provided information about their eating and exercise habits; the analysis of this data is in progress. In the focus group, participants debated the importance of having food available in a University and the importance of this food being nutrient dense, low in calories, high fiber and fruits and vegetables. Participants mentioned the convenience of having food available; most of them have limited free time between classes or during working hours. The stage one of the project is still ongoing; we are expecting to implement this officially in the school cafeteria, waiting for the university treasury department's approval. For stage two of the project, a complete menu of 1600 kcal distributed between breakfast 400 kcal, two snacks 300 kcal each and dinner 600 kcal, based on the average consumption of 2000 kcal.

The purpose of this project is to promote a healthy food environment provided by La Cafe 1600 with balanced diverse and healthy menus. To evaluate the full extent of the impact that La Café 1600 could have in the Faculty´s community a second focus group and questionnaire is required for comparison.

P3.52 Empty houses, loose dogs, and engaged citizens: Lessons learned from community participatory data collection in rural areas

Ms. Katherine Seals[1], **Ms. Jessica Stroope[1]**, Ms. Jamila Freightman[1], Dr. Laura Ainsworth[2], Dr. Aimee Moles[2], Dr. Denise Holston[1]

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: All ages
Subject Category: All

Purpose: Collecting data in rural communities presents unique challenges. With a strong plan and engaged community members, we illustrate how gathering a rural probability sample can be a strategic evaluation approach for health practitioners seeking community-based evidence to guide interventions.

Methods: Using validated measures and scholarly and community input, the Rural Eastern Louisiana Food Accessibility and Active Transportation (RELFA) survey was developed to evaluate three rural counties participating in the Centers for Disease Control High Obesity Program (HOP) grant. We used United States Postal Service (USPS) records and a free online random number generator to draw a probability sample (n=811). Survey responses were collected in person and via postcard using QR codes and website links. Members of each community were recruited to participate as data collectors, going door-to-door to collect surveys via offline iPADs, paper, or mail. A replacement scheme was utilized to address vacant or blighted properties.

Results/Findings: Postcards yielded thirty-two (5.99%) online survey responses, and fifty-one community data collectors collected 650 in-person surveys across three communities. There were ninety-two (11.34%) refusals, and 205 (25.28%) addresses were recorded as vacant or blighted. Respondents were 78.52% Black and 60.57% female. 37.6% of RELFA respondents rely on the Supplemental Nutrition Assistance Program (SNAP), and 26.47% reported using the charitable food system. 26.03% of respondents report walking at least weekly for transportation.

Conclusions: Lessons learned included the importance of community participation, local awareness, and flexibility to adapt protocols to fit local needs. RELFA provides evidence for grant priorities, including evidence of existing demand for active routes to everyday destinations, demonstrated by over a quarter of the sample reporting they walk for transportation at least weekly. Over a quarter of RELFA respondents reported relying on the charitable food system. Food pantry preference results have been shared with local food pantries where Extension staff are working alongside food pantry leadership to expand healthy options for pantry clients. Results have been shared with community members, stakeholders, and partners via community asset

maps and data walks at community events. Gathering data from a true cross-section of rural communities is feasible with a plan and community involvement.

P3.53 Are Sleep Logs Necessary? A Comparison of Parent-Report and Algorithm Detection to Guide Accelerometer-Based Sleep Processing

Dr. Sarah Burkart[1], Ms. Xuanxuan Zhu[1], Dr. Christopher Pfledderer[1], Dr. Ethan Hunt[2], Dr. Keith Brazendale[3], Dr. R. Glenn Weaver[1], Dr. Layne Reesor-Oyer[1], Dr. Elizabeth L. Adams[1], Dr. Bridget Armstrong[1], Dr. Michael W. Beets[1]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 6-12 yrs
Subject Category: Sleep

Purpose: To examine the comparability of sleep estimates when elementary school-age children's raw accelerometry data were processed with and without a parent-reported sleep log.

Methods: Children (n=756, K-5th grade, 51% female, 31% Black) wore an Actigraph GT9X accelerometer on their non-dominant wrist 24 hours/day for 14 days each during Fall 2020, Spring 2021, and/or Summer 2021. Parents completed nightly surveys indicating their child's bedtime and waketime. Sleep outcomes of interest included sleep period (onset to offset), duration (minutes spent asleep), wake after sleep onset (WASO), and timing (midpoint). Only nights with a completed parent sleep log were included. Raw data were processed without a sleep log using the default HDCZA algorithm (no log condition) and separately with a parent-reported sleep log (sleep log condition) using the GGIR package (v2.6.0) in R. Mean/absolute bias and limits of agreement were calculated. Bland-Altman plots measured agreement between the sleep log and no log conditions. Mixed-effects logistic regression was used to examine weeknight/weekend as a predictor of agreement.

Results: Children provided an average of 23±13 (median=24, IQR=12, 34) nights of valid data for a total sample size of 17,461 nights. Of those, 67% of nights showed perfect agreement in identifying sleep period (onset to offset) between the sleep log and no log conditions. Odds of perfect agreement for any given child were 1.97 times more likely on weeknights compared to weekends (95%CI=1.82, 2.14). At least one night with sleep period discrepancy was present in 88% of children. Compared to the sleep log condition, the no log condition produced longer estimates of the sleep period by 6.2 min (absolute mean bias, [AMB]= 58.9 min), longer estimates of sleep duration by 12.8 min (AMB=34.0 min), lower estimates of WASO by 18.9 min (AMB=29.1 min), and later estimates of midpoint by 16.9 min (AMB= 32.5 min).

Conclusions: Using a parent-reported sleep log did not alter sleep estimates on most nights in this large sample of elementary school-aged children. Increased odds of agreement on weeknights may be explained by more accurate parent-reported bed and wake times due to more consistent sleep routines.

P3.54 Different specifications of data from two 24-hour dietary recalls, NHANES 2017-2018: Application to the Planetary Health Diet Index

Ms Sarah Frank[1,2], Dr. Lindsay Jaacks[3], Ms. Linh Bui[4], Dr. Marta Guasch-Ferré[4], Dr. Walter Willett[4,5], Dr. Lindsey Smith Taillie[1,2]

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To apply a dietary index based on the recommendations of the EAT-Lancet Commission on Food, Planet, Health in a nationally-representative sample of US adults and examine how different data specifications affect derivation of the index. A secondary objective is to explore the association between this index and cardiometabolic risk factors.

Methods: 24-hour recall data from 4,923 adults in the 2017-2018 cycle of the National Health and Nutrition Examination Survey (NHANES) were coded in three ways: single-day recall; mean of two-day recalls (mean); and usual intake estimated by two-part modeling (twopm). Fourteen food groups were used to derive the Planetary Health Diet Index (PHDI) in accordance with the recommendations of the EAT-Lancet Commission, with values ranging from 0 to 10 for each food group. Participants were classified into quintiles of each PHDI (i.e., index from single-day, mean, or twopm input data). ANOVA and $\chi2$ were used to test for differences in sociodemographic characteristics across quintiles. Multivariable logistic regression was used to estimate the association of each PHDI with obesity and hypertension.

Results: PHDI values ranged from 22-115.5 (single-day), 23-114 (mean), and 36.5-107.5 (twopm) out of a maximum of 140. The distributions of all indices were approximately normal, and the PHDI derived with twopm had a smaller variation relative to that of single-day or mean of two-day recalls. Participants in the highest quintile of each PHDI were more likely to be female, have a college degree, have higher income, be never smokers, and had lower mean total energy intake compared to their counterparts in the lowest quintile. Quintile of PHDI was inversely associated with obesity, regardless of data specification ($p_{trend}<0.01$ for all PHDI). Quintile of PHDI derived from single-day intake was not associated with hypertension, but an inverse relationship was observed for PHDI from mean intake ($p_{trend}=0.04$) and for PHDI from twopm ($p_{trend}<0.01$).

Conclusions: The PHDI is a flexible dietary tool that performs well in a nationally-representative sample of US adults and is correlated with cardiometabolic risk factors. Two-part models should be used to derive the index when two or more days of recall are available.

P3.55 Pandemic-Related Changes in Resident-Identified Strategies to Improve Food Access and Physical Activity Resources in Medically Underserved Areas in Urban Appalachia

Miss Alexis Hartranft, Dr. Elizabeth Ackley
¹Roanoke College, Salem, USA

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Given the unique challenges imposed by COVID-19 on previously marginalized communities, researchers are called to action to understand and respond to the evolving needs of residents in medically underserved areas (MUA's). Ongoing pandemic-related challenges highlight a need for mindful and effective interventions to enhance access to resources supporting food access (FA) and physical activity (PA) resources and presents a new opportunity to incorporate community-informed strategies into interventions which reflect residents' lived experiences.

Purpose: To explore pandemic-related changes in resident-identified strategies to improve FA and PA resources in an Appalachian community's MUA's.

Methods: Surveys were collected from households in MUA-qualified census tracts in 2019 (*n* = 169) and 2021 (*n* = 82). Inductive content analysis was applied to open-ended survey questions to classify resident-identified resource needs related to FA and PA. Emergent themes from 2019 and 2021 were compared to understand thematic changes surrounding the pandemic.

Results: Prior to the pandemic (2019), emergent themes related to FA enhancement included access to healthier food options (healthier restaurant options, less fast and convenience foods; 17% of respondents), and neighborhood-level infrastructure (grocery stores, farmer's markets, mobile markets; 11.1%); infrastructure upgrades (sidewalks, new parks, road maintenance; 61%), enhanced safety (greater police presence, less crime; 21%), and traffic calming measures (8%) emerged as strategies to enhance PA. In 2021, a higher proportion of residents described the need for neighborhood-level infrastructure to enhance food access (52%) and a desire for resources in close proximity to the home emerged (17%). Safety enhancements remained a prominent strategy to enhance PA in 2021 (43%), and COVID-related themes emerged (increased park sanitization, restrictions;1%).

Conclusions: As a result of the COVID-19 pandemic, resident-identified strategies to enhance FA and PA resources in Roanoke city's MUA describe a shift toward supporting more proximal community needs.

P3.56 Validation of the French Version of a Questionnaire Measuring Sugar-Sweetened Beverage, 100% Pure Fruit Juice and Water Consumption among Adolescents

Dr. Lydi-Anne Vézina-Im[1,2], Prof. Dominique Beaulieu[1,2,3], Mr. Stéphane Turcotte[2], Mrs. Catherine Savard[1], Prof. Simone Lemieux[4,5], Prof. Danielle Boucher[1,2], Prof. Maria-Cécilia Gallani[6,7], Dr. Marie-Claude Paquette[8]

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose. Adolescents would consume large amounts of sugar-sweetened beverages (SSB), which would expose them to health issues. It is important to have questionnaires to measure adolescents' consumption of SSB and healthier beverage options that are short and easy to complete. To our knowledge, only one questionnaire measures frequency and quantity of beverages (BEVQ), and this tool was validated among English-speaking adolescents in the United States. The objective of this study was to adapt and validate a French version of this questionnaire among French-speaking adolescents.

Methods. The BEVQ was translated in French and only the items on SSB, 100% pure fruit juice and water were retained. The French version of the BEVQ was reviewed by seven experts from different domains (public health, nutrition and behavioral sciences) and pretested among five French-speaking adolescents to verify if its items were easy to understand. Finally, 60 French-speaking adolescents (14-17 years) from two regions in Quebec (Canada) completed the French version of the BEVQ twice at a two-week interval and two Web-based 24-hour dietary recalls (R24W). The temporal stability of the French version of the BEVQ was evaluated with intra-class coefficients (ICC) and its validity using Spearman correlations (r_s) between reported intakes from the BEVQ and from the two R24W.

Results. The mean age of participants was 15.3±1.1 years and 55.6% of the sample were girls. The French version of the BEVQ had acceptable temporal stability for the quantity of SSB (ICC: 0.68; 95% confidence interval [CI]: 0.46; 0.81), 100% pure fruit juice (ICC: 0.54; 95% CI: 0.23; 0.72) and water (ICC: 0.66; 95% CI: 0.38; 0.81) consumed by adolescents. The quantities of SSB (r_s=0.49; p<0.0001), 100% pure fruit juice (r_s=0.38; p=0.0024) and water (r_s=0.37; p=0.0034) reported in the French version of the BEVQ were significantly correlated to those of the two R24W.

Conclusions. The French version of the BEVQ has adequate psychometric properties to measure SSB, 100% pure fruit juice and water consumption among adolescents. It could be an interesting tool to evaluate French-speaking adolescents' consumption of SSB, including for public health interventions aimed at promoting healthier beverage options among this high-risk population.

P3.57 Comparison of self-reported and device-measured sedentary time in breast cancer survivors and age-matched healthy controls

Ms. M. Lauren Voss[1], Dr. Edward McAuley[2], Dr. Linda Trinh[1]
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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Purpose: Increased sedentary time is associated with negative health outcomes in breast cancer survivors (BCS). Previous research has demonstrated cancer survivors are more sedentary than the general population, thus accurate assessment of sedentary time is needed for health promotion efforts to reduce sedentary time. This secondary analysis aimed to compare the self-reported Domain-Specific Sitting Time questionnaire against objectively assessed sedentary time using inclinometers (activPAL™) in BCS and age-matched healthy controls.

Methods: Twenty BCS (M_{age}=55.3±9.8 years; mean months since diagnosis=77.9±42.7) and 20 age-matched healthy controls (M_{age}=53.8 ± 9.6 years) completed a modified version of the Domain-Specific Sitting Time questionnaire and wore an activPAL3™ micro inclinometer for 7 days during waking hours. The Domain-Specific Sitting Time questionnaire asks individuals to report the amount of time spent sitting (hours:minutes) on a typical weekday and weekend day in the following domains: transportation, occupation, television and home-based computer use, and leisure time. Spearman's rank correlations examined the association between self-reported and objectively assessed sedentary time. Bland-Altman plots were used to assess bias and the limits of agreement between the measures for BCS and age-matched controls.

Results: The Spearman's rank correlations between the modified Domain-Specific Sitting Time questionnaire and objectively measured sedentary time were marginally significant among BCS (ρ = 0.42, p = 0.06), but not among healthy controls (ρ = 0.37, p = 0.1). There was poor agreement between the measures among BCS (bias = -74.7 min/day) and healthy controls (bias = -87.7 min/day). The limits of agreement were wide for both BCS (95% CI = -387.6, 238.3; range = 625.9 min/day) and healthy controls (95% CI = -400.0, 224.6; range = 624.7 min/day).

Conclusion: The modified Domain-Specific Sitting Time questionnaire showed poor agreement with objectively assessed sedentary time. Both BCS and healthy controls appeared to underestimate their daily sedentary time. Self-reported sedentary time provides important information about the context of the behaviours, but the modified Domain-Specific Sitting Time questionnaire should not be used interchangeably with the activPAL™ inclinometers.

P3.58 Effectiveness of medical nutrition therapy in the management of adult dyslipidemia: A systematic review and meta-analysis

Ms. Cherine Hatem[1], Mr. Alex Mohr[2], Associate Professor Geeta Sikand[3], Dr. Mary Rozga[4], Dr. Lisa Moloney[4], Dr. Joanne Sullivan[5], Ms. Desiree De Waal[6], Dr. Deepa Handu[4]

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Cardiovascular disease (CVD) is a leading cause of mortality in the United States. Many of the primary risk factors for CVD, such as elevated circulating blood lipids, are modifiable with diet and lifestyle interventions. Therefore, the objective of this systematic review and meta-analysis was to evaluate the effectiveness of medical nutrition therapy (MNT) intervention provided by registered dietitian nutritionists (RDN) or international equivalent, compared to usual care or no MNT, on lipid profiles in adults with dyslipidemia. The databases MEDLINE, CINAHL, Cochrane CENTRAL, and Cochrane Database of Systematic Reviews were searched for randomized controlled trials (RCTs) published between January 2005 and July 2021. The revised risk of bias tool (ROB 2.0) and the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) method were used to assess risk of bias and determine the certainty of evidence, respectively. Meta-analyses were performed using a random-effects model. Overall, eight articles from seven RCTs were included. In a pooled analysis, MNT interventions provided by RDNs improved plasma lipid levels : total cholesterol (total-C) [mean difference (95% CI): -20.84 mg/dL (-40.60, -1.07), $P = 0.04$]; low density lipoprotein cholesterol (LDL-C) [-11.56 mg/dL (-21.10, -2.03), $P = 0.02$]; triglycerides (TG) [–32.55 mg/dL (-57.78, -7.32), $P = 0.01$]; and high density lipoprotein cholesterol (HDL-C) [1.75 mg/dl (-1.43, 4.92), $P = 0.28$]. Certainty of evidence was moderate for total-C, LDL-C and TG and low for HDL-C. In conclusion, in adults with dyslipidemia, MNT interventions provided by a RDN are effective for improving blood lipid levels.

P3.59 Depression and loneliness in adults at a Suicide Response and Resource 5K walk

Dr. Carol Janney[1,2], Dr. Jonathon Im[2]

[1]Pine Rest Christian Mental Health Services, Grand Rapids, USA, [2]Michigan State University, College of Human Medicine, Midland, USA

SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: To estimate the prevalence of depression and to evaluate the relationship between depression screening status and loneliness among adult participants at a suicide prevention walk.

Methods: Annually, Walk for Hope is held as a fundraiser and community celebration for the Barb Smith Suicide Response and Response Network (SRRN). As part of the Mental Health Research Advisory Council information table, participants volunteered to complete an anonymus survey that included the Patient Health Questionnaire (PHQ-2) for depression screening, the revised UCLA Loneliness Scale (ULS), and self-reported physical activity. For each completed survey, US$2.00 was donated to SRRN. Participants were classified as screening positive (PHQ-2= 3 to 6) or negative (PHQ-2= 0 to 2) for depression based on the sum of PHQ-2. T-tests were performed to evaluate if the ULS total and item scores differed by depression screening status.

Results: Approximately 1400 participants attended the Walk for Hope with donations estimated around $67,000. Overall 133 adults completed the survey (males=29, females=103). Ages ranged from 18 to 78 years. The majority of participants lived with family and friends (87%) while 12% lived alone. When compared to their peers, 44% were more active, 31% similarly active, and 21% less active. Over the past month, 39% stated they had little to no activity, 46% stated they were moderately active, and 11% stated they were vigorously active. 13% of the participants had a positive screen for depression. Loneliness was measured by the ULS was significantly greater for those who screened positive for depression (49$\pm$9) compared to those who screened negative (35$\pm$9)(p<0.0001). ULS and PHQ-2 were positively correlated (r=0.70, p<0.01).

Conclusion: As hypothesized, participants who screened positive for depression reported higher loneliness scores at the Walk for Hope. Our results suggest that loneliness may be a modifiable risk factor to target for adults at higher risk of depression and/or suicide at a community-based walk.

P3.60 Food-based Diabetes Self-Management and Education Intervention for Food Insecure Patients with Type 2 Diabetes: A Mixed-Methods Feasibility Study

Ms. Eliza Short[1], Mrs. Holly Bryant[2], Ms. Rhonda Gonzalez[3], Dr. Denise J. Roe[1], Ms. Jessi Sheava[3], Dr. Douglas Taren[4], Dr. Debbe Thompson[5], Dr. Melanie Hingle[1]

[1]University of Arizona, Tucson, USA, [2]El Rio Community Health Center, Tucson, USA, [3]Community Food Bank of Southern Arizona, Tucson, USA, [4]University of Colorado, Aurora, USA, [5]USDA/ARS Children's Nutrition Research Center; Baylor College of Medicine, Houston, USA

SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To determine the feasibility and acceptability of a food-based diabetes self-management and education (DSME) intervention for food insecure individuals.

Methods: A single arm (pre-post) intervention study was conducted in partnership with a food bank and federally qualified health center (FQHC). Twenty-one food insecure FQHC patients with type 2 diabetes (T2DM) participated in the 3-month intervention: six bimonthly food boxes, recipes, DSME resources, and two, 30-minute virtual dietitian consults. Food security, diabetes self-efficacy, sociodemographic characteristics, and dietary intake (two, 24-hour dietary recall interviews) were assessed during phone interviews; diet quality scores were calculated (Healthy Eating Index (HEI)-2015). Hemoglobin A1c (HbA1c), height, and weight were obtained (FQHC electronic medical record). Wilcoxon signed-rank and Stuart-Maxwell tests evaluated pre-post intervention differences. Participants completed one in-depth interview at follow-up; data were coded to assess feasibility criteria using structured thematic analysis.

Results: 247 patients with T2DM and food insecurity were recruited, 71 expressed interest, 25 consented, and 21 completed the study. Participants were median (IQR) 48.0 (38.0-63.0) years, 71% female, 62% Hispanic, and 38% White. Fifteen participants (71%) received all home food deliveries and $\geq$ 1 dietitian visit. At baseline, (n=15, 71%) participants reported low/very low food security; median (IQR) diabetes self-efficacy score (0-10) was 6.4 (5.9-7.0); HEI-2015 score (0-100) was 55.9 (51.8-63.9); 90% were overweight or obese; HbA1c was 10.4 (7.6-11.0). There were no significant differences in food security, diabetes self-efficacy, diet quality or biometric data (HbA1c, body mass index) between baseline and follow-up. The intervention was feasible - participants were satisfied with resources and reported using most/all foods received. Reported benefits included offsetting food costs, increased consumption of healthy foods, and help with T2DM meal planning. Challenges included time to cook some food items, family support, and securing dietitian appointments. Participants provided suggestions for improvement - more recipes, greater food diversity, T2DM management tools, and tailoring food amount to household size.

Conclusions: The intervention was feasible and acceptable, and participants gave specific suggestions for improvement. Most participants reported moderate diabetes self-efficacy, and low diet quality and food security, suggesting unmet needs. Next steps include a randomized clinical trial to establish intervention efficacy.

P3.61 Food consumptions and dietary patterns of migrant and non-migrant adults born in the French West Indies

Dr. Benjamin Allès[1], Dr. Zoé Colombet[3], Miss Nathalie Arnault[1], Dr. Louis-Georges Soler[4], Prof. Serge Hercberg[1,2], Dr. Mathilde Touvier[1], Dr. Caroline Méjean[3]
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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Caribbean territories are currently undergoing a nutrition transition, but little is known about how migration could influence the adherence to specific dietary patterns in Caribbean migrants. We specifically aimed to identify dietary patterns and their association with migration status and sociodemographic factors in a context of nutrition transition, in a cross-sectional observational study.

Methods: The study sample was composed by 1,094 participants from the NutriNet-Santé e-cohort, categorized in 4 subsamples: born and living in the French West Indies (West Indies/West Indies; n=172); born in the West Indies and living in mainland France (West Indies/Mainland, n=317); born in mainland France and living in the French West Indies (Mainland/West Indies, n=288) and those born and living in mainland France (Mainland/Mainland, n=317). From dietary intake provided by 24h records, we conducted a comparison between the four subsamples on nutritional quality of the diet, dietary patterns and sociodemographic, lifestyle and anthropometric characteristics.

Results/findings: The West Indies/West Indies group had the highest contribution of unprocessed food to their diet (40% of total energy intake vs. 30% for Mainland/ Mainland), with higher intake of traditional West indies tubers, rice, fish, chicken but also sugary drinks (p<0.05). The West Indies/Mainland group had consumption reflecting an intermediate nutritional quality between the West Indies/West Indies and the Mainland/Mainland group which exhibited higher consumption of plant-based foods. The Mainland/Mainland group were more likely to adhere to a mainland-France traditional dietary pattern, rich in animal-based foods, whereas the West Indies/West Indies group, and to a lesser extent the West Indies/Mainland group, were more likely to adhere to a West Indies dietary pattern and to a convenient pattern, rich in ultra-processed foods.

Conclusions: Migration has effects on nutritional quality of the diet suggesting that food environment may play a role in the current nutrition transition in the West Indies

O.3.23 - The home environment: Evidence and impact

Room 150

May 21, 2022, 12:20 PM - 1:50 PM

A systematic review of the child-level effects of family-based interventions for the prevention of type 2 diabetes mellitus

Miss Mette Kurtzhals[1], Mrs. Jane Hybschmann[2], Mrs. Lærke Mygind[1,3,8], Dr. Anne-Louise Bjerregaard[4], Ms. Bianca Desilva[5], Miss Anne Timm[6,10], Dr. Peter Elsborg[1,6], Associate Professor Trine Flensborg-Madsen[8], Dr. Peter Kurtzhals[7], Prof. Peter Bentsen[1,9]

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Background: The prevalence of type 2 diabetes (T2D) in pediatric populations has increased in recent years, although the number of preventive health initiatives for children is substantial. Likewise, factors that contribute to the risk of developing T2D have increased. Studies have examined the effects of family-based interventions that promote health behaviors influence on T2D incidence and related risk factors, but only a few studies have examined the effect of such interventions in vulnerable families with a focus on the effects on children. *Aim:* To systematically describe and characterize the existing literature on family-based health promotion interventions and to assess their effects on children's health behaviors and the quality of evidence.

Methods: The PRISMA checklist for systematic reviews formed the methodological framework, inclusion criteria were defined based on PICO and the quality of evidence was assessed using the OHAT Risk of Bias Assessment Tool. Additional inclusion criteria were English peer-reviewed quantitative studies with a between-subjects design. The searches were completed in March 2021. *Results:* Across five databases, 3173 studies were identified; 43 studies met the inclusion criteria and 39 different interventions were identified. The findings showed that family-based interventions to promote healthy behavior and prevent T2D or related risk factors in vulnerable families are characterized by great diversity, with some consistent intervention components.

Discussion: It was not possible to provide any rigorous recommendations for future designs of family-based interventions to promote healthy behavior in childhood. However, there were some intervention features that seem promising and beneficial for children, including empowering both child and parent, creating shared values by goal setting and social support, and promoting intrinsic motivation and self-efficacy on a social-cognitive theoretical basis.

Conclusion: The ideal family-based intervention to promote health behavior is yet to be identified, but this review provides proposals for future research and indicates a need for streamlining intervention designs and not only raises the question does the intervention work but rather why does it work. Implications enhancing future policy and practice involve both children and parents to promote mutual empowerment, shared values, and whole-family ownership in which intrinsic motivation and self-efficacy for behavior change are implicit.

"Mummy, can I join a sports club?" A qualitative study on the impact of health-promoting schools on health behaviours in the home setting

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Purpose: More insight into the effects of school-based health-promoting interventions' effects in the home environment is vital to optimise interventions' potential, as information regarding this subject is scarce. The Healthy Primary School of the Future (HPSF) is a Dutch initiative aiming to improve children's health and well-being by providing daily physical activity (PA) sessions and healthy school lunches. Earlier reports revealed favourable intervention effects on children's anthropometrics and health behaviours. Nevertheless, additional quantitative analyses revealed that favourable changes in health behaviours were only seen in the school setting, and not in the home setting. The present study used qualitative methods to answer the research question: "Does HPSF lead to changes in health behaviours (especially PA and dietary behaviours) of children and parents in the home environment, and if so, what are the processes behind these changes?"

Methods: In 2018-2019, 27 semi-structured interviews were conducted with parents from two HPSFs. Interviews were recorded and transcribed, data was coded and interpreted through thematic analysis using NVivo software. As theory regarding behavioural changes in the home context resulting from school-based interventions is scarce, data analysis followed a deductive grounded theory approach.

Findings: HPSF resulted in various behavioural changes at home, initiated by both children and parents. Interviewees reported improvements in healthy behaviours, which were sometimes compensated by unhealthy behaviours. Reasons for behavioural change included increased awareness, perceived support to adopt healthy behaviours, and children asking for the same healthy products at home. Barriers to change included no perceived necessity for change, lack of HPSF-related information provision, and time and financial constraints.

Conclusions: The present study is one of the first to provide insight into the processes, facilitators, and barriers of the transfer of behavioural changes following a school-based health-promoting intervention from school to the home context. School-based lifestyle interventions can lead to both healthy and unhealthy behavioural changes at home, and both child-to-adult intergenerational learning and parent-initiated changes play an important role in the transfer of health behaviours from school to home. Further stimulating these

mechanisms can therefore lead to an increased impact of school-based health-promoting interventions' impact in the home setting.

Exploring the feasibility of reducing mealtime screen use behaviours in low socioeconomic families with young children.

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Using screens during mealtimes, such as TV, handheld electronic devices or smartphones, can detrimentally influence diet and the development of healthy eating behaviours. However, around a third of young children engage in mealtime screen use every day. Given the complex nature of this behaviour in families with young children, the aim of this study was to explore the feasibility of reducing mealtime screen use using specific strategies co-designed with parents.

Method: Strategies aimed to reduce mealtime screen use were co-designed between the parent and researcher using individual motivational counselling sessions conducted via zoom, followed by a 3-4 week trial period and a follow up interview. Recruitment was conducted via social media. Interviews were recorded, transcribed and analysed thematically using a constructivist paradigm and the COM-B framework.

Findings: Participants were 14 mothers with at least one child between six months and six years, from socioeconomically disadvantaged backgrounds. Strategies to reduce mealtime screen use such as goal setting, parental modelling, adjustments to meal location and reconsidering mealtime expectations were reported to be feasible. Mothers mostly described making changes less difficult than they had expected and some reported improvements in family mealtime atmosphere as a result of reducing their mealtime screen use. Feasibility was stronger when mothers felt confident, supported and prepared to make change. Reminders which were accessible and tailored to the commonly reported challenges of mealtimes were considered a useful strategy for prompting and supporting new behaviours. Mothers were open to receiving similar advice around limiting mealtime screen use from a reputable source and were motivated to continue new behaviours following the trial.

Conclusions: Strategies to reduce mealtime screen use in families with young children appear to be feasible if they focus on challenging motivations for mealtime screen use and increasing mothers' parenting confidence. Utilising existing reputable health platforms to provide mothers with specific advice may be an opportunity to support parents in reducing existing mealtime screen use, and to promote limited mealtime screen use in families from the inception of feeding.

Disentangling the complex interplay of barriers and facilitators to activity behaviors of low-income Hispanic adolescents

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Physical activity (PA) has many health benefits. However, more than 75% of adolescents in the US, particularly Hispanics, did not meet current recommendations for daily moderate-vigorous PA (MVPA) compared to non-Hispanic Whites. It is likely that even fewer adolescents are meeting MVPA recommendations due to COVID-19 restrictions. Interventions are needed to increase MVPA in Hispanic adolescents. The purpose of this study is to identify barriers and facilitators to MVPA and sedentary time (ST) in this high-risk population to better inform future PA interventions.

Methods: A total of 409 Hispanic middle schoolers (55% female, Mage = 11.9 years) were recruited from a public charter school in Houston, Texas. Participants completed a validated Barriers to Youth Physical Activity Scale (3 subscales: Competing interests, Environmental, Social) and Facilitators to Youth Physical Activity Scale (3 subscales: Enjoyment, Family support, Socialization) for low-income, Hispanic youth (Arlinghaus et al. 2019). Average daily MVPA was assessed by 7-day actigraph wGT3x (Pensacola, Florida). ST was estimated via the self-reported Modifiable Activity Questionnaire item, "During a normal week, how many hours a day do you watch television and videos or play computer or video games before or after school?" Participants' height and weight were measured by trained researcher. Body Mass Index (BMI) was calculated using Quetelet's index. BMI percentile was derived from CDC growth curves. Hierarchical linear regression analyses were conducted to evaluate the influence of PA barriers and facilitators on MVPA and ST in Hispanic adolescents, controlling for gender, age, and BMI percentile.

Results: Overall, 10.1% of the variance in MVPA was explained by the model (p = .001), family support was the only unique significant predictor of MVPA in Hispanic adolescents (β=.183; p=.027). The model explained 19.9% of the variance in ST (p<.001), but competing interests to PA, such as rather watch television or play computer games, was the only unique predictor of ST in Hispanic adolescents (β=.424; p<.001).

Conclusions: These findings suggest that increasing family support may improve MVPA in Hispanic adolescents. Conversely, focusing on removing barriers to PA, like screen media devices, might be a more salient strategy for decreasing ST in this population.

Fathers' engagement in child feeding during the COVID-19 pandemic

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Fathers' role in child appetite and weight development is not well understood and this omission from research is particularly apparent in the context of the COVID-19 pandemic, during which families spent more time at home and thus more time together for meals. Here we examined fathers' engagement in child feeding during the pandemic.

Methods: We surveyed a large number of fathers of 2-12-year-old children in May 2020 (N=112) and a sub-sample also completed a follow-up survey investigating reported changes in food parenting practices, mealtime interactions and share of feeding responsibilities in August 2021 (n=56). Paired t-test were calculated to examine differences in food parenting practices between 2020 and 2021.

Results/findings: In May 2020, around 25% of fathers reported utilizing obesity-promoting feeding practices (e.g., using food to manage emotions or behavior) 'sometimes or more' while ≥80% reported implementing structure-related practices in terms of monitoring, timing, and setting. Fifteen months later, fathers used obesity-promoting practices less frequently than early in the pandemic while the frequency of using structure-related practices went up to ≥85%. However, these differences were not statistically significant. More than a year into the pandemic, 26% of fathers indicated that their share of feeding responsibilities had increased due to the pandemic (for 68% it stayed the same). Interactions with the child (e.g., serving, socializing, feeding, or eating with child), cooking/food preparation, cleaning up, and eating together as a family occurred more frequently now in 1/3 of the sample compared to before the pandemic while shopping, food budgeting, meal planning, and eating meals in front of the TV or using other devices remained the same for the majority of fathers. Fathers in a relationship expressed high levels of agreement (>81%) with their partner around child feeding.

Conclusion: The share of feeding responsibilities during the pandemic has slightly shifted, with increased engagement of fathers. Investigating paternal influences on child eating and weight is therefore warranted more than ever. While we did not see a significant change in paternal feeding practices during the ongoing pandemic, longitudinal relationships with child outcomes need to be examined next to determine lasting impacts of paternal engagement.

Attending Summer Day Camp Promotes Parental Rules/Routines for Obesogenic Behaviors among Elementary Aged Children: Evidence from a Randomized Controlled Trial

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: All

Background: Elementary-age children increase obesogenic behaviors and experience accelerated weight gain during summer vacation (i.e., shifted/disrupted sleep, increased screen time, poor diet intake). It is hypothesized parents relax health-promoting rules/routines around obesogenic behaviors during the summer. Attending summer day camp (SDC) may prevent decreased rules/routines in the home by providing external structure. In a secondary analysis of a randomized controlled trial, we evaluated 1) whether health-promoting rules/routines changed from the school year to summer and 2) the impact of access to free SDC on changes in these rules/routines.

Methods: Elementary-age children (n=309; 5-12 years, 51% female, 50% Black) from low-income households were randomly assigned to receive free access to a community-based SDC for eight weeks or a control condition. Parents (n=237) reported on household rules/routines during the school year (April/May) and summer (July/August) 2021. We focused on rules/routines about sleep (e.g., bed/wake times, 10-items), screen time (e.g., set limits on access to devices, 6-items), and meals (e.g., eats with family, 3-items). We utilized linear mixed effects models with measurements nested within children and children nested within families to evaluate differential changes between groups (time-x-treatment interaction) in rules/routines from the school year to summer (time). Statistically significant standardized effects (β) were evaluated as P<.001 to account for multiple comparisons.

Results: Compared to the school year, rules/routines decreased during the summer for sleep (βrange = -0.47 to -0.16, 7/10-items), screen time (βrange = -0.21 to -0.19, 2/6-items), and meals (β= -0.19, 1/3-items). Those who received access to free SDC maintained rules/routines during the summer for sleep (βrange =0.15 to 0.23, 4/10-items) and meals (β= 0.17, 1/3-items), but not screen time, compared to those in the control condition.

Conclusions: Parents relaxed health-promoting rules/routines during the summer compared to the school year; however, SDC protected against changes in rules/routines for sleep and meals. This study is among the first to show SDC facilitates a healthier home environment as demonstrated by maintenance of parent rules/routines, suggesting the benefits of SDC extend beyond what children experience at SDC into the home.

O.3.24 - Latest findings in aging

Room 151

May 21, 2022, 12:20 PM - 1:50 PM

Changes in dietary total and non-haem iron intake over 3 years is associated with incident frailty in older Australian men: The Concord Health and Ageing in Men Project

Miss Rebecca Luong[1,2,3], Dr. Rosilene V Ribeiro[1,4], Associate Professor Anna Rangan[1,2], Prof. Vasi Naganathan[5,6], Prof. Fiona Blyth[3,7], Associate Professor Louise M Waite[5,6], Prof. David J Handelsman[8], Prof. Robert G Cumming[3,7], Prof. David G Le Couteur[1,8], Associate Professor Vasant Hirani[1,2,5,8]

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Nutrition

Purpose: Frailty is more prevalent in old age and a major risk factor for disability, morbidity, and mortality. Poor nutritional intake is considered a key behavioural contributor to developing frailty. However, direct associations between dietary iron intakes and frailty have not been reported. The study aimed to evaluate the associations between dietary iron intakes (total iron, haem iron, non-haem iron and haem to non-haem iron ratio) and changes in dietary iron intakes with frailty.

Methods: Cross-sectional analyses involved 785 men aged 75 years and over at nutrition assessment from the Concord Health and Ageing in Men Project (CHAMP) prospective cohort study. Of these, 563 men who were robust or pre-frail were included in the longitudinal analyses over 3 years. Dietary intakes assessed at both timepoints using a validated diet history questionnaire were converted to foods and total iron intakes. Dietary calculation was used to derive haem iron and non-haem iron intakes from total iron intakes. The associations between iron intakes and changes in iron intakes (as categorical variables with the low tertile reference category and as continuous variables) with frailty were evaluated through binary logistic regression.

Results: New incidence of frailty at 3 years was 15.3% (n = 86). In longitudinal analyses, maintaining total iron intakes (medium tertile -2.61-0.81mg/d) without and with haemoglobin adjustment, maintaining non-haem iron intakes (medium tertile -2.09-0.79mg/d) without haemoglobin adjustment, and increases in total iron and non-haem iron intakes (high tertiles ≥0.82mg/d and ≥0.80mg/d) with haemoglobin adjustment, were associated with reduced risks of incident frailty (OR: 0.49 [95% CI: 0.26, 0.92, p = .027], OR: 0.46 [95% CI: 0.24, 0.88, p = .020], OR 0.50 [95% CI: 0.26, 0.98, p = .042], OR 0.47 [95% CI: 0.24, 0.94, p = .033] and OR 0.44 [95% CI: 0.21, 0.90, p = .024]).

Conclusion: We found that maintaining or increases in dietary total iron and non-haem iron intakes over three years were associated with reduced incidence of frailty in older men. This allows for practical application and should be further investigated for potential to include in dietary recommendations to reduce the onset of frailty.

Promoting food and health literacy in older adults – results of the GUSTO intervention in Germany

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Nutrition

Purpose: Food literacy (FL), a subset of health literacy (HL), refers to the ability to apply nutritional knowledge and practical skills to ensure a healthy and sustainable diet. HL was demonstrated to be limited among adults in Germany aged 65 and over. In addition, almost every second adult between 60 and 69 years has insufficient and problematic FL. The project "Enjoy eating and stay healthy together (GUSTO)", supported by the Bavarian State Ministry of Health and Care, aims to promote HL, and especially FL, in people aged 65 and over.

Methods: A participatory approach was used to develop and implement a 52-week program including 24 meetings of self-reliant, peer-moderated groups of older adults in the community. The intervention consisted of 11 groups in 11 social service institutions in Bavaria. The intervention's effect on FL and HL was measured using German versions of the Self-Perceived FL Scale and the HLS-EU-Q16 in a pre-post design. Daily fruit and vegetable consumption and fluid intake were used as a proxy for dietary behavior.

Results/findings: Overall 130 older adults (mean age: 71.0 ± 6.5 years, male: 29.5%) completed the questionnaire in the first measurement. The dropout rate between the first and second measurement was 78.5%. Most participants left the intervention during lockdowns due to the COVID-19 pandemic. 28 older adults (mean age: 68.4 ± 5.7, male: 21.4%) completed the intervention. Evaluation shows that the percentage of participants with insufficient and problematic HL has dropped from 50.0% at the beginning of the intervention to 39.3% at the end. FL scores were found to be nearly identical: 4.1 vs. 3,9 (pre vs. post; scoring range from 1 to 5, with 5 being the best possible FL score). Furthermore, there was an increase in the daily fruit and vegetable consumption (5.0 to 5.4 portions) and daily fluid intake (1.76 to 1.94 liters).

67.9% of the participants would recommend the intervention to others of the same age and 85.7% wish to continue meeting.

Conclusions: This intervention contributes to engaging older adults on nutrition and health topics. Due to the lockdowns, only limited interpretation of the results is possible.

Sit Less Move More: a feasibility study of an intervention to support older adults to be more active, improve strength and balance and reduce their sedentary time

Ms. Jessica Moran[1], Dr. Victoria Palmer[1], Ms. Frances Bain[3], Dr. David Blane[1], Dr. Claire Fitzsimons[2], Mr. David Loudon[4], Mr. Douglas Maxwell[4], Prof. Nanette Mutrie[2], Prof. Sally Wyke[1], **Prof. Cindy Gray[1]**

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Being sedentary is associated with poorer physical and mental health in older adults, while physical activity (PA) is associated with improved disease risk and physical functioning. Many older adults do insufficient PA, spending 65-80% of their waking day sedentary and COVID-19 has restricted efforts to be physically active. We aimed to test the feasibility of Sit Less Move More (SLMM): a 10-week, facilitator-led COVID-compliant intervention delivered via seven one-to-one telephone sessions to support older adults to be more active, break up their sedentary behaviour (SB) and build strength and balance.

Methods: A mixed-methods feasibility trial was conducted with community-dwelling older adults (N=60) randomly allocated to receive SLMM (intervention group, N=31) or a comparison group (N=29). Outcomes examined included feasibility (recruitment, retention, telephone delivery), acceptability (via semi-structured interviews with N=15 intervention group participants) and potential effectiveness (post-programme change in objectively-measured PA and SB and self-reported PA, SB, and strength and balance exercises).

Findings: The recruitment target (N=60) was met: 82% (N=49) were women (mean age 69±5.5), and 87% (N=25) of the intervention group completed the SLMM programme, which was successfully delivered remotely. The structured programme was particularly welcomed when routine activities had been disrupted by COVID. Participants found personalised goal setting and feedback from their SLMM facilitator highly motivational. Objectively measured daily steps increased more in the intervention group than the comparison group (1810±2840 vs. 440±2850 p=0.02). Self-reported walking MET mins/week increased significantly in the intervention group (2144±1628 vs. 1241±1170 p=0.002, between groups p=0.05). The intervention group increased sit-to-stand transitions more than the comparison group (10.5±25.3 vs. 2.3±8.6 p=0.11). No significant between-group differences in total sitting time were observed; however, self-reported sitting time (mins/day) reduced significantly in the intervention group (542±189 vs. 624±173 p=0.03). Number of days completing strength exercises increased in both groups (3.4 ± 2.8 p=0.004 vs. 2.7 ± 3.2 between groups p=0.27).

Conclusions: SLMM is a feasible and acceptable way of engaging older adults in making positive changes to their PA and SB. Successful telephone delivery means SLMM has potential to help older adults when their activities are restricted (e.g., during COVID) and those who live remotely.

The Association Between Sedentary Time and Physical Activity and Risk of Stroke: A National Cohort Study

Dr. Steven Hooker[1], Dr. Keith Diaz[2], Dr. Steven Blair[3], Dr. Natalie Colabianchi[4], Mr. Brent Hutto[3], Dr. Steven Hooker[5], Dr. John Vena[6], Dr. Virginia Howard[7]

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sedentary behavior

Background and Purpose: This study investigated the associations of accelerometer-measured sedentary time and physical activity (PA) of varying intensity and risk of stroke in a national cohort of middle-aged and older black and white adults followed from 2013 to 2020.

Methods: Participants comprised 8,000 white or black adults, ≥45 years of age, enrolled between 2003-2007 in the Reasons for Geographic and Racial Differences in Stroke study. Objective measures of PA and sedentary behavior were collected from 2009-2013. ActicalTM accelerometer activity counts of <49, 50–1,064, and >1,065/minute distinguished sedentary behavior, light intensity PA (LIPA), and moderate-to-vigorous intensity PA (MVPA), respectively. Participants wore the hip-mounted accelerometer for seven consecutive days. Medical records for individuals with suspected strokes were reviewed by stroke experts who validated and classified potential strokes.

Results: 286 incident stroke cases (85% ischemic stroke) occurred during 7.4 years (SD: 2.5) of follow-up. For LIPA and MVPA, the fully adjusted hazard ratio for incident stroke for the highest tertile, compared to the lowest, was 0.71 (0.51-1.01) and 0.60 (0.40-0.89), respectively. Higher sedentary time was associated with a 50% greater risk of incident stroke (1.50 [1.03-2.16]). When comparing highest to the lowest tertile, mean sedentary bout duration was significantly associated with a greater risk of incident stroke (1.59 [1.15-2.21]). The highest tertile of unbouted MVPA (1-9 min in duration) was significantly associated with a lower risk of incident stroke compared to the lowest tertile (0.66 [0.44-1.00]). However, bouted MVPA (≥10 min bouts) was not significantly associated with incident stroke risk upon adjustment for sedentary time. There was no effect modification by age, race, sex, or body mass index for any association.

Conclusions: Objectively measured LIPA, MVPA, and sedentary time were each significantly and independently associated with incident stroke risk. Longer sedentary bout duration was also independently significantly associated with an increased risk of incident stroke. Replacing sedentary time with LIPA, or even very short bouts of MVPA, may lower stroke risk. These findings support the concept to move more and sit less as an effective stroke risk reduction strategy in adults.

O.3.25 - What factors are associated with behavior change?

Room 152,

May 21, 2022, 12:20 PM - 1:50 PM

How are economic, social, and embodied cultural capital conditional on each other in their influence on physical activity in the Netherlands? A cross-sectional study

Ms. Andrea Mudd[1], Dr. Joost Oude Groeniger[2], Ms. Sanne Verra[1], Dr. Michèlle Bal[1], Prof. Frank Van Lenthe[1,2], Dr. Carlijn Kamphuis[1]
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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Bourdieu's capital theory offers potential to further understand socioeconomic inequalities in physical activity (PA). Although Bourdieu emphasized that economic, social, and embodied cultural capital interact to shape inequalities, existing empirical research mainly considered separate effects of the forms of capital on health behavior. Our aim was to investigate how economic, social, and embodied cultural capital are conditional on each other in their influence on adults' PA.

Methods: Cross-sectional, self-reported data from the 2014 GLOBE survey of 2,812 adults aged 25 and over residing in Eindhoven, the Netherlands, were used. Step-wise multiple logistic regression models included economic, social, and embodied cultural capital (operationalized as relative capital levels divided into quartiles) and confounders (age, gender, birth country, employment type). The models estimated the log odds and 95% confidence intervals (CI) of main associations, two-way interactions, and three-way interactions of the forms of capital on three PA outcomes: engaging in at least 30 minutes per week of (1) walking and cycling to and from work (yes/no), (2) walking and cycling in leisure time (yes/no), and (3) sports participation (yes/no).

Results: Embodied cultural capital was positively associated with all types of PA (for instance, the log odds of engaging in at least 30 minutes of sports per week for those with embodied cultural capital in the highest versus lowest quartile were 0.61, 95% CI: 0.28-0.95). Social capital was positively associated with walking and cycling in leisure time and sports participation and was negatively associated with walking and cycling to and from work. Economic capital was positively associated with sports participation. The interaction between economic and social capital positively influenced walking and cycling to and from work and sports participation. No other interaction effects were observed.

Conclusions: While economic and social capital do not appear to be conditional on embodied cultural capital, these findings suggest that economic and social capital may be conditional on each other, boosting adults' engagement in certain types of PA. Policy and interventions that consider the interaction between economic and social capital may be more effective in increasing PA levels than those targeting each form of capital in isolation.

Are men and women getting different preventive care? Gender differences in the receipt of physical activity counselling in Mexican primary care settings

Ms. Alyssa Comfort[1], Dr. Lucie Lévesque[1], Dr. Edtna Jáuregui Ulloa[2,3], Dr. Rebecca E. Lee[4], Dr. Juan López y Taylor[2], Dr. Karla I. Galaviz[5]

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Primary care physicians are well-situated to promote physical activity (PA) among their patients. However, gender differences may exist in the receipt of such preventive care. These differences have not been widely examined in Latin America, where gender roles are strongly culturally embedded. The purpose of this research is to examine differences in the receipt of PA counselling between women and men.

Methods: This was a secondary, cross-sectional analysis of data collected among Mexican primary care physicians and their inactive patients. Patient sociodemographic characteristics, self-reported receipt of counselling and PA levels were collected through questionnaires. PA counselling was broken down into the 5As: Assess, Advise, Assist, Agree, Arrange. Logistic regression models adjusted for age and education were used to estimate the probability of receiving counselling for women and men, and to examine differences in these probabilities according to patient-physician gender-concordance.

Results: Thirty-six Mexican primary care physicians (mean age=44 years, 53% women) and 359 of their patients (mean age=50 years, 77% women) were included in analyses. The probability of men reporting their physicians *Arranged* for a PA referral was 70% lower than that of women (AOR=0.30, 95% CI: 0.13-0.69, p=0.005). Further, the probability of patients reporting their physician *Assisted* them in setting a PA goal was 39% lower in gender-concordant patient-physician dyads than in gender-discordant dyads (AOR=0.61, 95% CI: 0.39-0.95, p=0.03).

Conclusions: Receipt of PA counselling differs between women and men, suggesting that disparities exist in the delivery of preventive care in the Mexican primary care context. Although the drivers of these disparities are not well-established, one explanation is that physicians may perceive women as more likely to follow-through with referrals. Identifying and addressing such disparities is imperative to offer gender-responsive primary care in Latin America.

Changes in animal and healthy plant food consumptions over time: associations with stages of change towards meat reduction and their motives

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To accelerate sustainable nutrition transition, one driver is a rebalance of animal and plant food consumption. Thus, a better understanding of actual changes in food behaviors is necessary. The transtheoretical model (TTM) enables to identify the stage of change in food behavior at which an individual is. For the first time, this longitudinal study aims to investigate the associations between the changes in animal and plant food consumption over time and the stages of change for reducing meat consumption in a population of French adults. Another objective was to describe motives associated to these stages.

Methods: This study included 25,143 non-vegetarian participants of the web-based NutriNet-Santé cohort with a median follow-up of 6.2 years. Dietary data were obtained from at least two sets of two 24-hour dietary records over the 2009-2019 period. The contribution of meat to total energy intake and a score measuring the contribution of healthy plant foods to the diet were computed. A questionnaire completed in 2018 allowed us to identify the five stages of change of the TTM (Precontemplation, Contemplation, Preparation, Action, Maintenance) and 12 motives related to meat reduction. Associations between changes in meat consumption, as well as healthy plant foods, and stages of change were assessed using linear mixed models, adjusted for potential confounders such as sociodemographic, geographic, and anthropometric factors. Motives were described according to the stages of change.

Results/findings: The Action and Maintenance stages were significantly associated with a decrease in meat consumption ($\beta_{Action}=-0.062$, $p< 0.0001$, $\beta_{Maintenance}=-0.079$, $p< 0.0001$, reference = Precontemplation) and an increase of the healthy plant food consumption score ($\beta_{Action}= 0.154$, $p< 0.0001$, $\beta_{Maintenance}= 0.119$, $p< 0.0001$) over time. The Contemplation and Preparation stages were not associated to consumption changes over time. For Action and Maintenance, the most frequently reported motives related to meat reduction were health (79.1 and 80.4%, respectively), nutrition (75.0 and 75.5%), and environment (67.4 and 70.4%).

Conclusions: This longitudinal study documented that individuals in the effective meat reduction stages of change have adopted healthier and more sustainable food behaviors. Stages of change towards meat reduction identified through the TTM reflected actual consumption changes.

Diet Outcomes of a Parenting Intervention Simultaneously Targeting Healthy Eating and Substance Use Prevention among Hispanic Families with Adolescent Children

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: To assess preliminary efficacy of Families Preparing the New Generation Plus (FPNG+), a 10-week parenting intervention promoting healthy eating and youth substance use prevention among low-income, Hispanic families on diet outcomes.

Methods: Dyads (n=239) of one parent (40.2±6.1 years; 89% female) and one 6th-8th grade adolescent child (12.4±0.9 years; 40% female) were recruited from 12 middle schools in Phoenix, Arizona. Participants were randomized (school level) to one of three arms: the FPNG+ intervention, a substance use prevention only intervention (FPNG Original), or a control intervention (academic achievement), all delivered exclusively to parents. Parent and adolescent diets were assessed using the Diet Screener Questionnaire at baseline (T1), after intervention completion (T2), and 12-16 weeks post-intervention completion (T3). Standardized effects were estimated using baseline-adjusted regression models, adjusting for school-level random effects, and applying Full Information Maximum Likelihood for missing data. Effect sizes (Cohen's ds) were calculated for all diet intake estimates

Results: Relative to the control group, adolescents in FPNG+ had greater intake of fruit and vegetables (including legumes; FVL) at T2 (+0.114 cup equivalents; d=0.295; p<0.01) and T3 (+0.170 cup equivalents; d=0.350; p<0.01), and greater fiber intake at T3 (+0.121 g; d=0.247; p<0.05). Parents in FPNG+ had greater intake of FVL at T2 (+0.195 cup equivalents; d=0.404; p<0.05), a trend towards greater intake of FVL at T3 (+0.083 cup equivalents; d=0.169; p<0.1), and greater fiber intake at T3 (+0.136 g; d=0.279; p<0.05). FPNG+ parents also consumed more whole grains at T3 (+0.197 oz equivalents; d=0.408; p<0.001) and less added sugars at T2 (-0.217 tsp equivalents; d=0.451; p<0.05), relative to control parents. Adolescents in the FPNG Original group consumed more FVL than those in the control group at T3 (+0.081 cup equivalents; d=0.166; p<0.05). Differences in the intake of dairy, calcium, or added sugars from sugar-sweetened beverages were not different among groups at T2 or T3.

Conclusions: Results suggest that FPNG+ contributed to favorable, albeit small, diet changes in parents and adolescents, some of which remained beyond intervention completion. Findings provide preliminary evidence to support the use of parenting as a strategy to improve adolescent diet quality.

Between-subject and within-subject effects of psychosocial factors on physical activity behavior of people with physical disabilities and/or chronic diseases: a prospective cohort study

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: This study aimed to use hybrid multilevel regression models to explore 1) the effects of psychosocial factors (i.e., self-efficacy, attitude, social support, motivation) on physical activity in adults with physical disabilities and/or chronic diseases followed up to one year after rehabilitation, both between persons and within a person over time, and 2) whether a person's stage of change modifies these effects of the psychosocial factors on physical activity.

Method: 1256 Adults with physical disabilities and/or chronic diseases were included from the prospective cohort study Rehabilitation, Sports and Active lifestyle (ReSpAct). Self-reported physical activity, self-efficacy, attitude, motivation, social support and stage of change were measured with questionnaires 3-6 weeks before discharge (T0) and 14 (T1), 33 (T2), 52 (T3) weeks after discharge from rehabilitation. Multivariable hybrid multilevel regression models (corrected for age, sex, BMI, education level, diagnosis) analyzed the between-subject and within-subject effects of psychosocial factors on physical activity on average over time, and potential influence of stage of change on these effects (effect modification).

Results/findings: Significant between-subject effects were found for self-efficacy (β=43.27 [95%CI 17.35, 69.18]) and intrinsic motivation (β=599.97 [95%CI 170.56, 1029.41]). Significant within-subject effects were found for identified regulation (β=-472.96 [95%CI -852.38, -93.48]) and intrinsic motivation (β=505.00 [95%CI 183.23, 816.43]). Effect modification of stage of change was found for the within-subject effect of identified regulation, which had a positive effect on physical activity in people in the precontemplation and contemplation stage and a negative effect on physical activity in people in the preparation, action and maintenance stage.

Conclusion: Using novel hybrid multilevel regression models to disentangle the between-subject and within-subject effects, we found that adults with physical disabilities and/or chronic diseases with better self-efficacy and who are more intrinsically motivated are more physically active up to one year after rehabilitation. However, to improve physical activity over time after rehabilitation within individuals, it appears that intrinsic motivation should be improved. Improving identified regulation can be a strategy in people in the

precontemplation and contemplation stage, but appears to have negative effects on physical activity in people in the stage of change preparation and beyond.

Effectiveness of a combined food literacy and physical activity intervention to optimize metabolic health among women of reproductive age in urban Uganda: a randomised control trial.

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Metabolic health of urban Ugandans, mostly women, has increasingly become sub-optimal due to the escalating prevalence of overweight and obesity. Improving fruit and vegetable intake and physical activity (PA) could optimise metabolic health. Objective: assess the effect of an intervention aimed at increasing fruit and vegetable intake and PA on metabolic health among women of reproductive age in urban Uganda.

Methods: A cluster-randomized controlled two arm trial with a 1:1 allocation involving 132 participants from six church communities in Kampala was undertaken (https://clinicaltrials.gov/ct2/show/NCT04635332). Eligible participants were aged 18-45 years, with a waist circumference ≥80cm and no cardio-metabolic related disease. The study included three-month intervention, followed by three-month post follow-up phase. The intervention arm was exposed to infographics and face to face group sessions while the comparison arm received only infographics. Primary outcome was a reduction in waist circumference. Secondary outcomes included optimization of PA, fruit and vegetable intake, FBG, SBP, DBP, TC, LDL, HDL, TG, body composition. Intention-to-treat analyses were performed using linear mixed models.

Results: At end-line and post follow-up, 118 and 100 participants respectively were included in the analysis. At end-line, a reduction trend was observed in waist circumference (-1.48cm (-3.05; 0.10), $p=0.060$) in the intervention arm. Apart from FBG (-6.95mg/dl (-13.37; -0.53) $p=0.034$), other cardio-metabolic parameters did not change. Participants in the intervention arm consumed more fruits (62.60g (1.86; 123.34) $p=0.046$) and vegetables (66.15g (25.47; 106.83) $p = 0.002$). Physical activity increased with no notable differences across the groups. At post follow-up, the intervention only influenced waist circumference (-1.87 cm (-3.32; -0.44), $p=0.011$), FBG (-6.48mg/dl (-12.76; -0.21) $p=0.043$), DBP (-6.67mm/Hg (-11.24; -2.11) $p=0.004$) and TC (-11.74mg/dl (-20.47; -3.01) $p=0.009$). Fruit consumption was sustained, 29.72g ((5.75; 53.69) $p=0.015$) but no difference was observed for vegetables. Participants in the intervention group were more active 2675.06 MET-mins/week (1045.68; 4304.44) $p=0.001$.

Conclusion: The intervention improved and sustained PA, fruits and vegetables intake but these changes did not translate in to substantial cardiometabolic health improvements. The intervention has potential to improve PA, fruit and vegetables intake. However, substantial effects on metabolic health may necessitate a direct focus on weight loss.

O.3.26 - The First 1000 Days: Latest science in behavioral nutrition and physical activity

Room 153

May 21, 2022, 12:20 PM - 1:50 PM

Cultural influences on infant and toddler feeding practices among Hispanic mothers of low-income

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Hispanic infants and toddlers experience higher obesity rates than their black or white counterparts, placing them at a greater risk for chronic disease later in life. Infant and toddler feeding (ITF) interventions are shown to improve dietary behaviors, but few studies target Hispanic populations. Culturally tailored interventions are shown to effectively improve health outcomes, but cultural influences on Hispanic ITF practices remain unclear. The purpose of this study was to characterize how culture influences ITF practices among mothers of low income from diverse Hispanic subpopulations. The research questions were, "What value do Hispanic mothers place on cultural ITF practices?"; "How do mothers decide whether to use cultural ITF practices?"; and "What role do influential others play in mothers' use of cultural ITF practices?"

Methods: A phenomenological approach was used to understand how culture influences ITF. Spanish- and English-language semi-structured qualitative interviews, accompanied by a brief survey, were conducted on Zoom or over the phone with New York City-based Hispanic mothers of children 4-24 months old. A directed content analysis approach was used to identify themes using Theory of Planned Behavior-informed theoretical codes and inductive codes. Transcripts were coded independently by two researchers using NVivo 12. Survey data were analyzed using descriptive statistics in Excel.

Results: Participants (n=19) were of Dominican, Mexican, and Central and South American origin, had low acculturation scores, and mean child age was 16.7 months (range: 5-24 months old). The following themes were identified: 1) Mothers highly value culture but infant health is the most influential factor in guiding ITF practices. 2) Mothers have high autonomy in adopting cultural ITF practices. Self-efficacy, social support, information from health professionals, and being outside their country of origin contributed to participants' sense of autonomy. 3) Mothers associate cultural ITF practices with short-term (e.g., the benefit of fruits for constipation and diarrhea) and long-term (e.g., healthy child development) health outcomes.

Conclusions: Future culturally relevant interventions should promote healthy cultural ITF practices, emphasizing the benefits on infant health. Incorporating social support and evidence-based information from health professionals should also be considered.

Does weight bias internalization in pregnancy influence the relationship between self-efficacy for exercise and meeting prenatal activity recommendations?

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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: High prenatal exercise self-efficacy is associated with meeting activity recommendations throughout gestation. In non-pregnant populations weight bias internalization (WBI) has been associated with low self-efficacy for health behaviours. The purpose of this study was to determine if WBI moderates the relationship between self-efficacy and adherence to physical activity (PA) guidelines during pregnancy.

Methods: An online survey was administered to pregnant individuals who were ≥12 weeks gestation and living in Canada. Eligible participants completed a modified WBI scale for pregnancy, the self-efficacy for prenatal exercise questionnaire, a pregnancy-modified Godin Leisure Time Scale (GOTS), and a demographics survey. Participants were classified as active meeting guidelines ($\geq$150 min/week of moderate intensity activity per week) (Group 1), active but not meeting guidelines (reported doing light or moderate intensity activity, but did not meet the criteria specifically for $\geq$150 min/week of moderate intensity activity per week) (Group 2), and inactive (Group 3) by referring to the Canadian Guideline for PA throughout Pregnancy. A one-way ANOVA was performed to compare self-efficacy for exercise and WBI scores. To determine if WBI moderates the relationship between self-efficacy and meeting PA guidelines, a simple moderation analysis was completed. Significance was accepted as $p<0.05$, and data for scale scores were presented as means (M) and standard deviations (SD). The following demographics were controlled for in all analyses: maternal age, gestational age, parity, and pre-pregnancy body mass index.

Results: Two-hundred and fifty-three pregnant individuals completed the surveys (Group 1=19, Group 2=168, Group 3=66). Self-efficacy was significantly higher in Group 1 (M=3.92; SD=0.80) compared to Groups 2 (M=3.15; SD=0.57) and 3 (M=2.76; SD=0.75). WBI was higher in Group 2 (M=4.16; SD=0.99) followed by Group 1 (M=3.63; SD=1.92) and 3 (M=3.61; SD=1.05). The overall moderation model was significant ($F_{(7, 194)}=10.60$, $p<0.001$, $R^2=0.28$), however, the interaction between self-efficacy and meeting PA guidelines was not moderated by WBI ($p=0.82$).

Conclusion: Weight bias internalization did not moderate the known relationship between self-efficacy and meeting prenatal PA guidelines. Prospective studies are needed to further extrapolate these findings and better understand how weight bias may be manifested in pregnancy.

Why do complementary feeding practices deviate from the recommendations? A multi-method exploration in Uruguay, an emerging Latin American country

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Complementary feeding is a critical period in the life of infants. Inappropriate feeding practices can have negative long-term effects on health, development, and wellbeing. In this context, the aims of the present work were to characterize complementary feeding practices among 7-10 months old infants and to identify the reasons underlying the deviations from the recommendations using a multi-method approach.

Methods: A total of 374 parents of 7-10 months old infants were recruited at health facilities in Montevideo, Uruguay. A questionnaire including a word association task, closed, multiple-choice and open-ended questions was used. In addition, 212 pediatricians were recruited at the National Pediatrics Conference. They completed a self-administered questionnaire including a word association task and open-ended questions about the recommendations they provide to parents regarding complementary feeding. In-depth interviews with parents of 7-10 months old infants and pediatricians were also conducted.

Results: Complementary feeding practices were characterized by the frequent consumption of fruits and vegetables. However, low dietary variety, an infrequent consumption of meat and the inclusion of sugary dairy products were the most relevant deviations from the recommendations. These deviations matched the structure of the social representations of complementary feeding of both parents and pediatricians identified in the word association task. Misperceptions about the healthfulness of ultra-processed products and the introduction of meat and potentially allergenic foods were also identified as relevant drivers of complementary feeding practices.

Conclusions: Results from the present work suggest the need to implement communicational strategies and interventions to promote variety, early introduction of meat, as well as to raise awareness of the hedonic, social, and developmental aspects of complementary feeding. Front-of-package nutrition labelling and marketing regulations are also needed to improve complementary feeding practices in Uruguay.

O.3.27- Evaluating process in practice and policy

Room 154

May 21, 2022, 12:20 PM - 1:50 PM

Campus Food Pantry Implementation: Does Nutrient Dose Promote Nutrition Security?

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Efforts to alleviate food insecurity have traditionally focused on increasing access to quantity rather than quality of food. Given burgeoning health disparities and lower dietary quality among food insecure individuals, there has been a call to focus on nutrition security—providing consistent access to foods and beverages that promote well-being. The aim of this study was to determine the dose of key nutrients received by students using an on-campus food pantry to determine whether pantry implementation is supporting nutrition security.

Methods: In August 2020, an on-campus, client-choice, food pantry opened at a large Midwest university; distribution guidelines were based on MyPlate and the pantry was open twice a week, three days apart. Pantry staff tracked student usage, item inventory, and food discarded during the first academic year of implementation. Inventory and waste logs were used to determine items distributed per pantry opening. Items were analyzed for specific nutrients using the Nutrition Data System for Research. Nutrient and distribution data were merged and adjusted for item size and quantity. The mean nutrients distributed was measured and dose-received was calculated as the average nutrients received per person for specific macro- and micronutrients of concern. Values were compared to national recommendations to determine days of adequate intake.

Results/findings: On average, 14 items were selected per student. Nutrients exceeding Dietary Reference Intakes (DRIs) for three days included vitamins A, C, most B vitamins, carbohydrates, and protein, and for men, iron, and women, zinc and magnesium. Nutrients that did not meet the DRIs for three days included vitamin D, and for males, potassium, energy, fiber, and linoleic and alpha linolenic acid. Added sugar made up less than 10% of total calories distributed (9.1%) and Acceptable Macronutrient Distribution Ranges were met for carbohydrates (50.8%) and protein (16.9%) but were exceeded for fat (35.6%).

Conclusions: Results suggest distribution standards support students receiving key nutrients, however, more foods fortified with Vitamin D are needed and male students may need access to more food to meet sex specific DRIs. More research on pantry implementation is needed to understand how pantry implementation can best support nutrition security.

How and why was a digital diabetes self-management intervention changed during national roll-out? A mixed-methods study

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: 'HeLP-Diabetes' is an evidence-based digital self-management intervention for people with type 2 diabetes, designed to change dietary and physical activity behaviours. In a randomised controlled trial (RCT) HeLP-Diabetes was effective in reducing HbA_{1c}; NHS England have since commissioned a national roll-out (called 'Healthy Living'). It is important to understand the extent to which Healthy Living has fidelity to HeLP-Diabetes, as any changes may impact effectiveness. We aimed to (a) describe the behaviour change and self-management content in Healthy Living, (b) compare this with HeLP-Diabetes, and (c) explain the reasons for any changes.

Methods: A content analysis of the Healthy Living webpages using three coding frameworks: Template for Intervention Description and Replication (TIDieR); Behaviour Change Technique (BCT) Taxonomy v1 (BCTs are the 'active ingredients' of behaviour change interventions); and our novel framework for coding self-management tasks. Results were compared with published descriptions of HeLP-Diabetes. We conducted nine semi-structured stakeholder interviews to understand the reasons for changes during the national roll-out. Interview data were analysed thematically.

Results: There were 43 BCTs in Healthy Living, which included BCTs to help self-regulate behaviour (e.g. goal setting, self-monitoring) that were integral to the original HeLP-Diabetes intervention. Healthy Living addressed all areas of self-management: medical, emotional and role management. Healthy Living included an additional structured online learning curriculum that was not included in the HeLP-Diabetes intervention tested in the RCT. This was because of changes in NHS policy that incentivised GPs to refer people newly diagnosed with diabetes to structured education within 9 months of diagnosis; however, HeLP-Diabetes was originally designed as ongoing self-management support rather than a structured education programme. Stakeholder interviews revealed that facilitated access by health professionals and a moderated forum were removed due to general practices not being willing or able to support these features.

Conclusions: Whilst changes were identified, the national roll-out of HeLP-Diabetes had good fidelity to the core self-regulatory BCTs that have been previously associated with producing changes in diet and physical activity. This study has identified the challenges of scaling up digital interventions in a national roll-out, highlighting the importance of considering implementation challenges during RCTs.

Healthcare provider perceptions within a regional charity food prescription program implementation partnership

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The last decade has seen a rise in "Food as Medicine" interventions by healthcare organizations to address food and nutrient deficiencies among their patient populations who screen as being food insecure. Several implementation models exist, from food delivery to voucher redemption. The purpose of our study was to analyze qualitative data on perceptions of healthcare providers (HCP) on implementation and adoption of voucher-based food prescription programming within their systems among their patient populations.

Methods: The Houston Food Bank (HFB) administers the food prescription program as part of a formal partnership with HCPs in the Houston, Texas region. An open-ended survey was administered to HCPs employed across organizations asking about their perceptions regarding implementing a food prescription program among their patients. Qualitative analysis of data from May 2018 to March 2021 included a review of question structure and response frequency by HCPs. The primary researcher reviewed all data and iteratively coded and categorized responses through thematic analysis; two research team members subsequently coded all data for reliability. All data were analyzed using Dedoose software (Los Angeles, California; Version 9.0.15).

Results: HCP organizations (n=20) provided qualitative feedback on responses (n=252) on food prescription program perceptions. Providers were categorized by five different types of healthcare providers. Six major themes were identified: 1) Food Quality: perceived as quality, type, variety, and availability incented continued program redemptions, 2) Patient barriers: including transportation issues and schedule conflicts with work or childcare, 3) Collaboration between HFB and HCP providers: the positive impacts of food bank provided community assistance and constant ongoing support, 4) Communication: confusion surrounding programming and eligibility and survey data collection, and 5) COVID-19 pandemic impact: transition to telehealth and shifting food distributions.

Conclusion: Results of this qualitative analysis offer unique stakeholder insight into the charity food and HCP food prescription model. Our study adds support to inform and improve the implementation of voucher-based food prescription models to influence health

The Structured Health Intervention for Truckers (SHIFT) cluster randomised controlled trial: a mixed methods process evaluation

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Process evaluations are critical for assessing intervention implementation and context. Truck drivers often display worse health profiles than the general population. A mixed-methods process evaluation was conducted to evaluate the implementation of the Structured Health Intervention for Truckers (SHIFT), a multi-component intervention targeting physical activity, diet, and sedentary behaviour, in a cohort of 382 truck drivers in the UK.

Methods: The 6-month SHIFT intervention was evaluated within a cluster randomised controlled trial and involved 25 transport sites (12 intervention and 13 control sites). Intervention components included a health workshop, Fitbit, text messages, and cab workout equipment. As part of the process evaluation, drivers completed questionnaires at baseline and 6-months follow-up. Semi-structured focus groups/interviews were conducted with drivers (n = 19) and managers (n = 18) from each site, after completion of the final follow-up assessment (16-18 months post-randomisation). Data were collected on fidelity, dose, context, implementation, barriers, sustainability, and contamination.

Results: Both questionnaire and interview data from intervention participants indicated favourable attitudes towards SHIFT, specifically towards the Fitbit with a high proportion of drivers reporting regularly using it (89.1%). The education session was deemed useful for facilitating improvements in knowledge and behaviour change, dietary knowledge changes were predominantly recalled. Receiving feedback from the health assessments motivated participants to change aspects of their lifestyle (intervention = 91.1%, control = 67.5%). The cab workout equipment was used less and spoken unfavourably of in the interviews. Barriers to a healthy lifestyle at work were apparent and affected drivers throughout the study. The most suggested improvement was more frequent contact with drivers. Managers were positive about the objectives of SHIFT, however almost all mentioned the challenges related to implementation.

Conclusions: SHIFT was a complex, multi-component health intervention, which was received well by drivers and managers, but was logistically challenging for smaller sites to implement. Truck drivers reported unique occupational barriers that have persisted before, during and after the study. Transport sites each have distinct characteristics, which required adaptations to individual settings to encourage participation. Managers and drivers reported enthusiasm and necessity for SHIFT to be included in future Certificate of Professional Competence training.

Factors affecting the dropout rate of intensive lifestyle interventions for weight loss

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To investigate the factors that influence adults to drop out of behavioral Intensive Lifestyle Interventions for weight loss (ILIs) at six months. Developing successful strategies to improve retention is expected to enhance ILIs implementation and increase weight loss.

Methods: Retrospective multiple logistic regression analysis of 268 participants from two studies: a multicenter study that included five in-person ILIs delivered by nutrition interns in two public primary healthcare clinics (n=49 and n=52), two public hospitals (n=45 and n=41), and a university clinic (n=50), and one randomized controlled trial that included one online ILI delivered by a PhD student (n=31). The same research team conducted both studies in the same population (adults aged 18 to 65 years, with a BMI≥ 25 kg/m^2 and living in Northern Mexico), using the same intervention components and identical instruments and techniques to collect the data. Twenty-nine factors related to the participants and five related to the interventions that have been shown in the literature to affect the dropout rate were considered. The model was selected using the stepwise automatic method. A sensitivity analysis was conducted to assess if the differences in the study designs affected the results by repeating the process, excluding the online clinic.

Results/findings: Older participants (≥ 50 years) were less likely to drop out of the ILI compared to participants <35 years old (OR=0.34, 95% CI=0.16-0.70). Participants who experienced less pain (higher scores on the bodily pain scale of the SF-36) also had a slightly lower chance of dropping out of the intervention: for each unit increase in the bodily pain score, the risk of dropping out decreased by 2% (OR=0.98, 95% CI=0.97, 0.996). Finally, change in the interventionist during the 6-month intervention more than doubled the risk of dropping out (OR 2.25, 95% CI=1.23-4.14).

Conclusions: The results of this study indicated that it might be possible to improve retention among participants of ILIs by ensuring that the same interventionist remains during the six-month intervention. In addition, ILIs may need tailoring for younger ages and participants with higher perceived pain. These factors can be accounted for in the design of the intervention.

O.3.28 - Measurement and modelling of built environment-physical activity relationships

Room 155

May 21, 2022, 12:20 PM - 1:50 PM

The development of a neighborhood drivability index for the Netherlands

Dr. Nicole den Braver[1,2], Miss Thao Lam[1,2], Mr. Edan Baron[1], Miss Rachael Jaffe[3], Dr. Maurice de Kleijn[4], Mr. Alfred Wagtendonk[1,2], Prof. Gillian Booth[5,6], Dr. Jeroen Lakerveld[1,2]

[1]Department of Epidemiology & Data Science, Amsterdam Public Health Research Institutes, Amsterdam University Medical Centres, Amsterdam, Netherlands, [2]Upstream Team, Amsterdam, Netherlands, [3]Institute of Health Policy, Management, and Evaluation, University of Toronto, Toronto, Canada, [4]School of Business and Economics, Spatial Information laboratory, Vrije Universiteit Amsterdam, Amsterdam, Netherlands, [5]MAP Centre for Urban Health Solutions, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, Canada, [6]Department of Medicine, University of Toronto, Toronto, Canada

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Car driving contributes to physical inactivity, sedentary behaviour, congestion, air- and noise pollution. Environment-level factors can be important targets for shifting population behaviors away from car use and towards active forms of transport. A comprehensive index combining multiple environmental factors that drive car use in Toronto, Canada, was strongly associated with car use. However, no such index is available for a European setting. This study aimed to develop a neighborhood drivability index for the Netherlands, and to investigate associations with car use for different purposes and trip lengths.

Methods: In this cross-sectional study, we considered candidate variables for inclusion in our index, related to car that capture density, diversity, design, destination accessibility, distance to transit, and demand management. Geographical data were obtained for all Dutch 4-digit postal code areas (n=4,066). The index was tested against a nationwide travel survey conducted in 2017 (n=21,376). We used a training set (random 2/3 of survey dataset) to create a composite drivability index by identifying environmental variables that predicted car use, based on a logistic prediction model with car use (yes/no) as the primary outcome. In a testing set (1/3 of the dataset), logistic regression was used to assess the association between neighborhood drivability as a standardized score (0-100) and car use, overall and according to trip characteristics (long/short distances, discretionary/non-discretionary purposes), adjusted for sociodemographic and other relevant confounders. We investigated effect modification by neighborhood-level socio-economic status and urbanicity.

Results: The drivability index consisted of land-use mix, population density, paid parking, public transit stops, and train stations; and predicted car use fairly well (Area Under the Curve: 0.63). The median drivability was 54.36 (IQR:14.25). A 1% higher neighborhood drivability score was associated with a higher odds of car use (OR:1.04; 95%CI:1.03-1.04). This association was stronger for discretionary trips (OR:1.04; 95%CI:1.03-1.05) than non-discretionary trips (OR:1.00; 95%CI:0.99-1.00). There was no difference between short (OR:1.03; 95%CI:1.02-1.03) and long trips (OR:1.04; 95%CI:1.03-1.04). No effect modification was observed.

Conclusions: This first nationwide drivability index for the Netherlands was associated with car use in general, and especially for discretionary trips. This could inform targeted transport and urban design policies.

Adaptation of a federal research-to-policy collaboration model to improve state health: The Texas RPC Project

Ms. Amelia Roebuck[1], Ms. Tiffni Menendez[1], Ms. Kate Faris[1], Ms. Margaret Moore[1], Ms. Kathleen Manuel[1], Ms. Shelby Flores-Thorpe[1], Dr. Alexandra van den Berg[1], Dr. Deanna Hoelscher[1]
[1]*Michael & Susan Dell Center for Healthy Living, UT Health School of Public Health in Austin, Austin, USA*

SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: All

Purpose: To increase the enactment of evidence-based health policy, it is essential to build trusting relationships between public health researchers and policymakers. Researchers and policymakers have different timelines, priorities, and values, which necessitates a process that includes training and development of a non-partisan network. The Texas Research-to-Policy Collaboration (TX RPC) Project aims to develop and support partnerships between health researchers and policymakers, using learnings from a similar federal model. This presentation describes the adaptation of the federal RPC model to the Texas legislative process, and presents data on recruitment, training, and evaluation. This project uses a framework rooted in Agenda Setting Theory, with a focus on translational methods.

Methods: The RPC model was modified to align with the Texas legislative cycle and prioritize child health legislation and state-level research related to nutrition, physical activity, obesity, and tobacco/e-cigarette use. Adaptation of project tools was informed by an advisory committee, community partners, and prior research with legislators to reflect state policymaking values and protocols. Researchers and legislators were recruited through various channels. Researchers completed baseline and post-training surveys; legislators completed a baseline interview and policy identification needs assessment. Pre- and post-survey data were analyzed to determine changes in knowledge and self-efficacy. Data from the interviews and needs assessment were compiled and categorized according to policy themes.

Results/findings: 61 researchers enrolled as network members, and 59 researchers were trained; 21 legislators participated in the interviews. Researchers' self-efficacy in communicating with policymakers and policy knowledge significantly improved after training. Baseline interviews indicate legislators desire expert knowledge and data on several health issues. During the 87th Texas Legislative Session in January-May 2021, TX RPC researchers/staff responded to 91 legislative requests, provided testimony on 3 bills, and held 31 collaboration meetings with legislators. TX RPC legislators filed 19 bills impacting child health; 8 bills passed at least one chamber of the Texas Legislature and 3 passed into law.

Conclusions: Initial recruitment and project activities indicate a need for training researchers and providing data and related support to legislators. Developing public health researcher-policymaker partnerships at the state level can be an effective model to implement evidence-based policy.

Moderating effects of neighborhood walkability on intervention components to increase MVPA in a randomized controlled trial

Dr. Mindy McEntee[1], Dr. Michael Todd[1], Dr. Vincent Berardi[2], Dr. Christine Phillips[3], Ms. Alison Cantley[1], Ms. Emily Foreman[1], Dr. Steven Hooker[4], Dr. Marc Adams[1]

[1]*Arizona State University, Phoenix, USA, [2]Chapman University, Orange, USA, [3]Clemson University, Clemson, USA, [4]San Diego State University, San Diego, USA*

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Ecological models posit that interventions should be most potent when environments support the target behavior. This study was powered a priori to examine interactions between walkability and mHealth intervention components in a large-scale trial to increase PA.

Methods: Healthy, inactive adults (n=512) were randomized to WalkIT Arizona, a 12-month, 2x2 factorial mHealth intervention evaluating goal setting (adaptive versus static) and financial reinforcement timing (immediate versus delayed) to increase accelerometer-measured MVPA. Participants were recruited from neighborhoods based on GIS-measured walkability index (high/low) and socioeconomic status (SES, high/low) strata and block randomized into one of four interventions. Participants wore an ActiGraph GT9X Link daily for a year. After recruitment, walkability (summed Z-scores for residential density, land use mix, intersection density, and transit access) was calculated within a 500m street network buffer for each participant's home. Generalized linear mixed effects hurdle models examined 1) likelihood of any (versus no) MVPA and 2) daily MVPA minutes based on the joint effects of walkability, goal type, reinforcement timing, and time, adjusting for accelerometer wear time, SES, and calendar month. Walkability was probed at 5th, 25th, 50th, 75th, and 95th percentiles to explore the full range of effects.

Results: Walkability moderated effects of goal type for any MVPA (OR = 1.08, 95% CI: 1.01-1.15) and MVPA duration (OR=0.97, 95% CI: 0.95-0.99). A larger between-group difference in likelihood of any PA for adaptive versus static goals was observed; this effect was largest for low walkability (5th, 25th percentile) and disappeared at the 95th percentile. Between-group differences in daily MVPA minutes were greater in low relative to high walkability areas favoring adaptive goals, although the reverse pattern was observed for static goals. For reinforcement timing, walkability moderated intervention effects for likelihood of any MVPA (OR=0.91, 95% CI: 0.85-0.97): immediate reinforcement showed a stronger increase in high relative to low walkability neighborhoods. There was no significant walkability x reinforcement x time interaction for MVPA duration.

Conclusions: Results show interactions between walkability and PA interventions depended on the intervention parameters, suggesting ecological model hypotheses may need to be refined.

Are you ready for childhood obesity prevention? – application of the Community Readiness Model in municipalities

Ms. Maike Schröder[1], Prof. Birgit Babitsch[2], Prof. Holger Hassel[1]
[1]Coburg University of Applied Sciences and Arts, Coburg, Germany, [2]University Osnabrück, Osnabrück, Germany

SIG - Primary Choice: M. Disease prevention and management
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Background: To promote the success of interventions it is essential to match them to the community's level of readiness. Community Readiness (CR) is the degree to which a community is prepared to address a health issue and measured in the community's knowledge of the issue and existing efforts, leadership, resources, and the community climate. Aim of this study is to analyse CR for the prevention of childhood obesity in municipalities using the Community Readiness Model (CRM). Based on this, participatory strategies to improve CR for obesity prevention in children will be developed.

Methods: A systematic literature review (SLR) was conducted searching the databases PubMed, LIVIVO, Cochrane and Google Scholar. The SLR included studies that used the CRM for the prevention of childhood obesity to analyse the application in practice. To assess CR, guided interviews with key informants from five Bavarian municipalities were carried out. Interviewees were identified in a modified stakeholder analysis. The transcribed interviews were analysed by two researchers following the CRM scoring system.

Results: A total of 285 records were identified in the SLR. After review of titles, abstracts, and full texts, 17 studies remained. The CRM has already been applied to childhood obesity prevention in the USA (n = 10), Australia (n = 4), the UK (n = 1), Iran (n = 1), and South Africa (n = 1). In Germany, no studies could be identified. From January to April 2021, semi-structured interviews (n = 27) with key informants from the participating municipalities were conducted. This sample comprised administration departments, medical, health and educational facilities. The municipalities average CR score reached 3.8 on a 9-point rating scale. According to the CRM, this corresponds to the "Vague Awareness" stage of readiness.

Conclusion: The CR assessment showed that childhood obesity is a concern in municipalities without an immediate motivation to actively address it. Municipalities have only vague knowledge about childhood obesity and there are limited resources that could be used for prevention efforts. These results will be reflected in a workshop with each participating municipality. Aim is to develop an action plan to increase CR for childhood obesity prevention.

OVERVIEW VIRTUAL PROGRAM

Virtual Sessions: Thursday, May 19th

Virtual Session	Virtual 1	Virtual 2	Virtual 3	Live Streaming (Room 151)
08:25–09:40	**S.1V.01** / 22108 Exploring the Great Outdoors: Promoting children's physical activity through reimagining outdoor play *Convenor: Cody Neshteruk*	**S.1V.02** / 22067 "Choosing All Together"; Community priorities for nutrition interventions in Sub-Saharan Africa *Convenor: Sarah Kehoe*	**08:15–9:40** **Supl. Virtual 5** *Chair: Elida Sina*	**S.1.05** / 22152 Sustaining the implementation of nutrition and physical activity interventions in early care and school settings *Convenor: Nicole Nathan*
09:50–10:50	**Keynote #2: Dr. David Conroy:** *Context-sensitive, just-in-time interventions to promote physical activity and fluid intake*			
12:05–13:20	**S.1V.07** Co-creation and dissemination of research with children: Lessons learned and reflections *Convenor: Andrea Smith*	**Supl. Virtual 1** *Chair: Shabnam Kashef*	**Supl. Virtual 3**	Cancer prevention and management (SIG) *Chair: Linda Trinh*
14:35–16:05		**O.1V.01** Determinants of behavioral nutrition and physical activity in elderly *Chairs: Shivangi Shah and Juliana Oliveira*	**O.1V.02** Predictors and its impact on behavioral nutrition and physical activity change *Chairs: Inês Santos and Verity Cleland*	**O.1.04** Apps, games, and social media, #OhMy! *Chair: Matt Buman*
16:10–17:30	**D2S.1V.01** Exploring Meaningful Health Promotion Research and Collaborations in the Caribbean *Chair: Danielle Walwyn*		**16:20–17:35** **S.1V.04** / 22163 Scalable approaches to supporting workers to stand up, sit less and move more at work *Convenor: Paul Estabrooks*	**16:20–17:35** **S.1.08** / 22084 Citizen science to advance behavioral change science: Empowering adolescents to create change *Convenor: Famke Mölenberg*
18:00–19:30	**D2S.1V.02** How to co-design a health intervention *Chair: Jillian Ryan*	**Supl.Virtual.02** Novel approaches to behavioral nutrition and physical activity science *Chairs: Rebecca Coulter and Adam Shoesmith*	**Supl. Virtual 04** *Chairs: Stephen Hunter and Olivia De-Jongh Gonzalez*	

Virtual Sessions: Friday, May 20th

Virtual Session	Virtual 1	Virtual 2	Virtual 3	Live Streaming (Room 151)
08:30–09:45	**S.2V.05** / 22116 Innovative approaches to overcome lack of active travel data in low- and middle-income countries *Convenor: Rizka Maulida*			**S.2.16** / 22136 Public open spaces for older adults' physical activity and mental health *Convenor: Jenny Veitch*
09:50–10:50	Best IJBNPA papers presentation **Keynote #3 Dr. Olga Sarmiento:** *Inequality in physical activity from the region of Latin America*			
12:05–13:20	**0.2V.03** Latest evidence in implementation and scalability *Chair: Alison Brown*	**0.2V.04** Social influences on behavioral nutrition and physical activity in children and families *Chair: Nigel Harris*	**12:05-13:35** **D2S.V2.05** Psychedelics and Health Behavior Change *Chair: Arlen Moller*	Young Adults (SIG) *Chairs: Jessica Larose and Melinda Hutchesson*
14:35–15:05				**ECR Presentation**
15:10–16:40	**0.2V.05** Latest evidence on early care and education research	**0.2V.06** Focusing on parental influences on behavioral nutrition and physical activity *Chairs: Youjie Zhang and Phoebe George*		**0.2.12** Individual and contextual effects on motivation *Chair: António Palmeira*
16:55–18:10	**S.2V.07** / 22092 Co-designing lifestyle behaviour research with young adults: Opportunities and challenges *Convenor: Katherine Livingstone*	**S.2V.08** / 22175 New rapid assessment tools to measure obesity-related behaviours in 0 – 5-year-olds *Convenor: Stewart Trost*	**S.2V.17** / 22096 Community based system dynamics supports communities to better health *Convenor: Jillian Whelan*	**S.2.23** / 22144 Youth-informed participatory action research: from preparation to transfer to other contexts *Convenor: Maite Verloigne*

Virtual Sessions: Saturday, May 21st

Virtual Session	Virtual 1	Virtual 2	Virtual 3	Live Streaming (Room 151)
08:30–09:45	**O.3V.07** High level constraints in behavioral nutrition and physical activity *Chairs: Amy Yau and Laura Arazat*	**O.3V.08** Trends and latest findings in disease prevention and management *Chair: Ariella Korn*		**O.3.18** Children and families *Chair: Sarah Yi Xuan Tan*
09:50–10:50	**Keynote #4: Dr. Valarie Blue Bird Jernigan:** *Community-based participatory interventions to supply Indigenous food sovereignty and health*			
10:50–11:20	**What's next @ISBNPA**			
12:20–13:50	**O.3V.09** School- and city-based constraints in behavioral nutrition and physical activity *Chairs: Pulan Bai and Elizabeth Wenden*	**O.3V.10** Latest evidence in behavioral nutrition and physical activity *Chairs: Courtney Thompson and Manon Rouche*		**O.3.24** Latest findings in aging *Chair: Rebecca Luong*

S.1V.01 - Exploring the Great Outdoors: Promoting children's physical activity through reimagining outdoor play

Virtual Session #1

May 19, 2022, 8:25 AM - 9:40 AM

Purpose:
To describe innovative opportunities to promote outdoor-based physical activity in children (1-17 y) beyond the COVID-19 pandemic with an emphasis on nature-based education.

Rationale:
Outdoor play serves a key role in promoting children's physical activity and health. With school closures and home confinement during the COVID-19 pandemic, children's outdoor play opportunities decreased, along with their physical activity. These declines may have long-term impact on child health. Finding innovative ways to support outdoor play, such as nature-based learning, offers an important opportunity to increase children's activity for short and long-term health impact.

Objectives:
Following this symposium, participants should be able to: 1) outline the importance of outdoor play on children's physical activity, 2) identify opportunities to promote outdoor play and physical activity in various settings and 3) define nature-based learning in the context of physical activity promotion.

Summary:
This symposium will describe the impact of the COVID-19 pandemic on children's outdoor play and physical activity in Canada, followed by two studies from the United States highlighting opportunities to facilitate children's outdoor play. First, the chair will provide an overview of outdoor play and children's physical activity, including the roles of outdoor time and the environment. The first presenter will present results from a repeated cross-sectional study assessing children's (5-17 y) outdoor play behaviors during the COVID-19 pandemic to provide the current context for outdoor play. Next, the second presenter will introduce nature-

based learning as an opportunity for increasing outdoor play, discussing a mixed method study of nature-based modifications to childcare centers for toddlers (1-2 y), and directors perceptions of barriers and facilitators to improving outdoor play. The third presenter will describe a unique collaboration with Parks and Recreation that utilized an outdoor education program to promote physical activity among fathers and preschoolers (2-5 y). Finally, the discussant will address contextual considerations for promoting outdoor play for all ages and potential solutions for families, practitioners, and researchers.

Format:
Dr. Cody Neshteruk will provide the introduction (5-minutes), then the individual presenters (Drs. Sarah Moore, Chelsea Kracht, and Neshteruk) will each present their findings (15-minutes/presentation). Dr. Patricia Tucker (discussant) will provide a summary (5-minutes) and facilitate discussion among the panel and session participants (20-minutes).

Interaction:
We will promote interaction with the online symposium two ways: 1) asking participants to submit questions in the chat and 2) utilizing closed-ended and open-ended questions/polls throughout the session using Poll Everywhere.

Outdoor play during the COVID-19 pandemic in Canada: Findings from a repeated cross-sectional study

Dr. Sarah Moore[1], Dr. Guy Faulkner[2], Dr. Ryan Rhodes[3], Dr. Leigh Vanderloo[4], Dr. Leah Ferguson[5], Dr. Mariana Brussoni[2], Dr. Raktim Mitra[6], Dr. Louise de Lannoy[7], Dr. Norm O'Reilly[8], Prof. John Spence[9], Ms. Tala Chulak-Bozzer[4], Dr. Mark Tremblay[10]

[1]Dalhousie University, Halifax, Canada, [2]University of British Columbia, Vancouver, Canada, [3]University of Victoria, Victoria, Canada, [4]ParticipACTION, Toronto, Canada, [5]University of Saskatchewan, Saskatoon, Canada, [6]Ryerson University, Toronto, Canada, [7]Outdoor Play Canada, Ottawa, Canada, [8]University of Maine, Orono, USA, [9]University of Alberta, Edmonton, Canada, [10]Children's Hospital of Eastern Ontario Research Institute, Ottawa, Canada

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Background: Outdoor play supports child and youth's mental and physical health. The COVID-19 pandemic and related public health recommendations have changed the daily lives of Canadians and restricted opportunities for outdoor play for children and youth. The purpose of this repeated cross-sectional study was to describe changes in outdoor play behaviours of children and youth across the COVID-19 pandemic.

Methods: Parents of school-aged children and youth (ages 5 to 17 years) participated in an online survey at three timepoints (April 2020, n=1,472; October 2020, n=1,568; April 2021, n=1,600). The survey asked parents about their child or youth's current outdoor play behaviours, and whether they thought these behaviours had changed as a result of the COVID-19 pandemic and related restrictions. Specifically, parents were asked about their child or youth's time spent walking or cycling in the neighbourhood, time spent in physical activity, sport, or play outdoors, and time spent in active transport to school. Parental support of their child's outdoor play behaviours was also assessed.

Results: According to parents, children and youth had reduced their time spent walking and cycling, time spent in physical activity, sport, and play outdoors, and time spent in active transport to school in April 2020, October 2020, and April 2021. Parents of youth (ages 12-17 years) reported greater reduction of time in these behaviours compared with children (ages 5-11 years) at all time points. Parents who were surveyed in April 2020 (initial phase of the COVID-19 pandemic) reported greater reductions in their child's outdoor play behaviour compared with parents who were surveyed in October 2020 and April 2021. Parent support behaviours (e.g., support, opportunity) were positively correlated with their child's outdoor play behaviours at all time points.

Conclusion: The COVID-19 pandemic has significantly impacted child and youth's outdoor play. As we see lifted restrictions related to the COVID-19 pandemic, we must consider ways to support children, youth, and families to return to outdoor play. Encourage outdoor play will help to mitigate the negative impacts and support child and youth's mental and physical health as we recover from the COVID-19 pandemic.

Modification of Childcare's Outdoor Setting for Toddler Physical Activity and Health: A Mixed Methods Study

Dr. Chelsea Kracht[1], Dr. Amanda Staiano[1], Ms. Michelle Grantham-Caston[2]
[1]Pennington Biomedical Research Center, Baton Rouge, USA, [2]Louisiana State University, Baton Rouge, USA

SIG - Primary Choice: F. Early care and education
Age Category: Infants 0-2 yrs
Subject Category: Physical Activity

Purpose: 1) To identify barrier and facilitators of toddler physical activity at childcare and 2) to determine the feasibility and acceptability of pragmatic and nature-based modifications to a childcare's outdoor setting.

Methods: For aim 1, the analysis of semi-structured interviews from childcare directors (directors, n=30) includes content analysis for themes related to the toddler (ages 1-2 years) physical activity, changes to the outdoor setting, and nature-based options. For aim 2, a stepped, sequential modification of the outdoor setting using pragmatic and nature-based options was conducted over 10-weeks with a delayed control group. After baseline measurements, the five options (wood stepping discs, garden, nature table, concrete stencils, and outdoor play training) were introduced one at a time every other week (e.g. week 1, week 3). Assessments were made one-week after each option was introduced (e.g. week 2, week 4). At baseline and week 10, parent questionnaires were used to assess toddler well-being and connectedness to nature, and toddler anthropometrics were objective measured. Feasibility and acceptability were assessed using surveys, engagement was assessed by toddler use of outdoor options, and accelerometers were used to assess physical activity during outdoor play sessions.

Results: Currently, data from directors (n=8, 87.5% African American, 75% female, age range: 47-78 years) that participated in interviews for aim 1 indicate most felt toddlers in their care were active. Directors were interested in updating their outdoor setting to provide a variety of play options, such as imaginary play. Barriers to implementation included finding feasible options and technical assistance. No directors reported existing nature-based options, and all were interested in toddler physical activity and nature-based resources. For aim 2, two childcare centers (one per group) completed baseline measurements. The teacher of the intervention site reported the wood stepping discs as feasible and acceptable. Both aims anticipate completion early 2022.

Conclusions: Directors were interested in increasing play options and age-specific guidance for their outdoor setting. Pragmatic and nature-based options are available, but barriers exist in linking directors with these options. Opportunities to combine toddler-age curricula and pragmatic options for outdoor play, including nature-based options, may improve outdoor settings and toddler health.

Promoting physical activity and outdoor learning with dad: a pilot study

Dr. Cody Neshteruk[1], Dr. Asheley Skinner[1], Mr. Jason Jones[2], Dr. Sarah Armstrong[1]
[1]Duke University School of Medicine, Durham, USA, [2]Durham Parks and Recreation, Durham, USA

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Purpose: Fathers can positively impact their children's physical activity, yet are often not included in family-based physical activity interventions. To address this gap, we are pilot testing Active Together, a physical activity and outdoor education program delivered through Parks and Recreation (P&R) for fathers/father figures and children ages 2-5 years.

Methods: The 8-week Active Together program is being tested using a non-randomized, quasi-experimental design. Active Together was developed in collaboration with our local P&R organization. Each weekly session includes a brief education session, outdoor activities designed to increase movement and teach families about nature, and a home toolbox with materials to continue the activities at home. Father-child dyads were recruited using standard P&R strategies (i.e., social media, community postings). The primary outcome is program feasibility, defined by five criteria: meeting recruitment goals (15 dyads), maintaining 70% attendance, child engagement in activity during programming, fathers' satisfaction with the program, and ability to obtain 90% of measures. Feasibility is currently being assessed using a combination of process measures, program observations, and surveys. Secondary outcomes include changes in accelerometer measured father and child physical activity and fathers' self-reported involvement and activity parenting. Descriptive statistics will be used to summarize feasibility outcomes and linear mixed models will be used to evaluate changes in secondary outcomes.

Results/findings: Programming is currently underway and will finish in early November 2021. Due to safety restrictions in response to the COVID-19 pandemic, the local P&R organization limited recruitment to 10 families. Recruitment goals were met with 10 children and 9 fathers enrolled in the program. Through seven sessions, child attendance has ranged from 50-80% with a mean attendance of 69%. Only 33% of fathers and 40% of children completed baseline measures. Engagement and satisfaction outcomes are forthcoming.

Conclusions: Findings from this pilot study will provide evidence for the feasibility of engaging fathers and their young children in physical activity through P&R outdoor education programming. Additionally this study also provides important lessons learned for engaging fathers and their young children in family-based research.

S.1V.02 - "Choosing All Together"; Community priorities for nutrition interventions in Sub-Saharan Africa

Virtual Session #2

May 19, 2022, 8:25 AM - 9:40 AM

Purpose:

This symposium provides an overview of the adaption, implementation and evaluation of a community engagement tool which aims to facilitate priority-setting of nutrition interventions. The CHAT (Choosing All Together Tool) is an activity in which communities allocate a limited budget to the interventions that they prioritise. The novelty of this work is its implementation in populations with low literacy levels.

Rationale:

The problem to be addressed is the dual burden of under- and over-nutrition in countries undergoing economic and nutrition transition. Governments and decision makers have limited resources to allocate to public health interventions. Programmes are most likely to be effective and sustainable if there is community engagement and 'buy in'.

Objectives:

1. To showcase the steps involved in implementing and evaluating CHAT;
2. To outline key challenges and benefits of CHAT;
3. To discuss adaptations of CHAT for different contexts; 3. To brainstorm ideas for future research in community priority setting .

Summary:

Outline of the session as a whole and outline and integration of the individual contributions
Dr Sarah Kehoe, Senior Research Fellow at the MRC Lifecourse Epidemiology Centre, will introduce the topic and speakers. The three talks describe the formative work leading to implementation and evaluation of CHAT

in Burkina Faso, Ghana and South Africa as part of the INPreP project (Improving Nutrition Pre-conception Pregnancy, Postpartum).

Talk 1 will be given by Romuald Boua from the Clinical Research Unit of Nanoro, Burkina Faso detailing focus group discussions exploring community perceptions of maternal and child nutrition issues (10 minutes).

Talk 2 by Agnes Erzse and Maxwell Dalaba presents the findings from the implementation of CHAT (20 minutes).

Talk 3 by Daniella Watson describes the process evaluation of CHAT in the three settings (10 minutes).

We will allocate 2-3 minutes after each talk for clarification questions (5-10 minutes).

The delegates will then be split into groups remotely or in person and will take part in a mini CHAT exercise in which they will be asked to collectively prioritise nutrition interventions (10 minutes).

The group discussion facilitated by Polly Hardy-Johnson will focus on our 4 objectives. We will engage delegates both in person and remotely by using polls, Q&A functions and jamboards to invite questions and discussion points (15-20 minutes).

Community Perspectives on Maternal and Child Nutrition in sub-Saharan Africa

Dr. Romuald Boua[2], Ms. Adelaide Compaore[2], Ms. Agnes Erzse[3], Mr. Cornelius Debpuur[4], Dr. Engelbert Nonterah[4], Dr. Hermann Sorgho[2], Prof. Shane Norris[3], Prof. Karen Hofman[3], Dr. Wendy Lawrence[1], Ms. Daniella Watson[1], Dr. Sarah Kehoe[1], Prof. Marie-Louise Newell[1], Prof. Keith Godfrey[1], Prof. Kate Ward[1], Prof. Mary Barker[1]
[1]University of Southampton, Southampton, United Kingdom, [2]Clinical Research Unit of Nanoro, Nanoro, Burkina Faso, [3]University of Witwatersrand School of Public Health, Johannesburg, South Africa, [4]Navrongo Health Research Centre, Navrongo, Ghana

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: All ages
Subject Category: Nutrition

Purpose: To present the findings of the formative work of the INPreP consortium which aimed to explore community perceptions of maternal and child nutrition issues in three countries in sub-Saharan Africa at differing stages of economic and nutrition transition: South Africa; Ghana; Burkina Faso.

Methods: A qualitative study design was adopted, using thirty focus group discussions (FGDs) with men and women aged >18 years from three communities; one urban (Soweto, South Africa) and two rural (Navrongo, Ghana and Nanoro, Burkina Faso). FGDs were facilitated by local researchers and thematically analysed.

Results: Community priorities revolved around poor nutrition and hunger caused by poverty, lack of economic opportunity and traditional gender roles. Men and women felt they had limited control over food and other resources. Women wanted men to take more responsibility for domestic chores, including food provision, while men wanted more involvement in maternal and child health and nutrition but felt unable to provide financially for their families. Further challenges to men's involvement included stigma, social and gender roles. Suggested solutions focussed on ways of increasing control over economic production, family life and domestic food supplies. The urban community wanted regulation of the food environment to address the supply of cheap foods high in fat, salt and sugar and to provide healthy foods at affordable prices. Rural communities sought support for agricultural activities.

Conclusions: To be acceptable and effective, interventions to improve maternal and child nutrition need to take account of communities' perceptions of their needs and consider challenges associated with communities' stage of economic transition. Findings suggest that education and knowledge are necessary but not sufficient to support improvements in women's and children's nutritional status. Interventions must address wider determinants of nutritional status such as poverty and gender inequality. Efforts are needed to facilitate and engage men and women to improve maternal and child health and consider implementation of interventions from a gender perspective.

Choosing Nutrition Interventions All Together: Implementing community priority setting tools in Sub-Saharan Africa.

Ms. Agnes Erzse[3], **Mr. Maxwell Dalaba[4]**, Dr. Aviva Tugendhaft[3], Dr. Marion Danis[5], Dr. Romuald Hofman[2], Ms. Adelaide Compaore[2], Mr. Cornelius Debpuur[4], Dr. Engelbert Nonterah[4], Dr. Hermann Sorgho[2], Ms. Daniella Watson[1], Prof. Mary Barker[1], Prof. Kate Ward[1], Dr. Sarah Kehoe[1], Dr. Polly Hardy-johnson[1], Prof. Karen Hofman[3]
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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: All ages
Subject Category: Nutrition

Purpose: We have previously engaged with communities in rural Burkina Faso and Ghana and urban South Africa to find out what they perceived as solutions to maternal and child malnutrition. To follow this qualitative research, we developed and evaluated a public engagement tool in which communities prioritise candidate nutrition interventions based on their cost.

Methods: We adapted and implemented a community deliberative tool "Choosing All Together" (CHAT) to identify and prioritise nutrition interventions, and to understand the rationale for the choices made. The CHAT tool resembles a board game activity in which a facilitator guides a group of 6-12 participants through a group negotiation and decision-making process. The CHAT board is a pie chart, on which the size of the 'slices' are proportionate to the cost of the candidate interventions. Participants are given a budget of tokens (stickers) equivalent to 60% of the cost of all interventions which they can allocate to the prioritised interventions. Discussions were recorded, transcribed, translated and thematically analysed.

Results: Despite low literacy in the rural communities, participants were able to use CHAT materials and work collectively to prioritize interventions. In rural Burkina Faso, providing farming tools to women was prioritised as a means to increase agricultural output and empower women. In rural Ghana participants prioritised: 1) livelihood empowerment to create an enabling environment for all year agricultural output to improve food security and income; 2) micronutrient supplementation interventions. Male involvement in maternal and child health was also prioritised to ensure optimal nutrition practices since men are mostly the household heads and main decision makers. In urban South Africa, communities prioritized: 1) food safety as it related to street food sellers, schools and crèches (pre-schools); 2) Provision of school breakfast; 3) Paid maternity leave.

Conclusion: It was feasible to modify and implement CHAT with communities in sub-Saharan Africa. Priorities were given to nutrition-specific interventions that have direct benefits over the nutrition-sensitive education related interventions. These nutrition priority choices have the potential to inform contextual decision-making in the area of nutrition health policy strategy and implementation.

A process evaluation of the community engagement tool "Choosing All Together" (CHAT) for improving maternal and child nutrition in communities in sub-Saharan Africa

Ms. Daniella Watson[1], Ms. Agnes Erzse[3], Mr. Maxwell Dalaba[4], Dr. Aviva Tugendhaft[3], Dr. Marion Danis[5], Dr. Romuald Boua[2], Ms. Adelaide Compaore[2], Dr. Engelbert Nonterah[4], Dr. Hermann Sorgho[2], Prof. Mary Barker[1], Prof. Kate Ward[1], Dr. Sarah Kehoe[1], Dr. Polly Hardy-johnson[1], Prof. Karen Hofman[3], Dr. Wendy Lawrence[1]

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: All ages
Subject Category: Nutrition

Purpose: "Choosing All Together" (CHAT), is a community engagement tool designed to give the public a voice in cost-effective priority setting in the face of unsustainable healthcare costs. It is important to conduct a process evaluation on community engagement tools to understand the context, implementation and mechanisms of impact, and especially how the community members responded.

Method: A secondary qualitative data analysis was conducted to evaluate the mechanisms of impact of CHAT for nutrition in two rural communities (Nanoro, Burkina Faso, and Navrongo, Ghana) and one urban township (Soweto, South Africa). The discussions from the CHAT activity were audio-recorded, transcribed and translated into English; the transcripts were thematically analysed to generate codes and themes driven by the data. The Behaviour Change Techniques (BCTs) taxonomy also guided the analysis of one theme based on behavioural mechanisms to explore if CHAT could have potential to be a behaviour change intervention. The BCT are the smallest practical components that make up behaviour change interventions.

Results: Thematic analysis generated five themes related to the CHAT processes. These included 'Working together to form a consensus' (community member's shared vision and diffusion of knowledge), 'priority setting components' (trade-offs, consensus), 'power dynamics' between facilitators and participants, 'facilitator's influence' on the CHAT process, and 'behavioural mechanisms'. The behavioural mechanisms based on the BCTs taxonomy included goal planning, social support and shaping knowledge.

Conclusions: The participants valued being involved in decision-making, felt more confident in making decisions and spoke of plans to improve nutrition in their community after participating in CHAT. The facilitators play a key role in community engagement interventions and should be trained appropriately to facilitate meaningful engagement between community members. As the CHAT process evaluation could be mapped onto the BCTs, it could be assumed that CHAT has potential to change nutritional behaviours of the CHAT participants. Future research should be conducted to see if any behaviour change around nutrition occurs in the community after participating in CHAT.

Supl.Virtual 05 – Other

Virtual Session #3

May 19, 2022, 8:15 AM - 9:45 AM

Television-Viewing Time and Prospective Changes in Bodily Pain in Middle-Aged and Older Australian Adults with and without Type 2 Diabetes

Mr. Francis Dzakpasu[1,2], Dr. Alison Carver[1], Ms. Parneet Sethi[2], Mr. Christian Brakenridge[1,2], Associate Professor Agus Salim[2], Prof. Flavia Cicuttini[3], Associate Professor Donna M. Urquhart[3], Prof. Neville Owen[2,4], Prof. David Dunstan[1,2]
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SIG - Primary Choice: A. Ageing
Age Category: Middle aged adults 45-64
Subject Category: Sedentary Behavior

Background: To identify sedentary behaviour/bodily pain relationships in the context of metabolic health, it will be informative to examine prospective associations of a common leisure-time sedentary behaviour – television-viewing (TV) time with bodily pain, and if such relationships may differ between those with and without type 2 diabetes (T2D). We examined longitudinal relationships of TV time with concurrent changes in bodily pain; and, potential moderation by T2D status.

Method: Data were from 4099 participants (aged 35 to 65 years at baseline) from the Australian Diabetes, Obesity and Lifestyle Study (AusDiab), who took part in the follow-ups at 5 years, 12 years, or both. Bodily pain (from SF36 questionnaire: a 0 to 100 scale where lower scores indicate more-severe pain), TV time, and T2D status [normal glucose metabolism (NGM), prediabetes, and T2D] were assessed at all three time points. Multilevel growth curve modelling used age (centred at 50 years) as the time metric, adjusting for potential confounders, including moderate-to-vigorous physical activity.

Results: Mean TV time increased (p<0.001) and bodily pain worsened (p<0.001) across the three-time points. Those with T2D had higher TV time and more severe bodily pain than those without T2D at all time points. In a fully adjusted model, the mean bodily pain score for those aged 50 years at baseline was 76.9 (SE: 2.2) and worsened significantly by 0.3 units every additional year (p<0.001). Those with initially more-severe pain had a higher rate of increase in pain severity. For every one-hour increase in daily TV time, there was a significant increase in pain severity (by 0.69 units each additional hour; p<0.001), accounting for the linear change in age and confounders. Above 2.5 hours/day of TV time, the association was significantly more-pronounced in those with T2D than in those without (prediabetes or NGM).

Conclusion: Increasing TV time predicted increased severity of bodily pain over 12 years in middle-aged and older Australian adults, and was more pronounced in those with T2D. While increasing physical activity is a mainstay of the prevention and management of chronic health problems, these new findings highlight the potential of reducing sedentary behaviours in this context.

Social media and children's diet - a systematic review of the underlying mechanisms

Mrs. Elida Sina[1], Dr. Daniel Boakye[1], Mrs. Lara Christianson[1], Prof. Wolfgang Ahrens[1], Dr. Antje Hebestreit[1]
[1]*Leibniz Institute for Prevention Research and Epidemiology-BIPS, Bremen, Germany*

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Sedentary behavior and nutrition

Purpose: Today, children and adolescents increasingly spend time using social media (SM), and research findings on how SM impacts their diet are inconsistent. Hence, this systematic literature review aims to explore the role of SM in healthy children's and adolescents' diets and related factors and is the first review to also consider potential underpinning mechanisms.

Methods: We searched Medline, Scopus, and CINAHL for studies published from 2008 to September 2020. Eligible studies included those assessing the association of SM exposure (e.g. Instagram, Facebook, TikTok, YouTube) with food intake (healthy and/or unhealthy), food preference, dietary behaviors, and the underlying mechanisms such as brain activation (as a potential determinant of diet) among healthy children and adolescents aged 2-18 years. The protocol was registered in PROSPERO (number: CRD42020213977). Due to the high heterogeneity among the included studies, a meta-analysis was not feasible.

Results: A total of 28 studies met the inclusion criteria, of which 20 were randomized controlled trials. Four studies focused on healthy food intake, and only one found that exposure to videos promoting healthy eating made by peers, but not SM influencers, increased subsequent vegetable intake. The majority of studies reported that SM was associated with an increased daily intake of sugar and caffeine, higher frequency intake of unhealthy snacks and sugar-sweetened beverages, lower intake of fruits and vegetables, as well as a higher likelihood of skipping breakfast, independent of age. Children and adolescents exposed to unhealthy vs. healthy food images showed an increased neural response in brain regions related to memory, reward, attention, and decision-making. We identified several mechanisms underpinning these associations and included: 1) the social determinants (e.g. food advertising via SM-influencers), and 2) the physiological aspects such as the neural response to the energy density and portion size of food depicted in images.

Conclusion: Exposure to SM deteriorates children's and adolescents' diets. Future health interventions should make use of the identified mechanisms by regulating SM food advertising among this vulnerable group. Furthermore, pediatricians and parents should help children and adolescents limit their overall SM use in order to prevent unfavorable health outcomes.

Associations of screen use with cognitive development in early childhood: the ELFE birth cohort study

Mr. Shuai Yang[1], Ms. Mélèa Saïd[1], Prof. Hugo Peyre[2,3,4], Dr. Franck Ramus[2], Dr. Marion Taine[5], Dr. Marie-Noëlle Dufourg[6], Dr. Barbara Heude[1], Prof. Marie-Aline Charles[1,6], Dr. Jonathan Bernard[1,7]

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Sedentary Behavior

Background: The existence of an effect of screen use on cognitive development remains controversial as there is a lack of recent, large, longitudinal studies. We aimed to assess the associations between screen use and cognitive development with adjustment for sociodemographic and behavioral confounders in the French nationwide ELFE birth cohort.

Methods: Time and context of screen use were reported by parents at age 2, 3.5 and 5.5 years. Language, executive functioning, and general development were assessed with the MacArthur-Bates Communicative Development Inventory (MB-CDI) at age 2 years, the Picture Similarities subtest from the British Ability Scale (PS-BAS) at age 3.5 years and the Child Development Inventory (CDI) at age 3.5 and 5.5 years. Outcome variables were age-adjusted and standardized (mean=100, SD=15) to ease cross-comparison on an identical scale. Multivariable linear regression models were applied to assess the cross-sectional and longitudinal associations between screen use and cognitive development, adjusted for sociodemographic and behavioral confounders, including non-screen-based activities/play and parent-child interactions. Multiple imputation was carried out among children (N=14,591) with at least one screen use information and one outcome measurement.

Results: Mean (± SD) daily screen time was 0.77 (± 0.98), 1.17 (± 1.01) and 1.41 (± 1.11) hours at ages 2, 3.5 and 5.5 years, respectively; Overall, 41.4% of children aged 2 years watched TV during family meals. TV during family meals was associated with lower MB-CDI score ($\beta_{yes\,vs\,no}$=-1.60, 95% CI: -3.11, -0.06) in cross-sectional analysis, but not with subsequent cognitive development. Screen time at age 2 years was neither cross-sectionally nor longitudinally associated with cognitive development. Screen time at age 3.5 years was negatively associated with CDI scores at age 3.5 (β=-0.78, 95% CI: -1.04, -0.52) and 5.5 (β=-0.57, 95% CI: -0.90, -0.25) years, but not with PS-BAS score. Screen time at 5.5 years was associated with CDI at age 5.5 years (β=-0.77, 95% CI: -1.09, -0.45).

Conclusion: Our study shows associations between screen use and cognitive development, but these are of weak magnitude once controlling for activities competing with screen use. Future studies need to better account for the context of screen use, not only screen time.

Ethnicity and Food Pantry Access Predict Inequities in Food Security during the COVID-19 Pandemic

Ms. Olasubomi Ajayi[1], Ms. Qianxia Jiang[1], Dr. Abiodun ATOLOYE[1], **Dr. Kristen Cooksey Stowers[1]**
[1]*University of Connecticut, Storrs, USA*

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Introduction: The covid-19 pandemic has exacerbated food insecurity (FI) among people with low-income and racial-ethnic minority status. Food pantries played a critical role in responding to increased food needs during the pandemic. Few studies have explored whether the built food environment and food pantry access influence inequities in FI. This study examined neighborhood food swamp exposure (i.e., areas where unhealthy food outlets inundate healthier options), food pantry proximity and use, and ethnicity as predictors of FI during the covid-19 pandemic.

Methods: From September 2020 to April 2021, a telephone survey of adults residing in 6 Hartford neighborhoods (including the 3 North Hartford Promise Zone sites) was conducted. Resident survey data on food pantry use, perceived food swamp exposure within 8 blocks from primary address (based on Food Swamp Index), food assistance program participation, income plus both typical (measured using validated 2-item FI screener), and covid-related FI were merged with objective Food Swamp Index (FSI) scores and food pantry locations using ArcGIS. Chi-square tests, Pearson correlations, and binary logistic regression models (clustered by neighborhood) were run using SAS v 9.

Results: An ethnically and socio-demographically diverse sample of adult residents (N=304) participated in the survey. Respondents were mostly Hispanic (67%) and Black American (29%), female (84%), and earn less than $25,000 annually (71%). Food pantry proximity was significantly associated with both typical (OR = 2.4, p<.001, 95%CI = [1.92, 3.02]) and COVID-related FI (OR=1.9, p<.01, 95%CI= [1.22, 2.81]). Food swamp residents were less likely to report typical (OR=.99, p<.001, 95%CI= [.988, .994]) and COVID-related (OR=.99, p<.001, 95%CI= [.996, .997]) FI. Controlling for food swamp exposure, pantry access and use, and income, Hispanics were more likely to experience COVID-related FI (OR=1.4, p<.05, 95%CI= [1.04, 1.95]) compared to Black Americans.

Conclusion: Food pantry access and perceived food swamps were linked to inequities in FI. Results also underscore ethnic disparities (Hispanic vs. Black) in covid-related FI. Future research should leverage community-based participatory and citizen science research approaches to explore the country of origin and citizenship status as predictors of FI among ethnically diverse populations and to design culturally-preferred solutions.

A review of sedentary behaviour assessment in national surveillance systems.

Miss Danielle Harvey[1], Associate Professor Karen Milton[2], Prof. Andy Jones[3], Dr. Andrew Atkin[1,4]

[1] School of Health Sciences, Faculty of Medicine and Health Sciences, University of East Anglia, Norwich, United Kingdom, [2]Norwich Medical School, Faculty of Medicine and Health Sciences, University of East Anglia, Norwich, United Kingdom, [3]Public Health, Norfolk County Council, Norwich, United Kingdom, [4]Norwich Epidemiology Centre, University of East Anglia, Norwich, United Kingdom

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Purpose: Sedentary behaviours (SBs) may be associated with chronic disease morbidity and mortality, warranting their inclusion in national surveillance systems. However, it is currently unknown what types of SBs are measured in surveillance systems and whether these reflect contemporary patterns of SB. Therefore, the aim of this study was to describe the characteristics of SB measurement within national surveillance in adults.

Methods: We used the Global Observatory for Physical Activity (GoPA!) country cards (updated 2021) to identify national surveillance systems that included physical activity and/or SB assessment from 217 countries. Google searches and email communication with a GoPA-designated country contact were used to obtain copies of the questionnaires used in each surveillance system. The Taxonomy of Self-reported Sedentary Behaviour Tools framework was used to map the questionnaire characteristics in terms of type of assessment, recall period, temporal unit and assessment period. Using a modified version of the Sedentary Behaviour International Taxonomy we classified the SBs captured by each questionnaire in terms of their purpose and type.

Results/findings: From 217 countries we reviewed 269 surveillance systems, from which we located 177 questionnaires for further appraisal. 152 questionnaires used a single item to measure sitting time, 10 used a single item proxy measure (e.g., TV viewing or computer use), 13 used a composite measure of a sum of behaviours (e.g., reading, playing video games and using a tablet) and two used a composite measure of a sum of domains (e.g., work and home). Our results indicate that surveillance tools typically measure total sitting time. TV viewing and/or computer use were the most frequently measured behaviours whereas only six questionnaires captured time spent using a mobile phone or tablet and these were typically combined with other behaviours.

Conclusions: TV and computer use were the most frequently measured behaviours when a proxy or composite measure were used, with few systems capturing contemporary screen behaviours, such as tablet or mobile phone use. An update of existing surveillance tools is needed to ensure that population levels of SB are accurately captured and reported.

Developing the BLOOM trial: Co-creating an intervention promoting healthy weight development during infancy with community health nurses and parents

Ms. Lene Kierkegaard[1], Ms. Rikke Rothkegel Carlsson[1], Miss Camilla Thørring Bonnesen[1]
[1]*National Institute of Public Health, University of Southern Denmark, Copenhagen, Denmark*

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Infants 0-2 yrs
Subject Category: All

Background: Childhood obesity is a major public health challenge, and it is recommended to promote a healthy weight development already during infancy. Danish community health nurses (CHN) cover almost all families with a new-born child leaving a huge potential for early interventions. Therefore, the aim of the Danish BLOOM trial is to develop an intervention to promote healthy weight development among children delivered by CHN. It is important to co-create interventions to maximize the feasibility which includes relevance, acceptability, adaptability, and thus improve the chances of successful implementation.

Purpose: To describe the co-creation process of the BLOOM trial.

Method: Development of the BLOOM trial is inspired by co-creation frameworks and the Intervention Mapping protocol. The co-creation process comprises three stages: 1) Evidence review, qualitative research with CHN and parents, and stakeholder consultations; 2) co-creation of the intervention content including workshops and group meetings with CHN, managing CHN and other stakeholders, and focus group discussions with parent groups; and 3) prototyping, feasibility- and pilot-testing. Currently, we are in stage 2 and have conducted three of six workshops with CHN and one of six parent group discussions.

Results: During stage 1, we identified the intervention setting; the unique system of CHN in Danish municipalities. Furthermore, we identified the need for focusing on nutrition and physical activity as well as sleep, screen time and sense of security to promote healthy weight development. The main intervention components are a course for CHN and information on when and how to talk to parents about the behavioural risk factors. The main components for parents are eight home visits from CHN during pregnancy and until the child is 2½ years old, an app, and group activities.

Conclusion: It is important to involve the implementers and the target group in developing new interventions. This description of the development of the BLOOM trial provides an example of how to co-create an intervention balancing evidence, the practical work of the implementers and the needs of the families. Involving parents and stakeholders in the development of an intervention aims at increasing the chances of producing a relevant, successful, and sustainable intervention.

Food insecurity and glycemic control among adult diabetics: the impact of a food prescription program

Dr. Shreela Sharma[1, 2], Dr. Nalini Ranjit[1, 2], Ms. Jennifer Aiyer[1, 2], Ms. Esther Liew[3], Ms. Paige Boyer[3], Ms. Jennifer Aiyer[1]

[1]University of Texas Health Science Center (Houston), Houston, USA, [2]Michael & Susan Dell Center for Healthy Living, Austin, USA, [3]Houston Food Bank, Houston, USA

SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Food prescription programs provide healthy food to address food insecurity and improve health outcomes in patient populations with various co-morbidities, however robust outcomes data remains scarce. The purpose of our study is to evaluate the impact of food bank implemented food prescription programs on biometric health outcomes in food-insecure patient populations.

Methods: We utilized a quasi-experimental pre-post evaluation design to conduct secondary analysis of health outcomes and food pantry visits data collected from May 2018 to October 2021 from food prescription programs across 17 participating healthcare partner (HCP) organizations in the Greater Houston area. Each 12-month redemption consisted of up to 30 pounds of fresh produce, plus whole grains, lean protein and low-fat dairy redeemed bimonthly at a food bank operated food pantry. HCPs provided baseline and follow-up data on glycosylated hemoglobin (HbA1c), systolic blood pressure (SBP), and diastolic blood pressure (DBP), while the food bank provided pantry visit data. Linear regression modeled complete case pre-post changes in outcomes within and across groups, adjusted for the number of days between pre-post measures to examine the impact of no visits (control) versus one or more visits (treatment) on HbA1c, SBP and DBP. Linear regression models explored dose-response effects by categorizing visits into three ordinal groups (coded 0 for no visit, 1 for <= median number of visits, 2 for >median number of visits).

Results: Results showed a -0.52% HbA1c pre-post difference among those in the intervention group (n=746 patients; p<0.001). As compared to the control group, the net difference was -0.32% (p=0.05). There were no significant intervention effects observed for other outcomes. Additional modeling confirmed a dose-response effect of visits; those with <= median visits (3 or fewer) had a -0.44% (p=0.005) decrease in HbA1c and those with >median visits had -0.61% (p<0.001) decrease in HbA1c over time compared to controls with no visits (0.20%, p=0.09).

Conclusion: This finding confirms prior research of improved blood glucose control among food prescription participants, utilizing a stronger study design with a sufficiently powered sample size. Our study adds support to the use of the charity food prescription model to improve health.

Virtual posters OD1

May 19, 2022, 10:50 AM - 12:05 PM

OD1-01 Use of behaviour change techniques in physical activity programs and services for older adults tested in large high-quality trials

Dr. Heidi Gilchrist[1,2], Dr. Juliana Souza de Oliveira[1,2], Ms. Venisa Kwok[1,2], Dr. Marina De Barros Pinheiro[1,2,] Dr. Leanne Hassett[1,3], Associate Prof. Anne Tiedemann[1,2], Prof. Cathie Sherrington[1,2]

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: The benefits of physical activity for older adults are well known. Understanding the extent and type of behaviour change techniques (BCTs) used in programs and services tested in trials can help interpretation of trial results. The purpose of this study was to identify and summarise the number and type of behaviour change techniques used in physical activity programs and services for older adults evaluated in large high-quality trials.

Methods: Our WHO-commissioned systematic review identified 87 large (>100 people per group) high-quality (Physiotherapy Evidence Database (PEDro) score >6) individual randomised controlled trials (RCTs) evaluating physical activity programs/services for older people. We described the trial's impact on physical activity, falls, intrinsic capacity (physical domain), functional ability (physical, social, and cognitive/emotional domains), and quality of life. Forty trials out of 87 included additional strategies to enhance program effectiveness. In the present study, the interventions in these trials were coded for the type and number of BCTs present, using a published taxonomy of 93 behaviour change techniques (the BCTT).

Results: A total of 374 behaviour change techniques were identified in the 40 trials that included additional strategies to enhance program effectiveness. The average number of BCTs used per intervention was eight, with a range of 4 to 17 BCTs used. A total of 39 of the possible 93 behaviour change techniques from the BCTT were identified, and nine of the BCTs accounted for 55% (206/374) of the total BCTs used. The most common BCT was "action planning" (n=38), and the most common BCT groupings were "goals and planning" and "substitution and repetition".

Conclusion: Understanding which BCTs are used in interventions and their association with trial outcomes will help guide evidence-based practice and improve the effectiveness of future interventions.

OD1-02 Perspectives of diet and exercise in frail and pre-frail hospitalised older adults: a qualitative report describing patterns before, during and after hospitalization

Mr. Chad Han[1], Dr. Alison Yaxley[1], Associate Professor Yogesh Sharma[2,3], Dr. Claire Baldwin[1], Ms Jersyn Doh[1], Prof. Michelle Miller[1]

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Nutrition

Purpose: Diet and exercise have been identified as the cornerstones in reversing frailty/pre-frailty. This study aims to investigate perspectives on diet and exercise in frail/pre-frail older adults, before, during and after hospitalization.

Methods: A qualitative study on perspectives of diet and exercise, before, during and post- hospitalization, using semi-structured interviews was conducted. A total of 22 frail or pre-frail older adults aged 67 – 90 years (mean age, 80.6 years; female 41%; living alone 41%; body mass index, 27.2kg/m2) admitted to the acute medical unit at a tertiary hospital in South Australia, were interviewed. Sessions were audio-recorded, transcribed verbatim and analyzed thematically.

Results: The perspectives of the participants' own diet prior to hospitalization were grouped into seven themes: preference for home-cooked food over takeaway; energy-balanced meals; a variety of food groups; emphasis on particular food group(s); three regular meals; minimal discretionary foods; and professionally pre-made meals. The following were identified as components of an ideal diet for older adults: energy-balanced meals; sufficient protein; sufficient hydration; plant-based; use of whole foods; dietitian planned, and professionally pre-made meals. Participants described a lack (defining exercise as household chores and stretching) or range of exercises prior to admission: walking, strength-training, self-guided and group. Regular walking and golfing were described as ideal exercise routines. During hospitalization, participants noticed a difference in the taste of food served. There were also feelings of unfamiliarity in the type of food, and reduced variety and quantity compared to what is served at home. Participants also described a wide range of changes in exercise during hospitalization, from complete bed rest to increased exercise from baseline. Post-hospitalization, participants anticipated an improvement diet adequacy and quality. The general consensus for exercise were initiation of home exercise services or physiotherapy, increased exercise intensity, and exercising with mobility aids if necessary.

Conclusion: This research revealed important viewpoints pertaining to diet and exercise that can inform future interventions for frail/pre-frail older adults both in hospital and on discharge home.

OD1-03 Understanding older people's engagement with online yoga classes: What works for whom, and why?

Dr Abby Haynes[1,2], Dr. Heidi Gilchrist[1,2], Dr. Juliana Oliveira[1,2], Dr. Anne Grunseit[3], Prof. Catherine Sherrington[1,2], Prof. Stephen Lord[4,5], Associate Prof. Anne Tiedemann[1,2]

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Balance-challenging exercise can reduce falls in older people. Successful AGEing (SAGE) is a novel randomised controlled trial testing the effectiveness of a 40-week yoga-based exercise program on reducing falls in people aged 60+. The face-to-face yoga classes were moved online following COVID-19 restrictions so initial participants took part in a hybrid program, while current participants are attending classes entirely online. Our evaluation aims to explain continuing high participation rates and positive post-intervention survey feedback indicating adherence to and enjoyment of hybrid and online programs, with reports of improved balance, physical function, sleep and mental wellbeing.

Methods: We conducted a realist process evaluation of the hybrid program. This involved developing and testing program theories that describe which mechanisms the program may be activating and how context mediates this relationship to generate proximal outcomes. Data included purposively sampled interviews and focus groups with participants (n=21) and yoga instructors (n=3), observations of classes, and review of feedback forms (n=46) and routine trial data. We are currently evaluating the online program.

Results: Findings from evaluation of the hybrid program indicate that SAGE is working well for most participants—regardless of the delivery mode—due to the quality of yoga instruction, program structure and inherent yoga characteristics. Gains in transitioning online included greater convenience. Losses included perceived reduction in the effectiveness of yoga instruction. Home environments create barriers for some, and people struggling with pain face greater challenges. We identified six program theories configured around 16 mechanisms: 1. *It's worth the effort* and 2. *In expert hands* (mechanisms were: value expectancy, therapeutic alliance, achievement/mastery), 3. *A communal experience* (shared experience, social connection, social comparison, position checking), 4. *Finding yoga within reach* (accessibility, convenience, gratitude), 5. *Building yoga habits* (purposeful structure, momentum, accountability, continuity), and 6. *Yoga's special properties* (embodiment, mindfulness). These program theories are now being explored with participants who completed SAGE entirely online.

Conclusions: For most participants, online delivery of SAGE retains much of the value of the well-received face-to-face program, and increases value in some areas. This indicates that teleyoga can provide engaging, accessible and scalable yoga-based fall prevention programs for people aged 60+.

OD1-04 Meaningful mobility and positive ageing: A scoping review

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Mobility underpins many features of positive ageing for community-dwelling older adults and is often considered differently depending on the approach taken to collecting and interpreting data. We extended our recent scoping review on 'conceptualising positive ageing' to explore the role of mobility (defined as meaningful movement within/across an environment) in positive ageing. Furthermore, we separately considered closed/validatory (etic) and open/exploratory (emic) approaches to exploring positive ageing and mobility.

Methods: Our scoping review process was guided by Arksey and O'Malley's framework. We systematically searched six electronic databases (CINAHL, Embase, Web of Science Core Collection, Medline, Scopus, PsycINFO) and articles included in seven relevant reviews. Articles meeting all general (English language; peer-reviewed primary study; conceptualising positive ageing for community-dwelling adults ≥65 years) and specific (incorporating mobility) inclusion criteria were included. Methodological quality was assessed using the Mixed Methods Appraisal Tool. Extracted mobility characteristics were grouped according to 'implied mobility' (i.e., activities where physical movement was likely involved, but not specified) and/or 'realised mobility' (activities where physical movement was involved). Data will be analysed descriptively and thematically following the six-step reflexive thematic analysis approach of Braun and Clark (2006).

Results: Of 2,416 retrieved articles (duplicates removed), 39 articles incorporated positive ageing and mobility (24 etic, 14 emic, 1 etic/emic combination). Methodological quality ranged from low to high. Mobility was predominantly presented as an 'implied' concept, often involving employment, community/social engagement, and caregiving activities – although the emphasis on specific activities differed across etic and emic perspectives. Our preliminary thematic analysis of 'realised mobility' highlighted complexity within/across etic and emic perspectives. 'Realised mobility' extended beyond physical movement, had an underlying health focus and imperative to be mobile, and involved active intention to use/adapt resources to support meaningful interaction and engagement.

Conclusions: Implied and realised mobility illustrate the unique role of physical movement in supporting positive ageing. Realised mobility is complex and involves a range of contributing factors and intentions. Etic and emic approaches present unique and complementary perspectives. Ultimately, this knowledge can inform research and policy initiatives to create enriching environments for positive ageing and meaningful mobility.

OD1-05 Contributions from a co-creation approach to the design of communication strategies for reducing consumption of discretionary salt

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The present work seeks to provide insights for the design of communication strategies to reduce discretionary salt consumption (i.e., salt added during cooking or at the table), a major source of dietary sodium in Uruguay. Its aims were to: (i) explore the automatic mental associations raised by salt and (ii) co-create potential messages for a communication intervention to reduce discretionary salt usage at the population level.

Methods: An online study was conducted in Uruguay using a non-probabilistic sample of 581 participants, recruited using an advertisement on Facebook and Instagram. Participants were first asked to write down the first words that came to their mind when thinking of salt. Then, they answered a questionnaire on discretionary salt consumption patterns and a series of open-ended questions to provide ideas for the development of a communication campaign to reduce the use of discretionary salt. In addition, two co-creation workshops involving designers, communicators, nutritionists, and general population were held in two different cities in the country.

Results/findings: Results revealed that the most frequent associations elicited by salt were related to negative health effects (41.5%), being hypertension the most frequently mentioned (76% of the responses within this category). This result suggests that participants were already aware of the negative health consequences of excessive sodium consumption. Only 8% of participants self-reported consuming an excessive amount of salt, suggesting the need to increase perceived susceptibility of potential health problems associated with excessive sodium intake. The Health Belief Model was used as the theoretical framework to code participants' ideas on messages to reduce discretionary salt usage. Three dimensions were identified: highlighting benefits (e.g., increasing life expectancy and rediscovering the natural taste of food); bringing down barriers and improving self-efficacy towards sodium reduction (e.g., promoting the use of species); and increasing risk perception (with emphasis on the severity). These results were used in the workshops to create sketches of messages (image and text) for communication strategies, focused on promoting alternatives to salt and raising perceived susceptibility.

Conclusions: Valuable insights for the development of well-informed communication strategies to reduce discretionary salt consumption were gathered.

OD1-06 Does the carbon footprint of dishes on the menu impact consumer choice?

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Human nutrition significantly contributes to greenhouse gas emissions worldwide, while the climate impact differs substantially between foods and nutritional styles. The carbon footprint of products is a way to inform consumers about the ecological impact of their food choices. The current research investigated the provision of that information to customers in corporate catering services.

The carbon footprint of all dishes in a corporate catering service was calculated and displayed at three canteens for a period of two weeks. As a control, the same menu had been offered earlier in a control period without providing the information. Sales numbers were collected and compared between control and intervention period. In addition, the initiative was evaluated among customers using a questionnaire.

Carbon footprints of the offered dishes varied between 305 g and 7087 g carbon dioxide equivalents. A vast majority of the customers evaluated the provision of the information positively. While only 30% of survey participants indicated that the information did not influence their choice of a dish, the differences in sales between control and intervention period are inconclusive. Over the two-week period, the average carbon footprint did not differ significantly, and the number of lower carbon footprint dishes did not increase significantly and neither did the number of high carbon footprint dishes.

As consumers show positive attitudes towards sustainability information such as the carbon footprint of food products, further research is needed to learn under which conditions this information impacts consumer behaviour. The results do not indicate the provision of the carbon footprint to be a promising and effective intervention to substantially shrink the climate impact of a corporate catering service compared to other methods, such as nudges or a shift on the supply side, for instance by changes in offered dishes and recipes or monetary incentives.

OD1-07 A qualitative exploration of barriers and facilitators to adherence to diet and/or physical activity interventions in adults

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Lifestyle behaviour interventions focusing on changing diet or physical activity (PA) are key to promoting long term health and reducing the burden of disease. However, adherence to dietary or PA recommendations during and after these programs is low. To date, no work has consolidated the facilitators and barriers to lifestyle intervention adherence participants experience. Therefore, the purpose of this systematic review was to qualitatively explore participant perceived barriers and facilitators to lifestyle intervention adherence.

Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines, five electronic data bases (i.e., Google Scholar, Cochrane Reviews, Medline, PubMed, and Web of Science) were searched from 2005 to 2020. Only qualitative studies assessing participant perceived barriers and/or facilitators to adherence were considered. For this review, lifestyle interventions included those focused on changing diet and/or PA related behaviours to improve eating, exercise, or weight loss. All studies were conducted in adults (>18 years) living without a mental or physical impairment. Similar themes across studies were grouped together into individual, environmental and intervention level facilitators/barriers.

Results: Fifty papers were included. At the individual level, possessing health literacy, positive attitudes towards intervention guidelines (e.g., prescribed foods or PA exercises) or perceived ease of incorporation facilitated adherence to the intervention. Barriers included a lack of clarity on how intervention recommendations affected personal health or unwillingness to change behaviours. Environmental barriers included financial, access to unhealthy foods and poor neighbourhood walkability. Social interactions within the home acted both as a facilitator and as a barrier at this level. At the intervention level, personalizing intervention guidelines (e.g., picking type of PA), having clear guidelines and inclusion of social interactions embedded within interventions (e.g., group exercise sessions, or intervention 'coaches') facilitated adherence. Conversely, interventions that were time intensive, rigid in delivery or provided no opportunities for personalization were viewed as harder to adhere to.

Conclusions: Greater adherence to lifestyle interventions may promote maintained adoption of dietary or PA behaviours with health benefits. This includes incorporating theoretical underpinnings that support development of skills necessary for behaviour change (e.g., knowledge), social companionship and personalization of intervention guidelines.

OD1-08 Why did older people participate in a physical activity and fall prevention coaching trial? A qualitative study guided by self-determination theory

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Background: Well-designed exercise programs can reduce falls in older people. Many physical activity and fall prevention intervention trials are now seeking to advance this evidence base, yet these trials frequently report low and unrepresentative recruitment. Better understanding of reasons for participation can help improve recruitment. We explored why participants enrolled in and persevered with the Coaching for Healthy Ageing (CHAnGE) trial, including how recruitment strategies affected their expectations and decision-making. CHAnGE was a cluster randomised controlled trial testing a program targeting inactivity and falls in community-dwelling people aged 60+. Recruitment took place at community centre meetings where health coaches presented trial information in an accessible format and answered questions.

Methods: We conducted a secondary thematic analysis of data from our qualitative evaluation in which 32 purposively sampled trial participants took part in semi-structured interviews. Data relating to recruitment and participation were analysed inductively, then a coding framework comprising the core constructs of self-determination theory—autonomy, competence and relatedness—was used to explore if and how this theory helped to explain participation.

Results: Participation was motivated by the desire for improved health and decelerated ageing, altruism and curiosity. At the point of enrolment, participants hoped that the intervention would fulfill these desires via structured support, accountability and achievability—reasons that align with the self-determination concept of competence. However, positive descriptions of what it was like to actually participate in the intervention focused on other attributes such as program flexibility, empowerment and the caring encouragement provided by health coaches—reasons that address the self-determination concepts of autonomy and relatedness as well as competence. Recruitment promoted CHAnGE well in terms of improved health, decelerated ageing and fall prevention, but it was less effective in conveying the intervention's demonstrated potential to support all aspects of self-determination via person-centred coaching.

Conclusions: Findings suggest that recruitment could have greater reach using: 1. Empowerment-focused messaging, 2. Participant stories that highlight positive experiences of participation, and 3. Peer support and information sharing to leverage altruism and curiosity. Theory-informed improvements may increase participation in future fall prevention trials and programs, especially of people in harder-to-recruit groups.

OD1-09 How big is too big? The portion size norm of discretionary foods – a systematic review

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: All ages
Subject Category: Nutrition

Purpose: The ubiquity of energy-dense, nutrient-poor discretionary foods in large servings and packages may have distorted the portion size norm (defined as the perception regarding how much of a given food people choose to eat in one eating occasion), resulting in unconscious overconsumption. An overview of existing portion size norms for discretionary foods has yet to be established. The aim of this systematic review was to examine the portion size norm of discretionary foods and drinks, and methodologies used to assess the norm.

Methods: Primary peer-reviewed studies investigating the portion size norm of discretionary food and drinks were included. The search was conducted in six selected databases including Medline, CINAHL, Embase, Emarald, PsycInfo, and Scopus following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. The risk of bias assessment was performed using the Joanna Briggs Institute (JBI) critical appraisal checklists for the appropriate study design.

Results: After screening 7416 articles, 32 articles (comprising of 31 quantitative studies and seven qualitative studies) were eligible. All included studies were from high-income western countries and most studies were conducted in a single setting. The most examined discretionary food types were packaged potato crisps and confectionery, with normal portion sizes varying from 27-64 g for crisps (n=7), and 15-72 g for confectionery (n=6), based on studies using validated tools. Reviewed studies differed considerably in their design including the setting, selected food type, food presentation, the articulated questions, and the range and number of displayed serving size options participants could choose. The quality of reviewed studies was mixed (three low risk of bias, 22 fair risk of bias, 13 high risk of bias); portion size assessment tasks were not validated in 11 of 31 quantitative studies.

Conclusions: A wide range of portion sizes could be considered normal but there is lack of consistency and validation in terms of portion size tasks adapted to assess portion size norms. Large variations in food presentation and displayed serving size options was observed across studies. Further high-quality evidence using pre-piloted, validated tools are needed to accurately assess the portion size norm of discretionary foods

OD1-10 Demographic, psychological and behavioral determinants of sustained adherence to physical exercise in health clubs: Rapid systematic review

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The aim of this review was to review and synthesize existing literature analyzing demographic, psychological and behavioral determinants of sustained adherence to physical exercise in health clubs.

Methods: This review included quantitative studies that report these determinants, published between 2010 and 2021, with adult population. Clinical trials and reviews published in peer-reviewed scientific journals and written in Portuguese, English and Spanish, and indexed in PubMed database, were included.

Results: A total of 461 articles were selected through keyword combination and two were added by manual search. Seven studies were included in this review, including a sample of 1051 participants. Of the selected studies, one was cross-sectional study, one longitudinal, three uncontrolled clinical trials, and two randomized controlled trials. The identified determinants were categorized into demographic determinants, psychological determinants and behavioral determinants.

Conclusions: Motivation was the psychological determinant most often studied and with the highest score of positive associations, followed by the notion of health and well-being. In the behavioral determinants, habits, past behavior and intention seem to predict sustained adherence to physical exercise in a health club context.

OD1-11 A correlation of occupation-related sedentary behaviour and cardiometabolic risk factors in South African office-based workers

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Purpose: Sedentary behaviour is a known independent contributor to preventable chronic conditions in adults. Office-based workers spend most of their awake time sitting during working hours, suggesting a high likelihood of cardiometabolic diseases. Given the paucity of data in the South African setting, this study aimed to understand sedentariness during the occupation time among a sample of office-workers and to determine the correlation between sitting time and cardiometabolic risk factors associated thereof.

Methods: A cross-sectional study was conducted on adult South African office-based workers. Participant biomarkers such as age, gender, anthropometry, blood pressure, glucose, glycated haemoglobin (HbA1c) and lipid profiles were collected. Sedentary behaviour during work hours was measured as the amount of time sitting at work, and breaking sitting time while at work using the sit-q-7d questionnaire.

Results: Descriptive statistics for participants mean; age (36.9 ±8.7), BMI (23.5 ±5.7), random glucose (6.2 ±1.9) and HbA1c (6.1 ±1.5). Interrupting sitting time showed a positive association with waist circumference ($r = 0.24$; $p = 0.046$), systolic blood pressure ($r = 0.25$; $p = 0.038$), and diastolic blood pressure ($r = 0.27$; $p = 0.021$). No other significant correlation was identified.

Conclusions: Sedentary behaviour is a health risk among workers, as such, the workplace remains an ideal setting for interventions to interrupt sitting time.

OD1-12 The feasibility of constructing a smart aging exercise promotion platform in community parks

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SIG - Primary Choice: D. e- & mHealth
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Introduction: Community parks are an important environmental factor that increases the physical activity levels of older adults. Previous studies have demonstrated that the application of technology may enhance the benefits of health promotion and smart aging; however, research on community parks and the application of technology is very limited in Taiwan. Thus, this study explored the feasibility of using smart aging programs in community parks through focus groups and content analysis.

Methods: This study carried out preliminary integration and induction of outdoor fitness equipment projects provided by the parks. Furthermore, we conducted focus group interviews with seven experts regarding the environmental smart aging platform system of community parks.

Result: The major results of this study are as follows: i) more demographic factors, such as income, location, behavioral intent, and personal ability; ii) research designs should consider the characteristics of the older adults and add incentives to attract them to participate and reduce the threshold of participation; iii) intelligent equipment should consider the feasibility and accessibility of community parks; and iv) further investigations should be conducted on older adults, the amount of physical activity performed in community parks, and the status and needs of other adults.

Discussion: These results can be used as a relevant unit and the future policy for building a smart aging exercise promotion platform in the context of community parks.

OD1-13 4-legged friend facilitates children's physical activity – the PAWS mobile health intervention

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SIG - Primary Choice: D. e- & mHealth
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Introduction: Physical activity is important for children's healthy growth and development; however, few children meet recommended levels of physical activity. A potential area for intervention is via encouraging more walking and playing with the family dog. Despite many families owning a dog only a small proportion of children gain the benefits of dog ownership through dog walking and play. The PLAYCE PAWS study pilot tested a mobile health (mHealth) dog-facilitated physical activity intervention to encourage more family dog walking and play.

Methods: 150 children (5 – 10 years old) recruited from Perth, Western Australia were randomly assigned to either one of two intervention groups ('SMS' and 'SMS and pedometer') or an 'usual care' control group. A mHealth strategy consisting of text messages to parents was administered; the 'SMS and pedometer' group also received a dog pedometer and personalised dog steps diary. Other supports include information about dog friendly parks and beaches; games for children to play with their dog; and tips on how safe interaction between child and dog. Child outcome measures (dog walking and dog play) as well as socio-demographic factors were collected using parent-report online surveys at baseline, 1 month and 3-month post intervention. Dog-facilitated physical activity was calculated by summing dog walking and dog play scores. Both intervention groups were combined to form one intervention group ('combined intervention'). Ordinal logistic modelling was used to examine the impact of the intervention on children's dog walking and dog play behaviours

Results: Compared with controls, the 'SMS' and combined intervention groups were significantly more likely to engage in dog-facilitated physical activity at 3-month follow-up ('SMS' OR 2.61 95% CI 1.17, 5.83; combined intervention OR 1.97 95% CI 1.01, 3.86). However, after adjustment for socio-demographic factors the associations did not achieve significance. Nevertheless, families reported the intervention was acceptable and feasible.

Conclusion: The PAWS mHealth intervention appears effective and feasible in encouraging children to be more active with their dog. Larger trials are needed to confirm these findings as well as the impact of mHealth dog-facilitated interventions on children's overall physical activity levels and other health and developmental outcomes

OD1-14 The Effects of mHealth Interventions on Dietary Adherence in Patients with Cardiovascular Diseases: A Systematic Review

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Dietary modification is a key therapy for patients with cardiovascular diseases (CVDs); however dietary nonadherence is often a challenge, placing burden on the healthcare system. Evidence suggests that mHealth interventions may be effective for supporting CVD patients in following dietary prescriptions. The aim of this study was to conduct a systematic review to determine if the use of diet-focused mHealth interventions are effective for supporting patients with CVDs in adhering to dietary recommendations.

Methods: Literature searches were conducted in the Ovid MEDLINE, Ovid EMBASE, Ovid Cochrane, CENTRAL, CINAHL, Ovid PsycINFO, Scopus, Web of Science, and ProQuest Dissertations & Theses Global databases, from June to September 2021. Randomized controlled trials (RCTs) and non-randomized experimental studies were included if participants were ≥18 years old, had a CVD diagnosis, tested an mHealth intervention, and measured dietary adherence. Studies were excluded if the intervention involved open two-way communication, or were qualitative studies or systematic reviews. Two independent reviewers conducted screening and risk of bias assessments.

Results/Findings: After removal of duplicates, 2011 studies were identified and underwent title and abstract screening. Fifty articles underwent full text screening; 13 studies were included in the systematic review: 10 RCTs and 3 non-randomized studies, ranging from 1 to 12 months in duration. The mHealth interventions assessed included text messages (n=5), apps (n=4), a combination of texts and apps (n=1), e-mails (n=1), and websites (n=2). Studies tested the effects of these mHeath interventions on intake of specific foods/nutrients (e.g., vegetable, fruit, and sodium) (n=10), the DASH diet (n=2) and Mediterranean diet adherence (n=1). Five studies assessed blood pressure (n=5). Most studies (n=8) showed that patients who used mHealth interventions had significantly improved adherence to diet recommendations; others showed mixed results (n=3) or no support for the intervention (n=2). Overall, 5 studies had low risk of bias, 3 had some concerns, and 5 had high risk of bias.

Conclusions: mHealth interventions have a primarily positive effect on dietary adherence among patients with CVD. However, due to the risk of bias identified within the included studies, caution is advised when applying these findings to clinical settings for patients with CVD.

OD1-15 Barriers and facilitators for implementing lifestyle interventions in osteoarthritis as perceived by healthcare professionals: a scoping review

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Osteoarthritis (OA) is a highly prevalent degenerative joint disorder, leading to significant disability in daily life. Previous studies have demonstrated that lifestyle modifications (e.g. increasing physical activity levels and weight reduction) result in reduced pain and improved physical functioning. However, lifestyle interventions (LIs) are currently underutilized in the conservative treatment of OA. Some research has been conducted among healthcare professionals (HCPs) on the implementation of LIs in their daily practice, however, a systematic overview of barriers and facilitators is still lacking. Therefore, this scoping review aimed to provide an overview of factors affecting the implementation of LIs within hip and/or knee OA care as perceived by HCPs.

Methods: A scoping review was conducted. The databases PubMed, Embase, CINAHL, PsycINFO and the Cochrane Library were searched up to January 2021. Primary research articles with a quantitative, qualitative or mixed-methods design were eligible for inclusion if they reported: (1) perceptions of primary and/or secondary HCPs; (2) on implementing LIs with physical activity and/or weight management as key components; (3) on conservative management of hip and/or knee OA. Barriers and facilitators were extracted by two researchers independently and linked to a framework based on the Tailored Implementation for Chronic Diseases checklist.

Results: Thirty-six articles were included. In total, 809 factors were extracted and subdivided into nine domains. Extracted barriers were mostly related to non-optimal interdisciplinary collaboration, patients' negative attitude toward LIs, patients' low health literacy, and HCPs' lack of knowledge and skills around LIs or promoting behavioral change. Extracted facilitators were mostly related to good interdisciplinary collaboration, a positive perception of HCPs' own role in implementing LIs, the content or structure of LIs, and HCPs' positive attitude toward LIs.

Conclusions: Multiple individual and environmental factors influence the implementation of LIs by HCPs in patients with hip and/or knee OA. The resulting overview of barriers and facilitators can guide future research on the implementation of LIs within OA care. To investigate whether factor frequency is related to the

relevance of each domain, further research should assess the relative importance of the identified factors involving all relevant disciplines of primary and secondary HCPs.

OD1-16 Pragmatic evaluation of a pilot Play Street in Inner West Sydney, Australia

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 0-18 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: To assess community utilisation, stakeholder perceptions, and identify enablers and barriers to implementation of a pilot Play Street initiative in the Inner West area of Sydney, Australia. Play Streets are a priority in the Inner West Council's strategy for increasing access to outdoor space for play and recreation in high-density areas.

Methods: The pilot Play Street was held in March 2020. We used a post-only mixed methods design comprising: (i) brief intercept surveys with Play Street visitors exploring their motivations and expectations for attending and, (ii) semi-structured stakeholder interviews examining stakeholders' experiences related to planning and implementation of Play Streets (current and future). Survey data were analysed to provide descriptive statistics about visitors and utilisation and perceptions of the event. Interviews were recorded, transcribed, and analysed for themes.

Results: Of n=32 survey respondents, the majority were female, aged 35-54, lived in the Play Street's postcode, came in groups of adults and children. Respondents mainly came to socialise and meet friends (78%) and to let children play (53%). Overall, the Play Street was rated positively by respondents who indicated it was "enjoyable or very enjoyable" (100%), "safe or very safe" (97%) and "well or very well organised" (81%). Only two stakeholders were interviewed due to COVID-19 lockdown in Sydney, both with roles in local government. Issues highlighted were importance of community consultation; balancing the needs and concerns of street residents to achieve compromise; concerns about safety and insurance costs; the role of Council as facilitator to help residents take ownership of Play Street. Contextual factors that impacted planning, implementation, and evaluation of this pilot included postponements due to community concerns and poor air quality arising from bush fires, heavy rain on event day, and COVID-19 restrictions.

Conclusion: This pilot demonstrates that it is feasible and acceptable to use streets as recreation spaces in Sydney's Inner West. Recommendations for future planning and delivery include prioritisation of locations with less access to open outdoor space, encourage community to lead initiative, highlight Council's role as facilitator, ensure adequate community consultation, develop strategic plan with clear procedures and accessible resources.

OD1-17 The Play Active Program for Early Childhood Education and Care: describing current educator physical activity practices

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Background: Early Childhood Education and Care (ECEC) services are an important place for supporting children to be physically active, healthy, and developmentally on track. Play Active is an evidence-informed physical activity policy template coupled with resources and training to enable ECEC services to successfully implement their policy. This presentation describes the baseline physical activity context of ECEC services as measured through educator practices and attitudes.

Methods: In 2021, baseline data were collected from 565 educators across 79 ECEC services participating in the Play Active Program pragmatic randomised controlled in Perth, Western Australia. Educator physical activity practices were collected using established items in an online survey. To identify patterns of physical activity practices and attitudes baseline data were analysed using exploratory factor analysis (EFA) and latent class analysis (LCA).

Results: EFA revealed three physical activity practice subscales (Encouraging, Planning, and Using Rewards), two attitudinal subscales (Values and Space perceptions), one confidence subscale, one motivation subscale, and one support subscale. Scores derived from these subscales were dichotomised into 'high' or 'low' and entered into either the physical activity practices LCA or the attitudes LCA. LCA identified three physical activity practice latent classes: 'Low encouraging, low planning' (62% of educators); 'High encouraging, high planning' (22%); and 'Low encouraging, high planning' (17%); and three attitude latent classes: 'High confidence, motivation, support' (46%); 'High intrapersonal' (32%); 'Low intrapersonal' (22%). Only 12% of educators were in both the 'High encouraging, high planning' and 'High intrapersonal' latent classes and 19% were in both the 'Low encouraging, low planning' and 'Low intrapersonal' latent classes.

Discussion: Only 12% of educators participating in the Play Active trial had positive physical activity practices, attitudes, confidence, motivation, and support at baseline. This is concerning given these factors are critical for supporting children's physical activity while in care. Improving educator's attitudes and practices is a key objective of the Play Active Program. Further evaluation on the effectiveness of Play Active will be undertaken in 2022.

OD1-18 The relative contribution of center demographic, educator, parental, social, environmental, and policy factors to scheduling outdoor play in childcare settings during the COVID-19 pandemic.

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[1]*University of Alberta, Edmonton, Canada*

SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Purpose: Childcare centers play a key role in providing outdoor play opportunities. Guided by the socio-ecological model, this study investigated center demographic, educator, parental, social, environmental, and policy factors associated with scheduling outdoor play in Alberta, Canada childcare settings during the pandemic.

Methods: Childcare center directors (n=159) in Alberta, Canada participated in this cross-sectional study from June to August 2021. Centre demographic (number of cohorts, educator certification, center location), educator (barrier self-efficacy, positive outcome expectation), parental (interest, support), social (support from the government, health authority, licensing), environmental (play areas, alternatives to licensed spaces, amount of equipment, variety of equipment), and policy factors (centers' written outdoor play policy, perceived attributes of government COVID-19 guidelines) were measured via a questionnaire adapted from previous tools. Changes in the frequency and amount of outdoor playtime scheduled during COVID-19 compared to before COVID-19 were measured separately for winter (December-March) and non-winter months (April-November) on a 5-point Likert scale. Hierarchical regression analyses were conducted.

Results: In winter months, parental interest (β=0.277), social support (β=0.289), play areas (β=0.213), and compatibility of government COVID-19 guidelines (β=0.216) were positively associated with changes in the frequency of outdoor playtime. Similarly, parental interest (β=0.184), social support (β=0.199), play areas (β=0.224) were positively associated with changes in the amount of outdoor playtime. The final models accounted for 26.7% (frequency) and 29.5% (amount) of the variance. In non-winter months, parental interest (β=0.292), social support (β=0.194), and alternatives to licensed spaces (β=0.155) were positively associated with changes in the frequency of outdoor playtime, while the number of cohorts (β=-0.150) was negatively associated. Similarly, parental interest (β=0.276), social support (β=0.203), and alternatives to licensed spaces (β=0.211) were positively associated with changes in the amount of outdoor playtime, while the number of cohorts (β=-0.180) was negatively associated. The final models accounted for 28.5% (frequency) and 34.3% (amount) of the variance.

Conclusions: Factors from multiple socio-ecological levels were associated with scheduling more outdoor play in childcare centers during the COVID-19 pandemic compared to before. Findings can help inform interventions and initiatives targeting the scheduling of outdoor play in childcare settings during and after the on-going pandemic.

OD1-19 Outdoor nature-based play in Early Care and Education centers: Applying systems science to identify crucial determinants and understand the process of implementation

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Purpose: For young children, play is physical activity by stealth. Children tend to be more physically active outdoors compared to indoors and nature-based play has been shown to benefit children's motor skill development. To inform the promotion of outdoor nature-based play in Early Care and Education (ECE) centres, we applied a systems science perspective to identify the crucial factors that can better support the implementation of outdoor nature-based play.

Methods: Using Group Model Building (GMB), data were collected during two workshops with 10 educators in managerial roles and 10 in practitioner roles working in ECE settings across Scotland. The relationship between elicited factors influencing the implementation of outdoor nature-based play were appraised using Causal Loop Diagrams (CLD). The finalized CLD was used to understand the complex relationships that lay behind the implementation of the policy. To further explore and validate the findings, descriptive network analysis was employed.Network analysis identified the leverage points important for this policy implementation.

Findings: Forty-two factors were identified which were grouped into the categories: Educator attributes, ECE practice, Resources, Parental factors, Child-related factors, other (e.g., Culture of being outdoors) and external factors not directly influencing the system (e.g., Access to nature space). Fifty-seven connections and eleven causal loops emerged relating to Affordability of nature-based childcare, Practice of nature-based childcare, Risks-Benefits, Collaborating to agreed vision, Formal and informal capacity building, Educator-child relationship, Children's playing experiences outdoors, Weather, Parental choice, and Parental 'outdoorsiness'. Factors were not equally essential for implementation of the policy. Three factors were found to be the most important in connecting the CLD (Use of outdoor space, ECE culture of outdoor play, Educator confidence). Three factors were found to be part of a higher number of causal loops (Use of outdoor space, Educator agency, Perceived child safety and enjoyment).

Conclusions: The CLD enabled identification of five important leverage points that could enhance outdoor nature-based play in ECE settings which could have further impacts on children's health and wellbeing. This study allows researchers and policy makers to appraise the state of art of the outdoor nature-based ECE.

OD1-20 Effectiveness of an mHealth intervention in childcare services on food packed in children's lunchboxes.

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Lunches packed by parents for their children to consume at childcare services often contain inadequate quantities of healthy foods. The use of mHealth to support parents to pack healthier lunchboxes represents a novel way to potentially improve lunchbox contents. The purpose of this study is to report on the preliminary impact of an mHealth intervention, embedded within an existing childcare-parent communication app, on packing of discretionary foods and core food groups in children's lunchboxes.

Method: A single- blind randomised controlled trial was undertaken with 17 childcare services in the Hunter New England region of NSW Australia. Eligible services were those that required food to be brought from home in a lunchbox, and who were currently using or were willing to use the intervention app. Parents in the intervention group received an eleven-week program via an existing childcare-parent communication app. The intervention consisted of weekly push notification messages which aimed to address known barriers to packing of healthy lunchboxes. Lunchbox contents were recorded at baseline and follow up, using photography and weighed food records. Fidelity and parent engagement with intervention implementation was monitored using service manager self- completed records and app analytics. Outcomes included number of discretionary food serves and number of core food groups packed. The analysis controlled for baseline outcomes and were adjusted for clustering.

Results: No significant differences in packing of discretionary foods (0.13, p=0.53), fruit (-0.1, p=.47), vegetables (0.00, p=.97), breads and cereals (-0.10, p=0.61), dairy (0.02, p=0.75) or meat and alternatives (0.01, p=0.60) were found at follow up between the intervention and control services. Likewise, no significant between group changes were identified for mean total mean energy provided by core foods (-71.72, p=0.35). App analytics indicated that 100% of messages were delivered during the intervention, however estimated mean percentage of parents downloading the app and engaging with the messages was 62% and 25% respectively.

Conclusion: Preliminary results suggest that the intervention had a null effect on parent packing of core food groups in childcare lunchboxes. Further research into the barriers for parent uptake and engagement with app-based interventions in the childcare setting are warranted.

OD1-21 Change in Family Child Care Home Nutrition Practices and Policies Following Happy Healthy Homes Intervention

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Determine impact of the Happy Healthy Homes intervention to enhance nutrition environment and optimal practices in Family Child Care Homes (FCCH) in Oklahoma.

Methods: FCCH providers (n=45) in Oklahoma City who participated in the Child and Adult Care Food Program (CACFP) were recruited. The randomized, attention-matched intervention was tailored for FCCH and focused on goal setting. Arms were either nutrition (NUT) or environmental health (ECO). Nutrition and Physical Activity Self-Assessment in Child Care (NAPSACC) for FCCH was completed at baseline, immediately following intervention (~3-months) and at ~12-months post-baseline. For each NAPSACC section (i.e., foods provided, beverages provided, feeding environment, feeding practices, menu variety, and education and professional development) the changes in score and frequency of optimal practices (OP) from baseline-to-3-months and baseline-to-12-months were compared using mixed regression models.

Results/Findings: FCCH providers supervised 9.2±3.9 children and spent 1.9±0.9 hours/day preparing meals. No baseline differences between arms emerged. NUT baseline NAPSACC total score was 129.25±14.59, average score was 3.18±0.25, OP was 15.75±4.8. NUT foods provided remained unchanged at 3 months. However, the score (baseline=3.29 [max of 4] +0.18, p=0.0094) and OP (baseline=7.07 [max of 13] +1.27, p=0.007) were improved at 12 months. The beverages provided score increased at 3 months (baseline=3.4 [max of 4] +0.17, p=0.02) and 12 months (+0.28, p=0.0003). Beverages provided OP remained unchanged at 3 months but improved at 12 months (baseline=3.8 [max of 5] +0.79, p=0.0004). Feeding environment score (baseline=2.87 [max of 4] +0.22, p=0.0003) and OP (baseline=2.55 [max of 7] +0.68, p=0.02) improved at 3 months but did not remain statistically significant at 12 months. No other NUT intervention effects were observed. ECO scores and OP remained unchanged after intervention.

Conclusion: This FCCH-tailored goal-setting intervention improved food and beverage quality in FCCH receiving the nutrition intervention 12-months post-baseline. Integration of food and beverage changes took longer than the intervention period but were evident at 12-months. In contrast, initially observed improvements in food environment, including family style meal service, presence of TV, and role modeling, diminished by 12 months suggesting that these behaviors may need additional support to be sustained.

OD1-22 Development of a toolkit to strengthen the ECEC teacher-parent partnership regarding healthy eating, physical activity and sleeping behaviors in young children

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Purpose: Children show health inequalities already at a young age. Among children from families with diverse ethnic backgrounds and/or low socioeconomic positions, excess weight gain and unhealthy behaviors are still common. The need for early interventions to promote healthy behaviors in disadvantaged children is widely recognized. An Early Childhood Education and Care (ECEC) teacher-parent partnership regarding healthy behaviors may support parents and stimulate their children's development. A preschool-based intervention was developed to strengthen such a collaboration. The intervention consists of a toolkit with parent-child activities and (information) materials. ECEC teachers supervise the activities at the standard walk-in play time. This study describes the systematic development of the toolkit.

Methods: The Intervention Mapping approach was used to develop the parent-child activities. The needs assessment included interviews with experts and focus groups with ECEC teachers. Furthermore, parents were asked to identify healthy lifestyle topics for their child which they think are easy or difficult to pursue. Parent could put a green (for easy) or a yellow (for difficult) sticker at a predefined list of topics.

Results: ECEC teachers (n=10) indicated that the activities should be fun, accessible, practical [in their execution] and should fit in their regular program. The interviews with experts (n=9) and conversations with parents (n=28) resulted in 10 important behaviors in which difficulties are experienced: providing a healthy breakfast, involving their child in meal planning and preparation, providing healthy foods, controlling portion sizes, providing water, exercising together, giving opportunities to be physically active, letting a child play outside, and ensuring their child has enough sleep. The developed parent-child activities relate directly to these lifestyle behaviors. A reader and training for ECEC teachers was designed to improve implementation by the teachers.

Conclusions: The toolkit and associated training will provide a practical guide for ECEC teachers to communicate with parents about lifestyle-related topics. In future research, we will explore parents' and ECEC

teachers' views and experiences of receiving and implementing the toolkit and study the effect of the toolkit on the teacher-parent partnership.

OD1-23 Tummy time patterns, preferences, and dose-response relationships between tummy time duration and development in the first six months of life

Dr. Zhiguang Zhang[1], Ms. Madison Preddy[1], Dr. Kylie Hesketh[2], Dr. Lesley Pritchard[3], Prof. Valerie Carson[1]
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SIG - Primary Choice: F. Early care and education
Age Category: Infants 0-2 yrs
Subject Category: Physical Activity

Purpose: Tummy time is a recommended type of physical activity for infants not yet mobile. This study examined: change in tummy time patterns and preferences, dose-response relationships between tummy time duration and development, and differences in tummy time patterns between higher and lower tummy time preference groups in the first six months of life.

Methods: Participants were parents of infants from the Early Movers project in Edmonton, Canada (baseline: n=411). At 2, 4, and 6 months of age, tummy time duration and preference (i.e., 1=really dislikes to 5=really likes) and development (i.e., Ages & Stages Questionnaire [ASQ-3] communication, fine motor, gross motor, problem-solving, personal-social) were measured using a parental questionnaire. In a subsample (n=127), tummy time patterns (i.e., bout frequency, mean and median bout length) were measured using a 3-day time-use diary. Linear mixed models, linear regression models, and Mann-Whitney tests were conducted.

Results: Tummy time bout frequency, bout length, and preference significantly increased over time. Dose-response relationships between tummy time duration and developmental outcomes were observed at 4 (gross motor) and 6 months (all developmental outcomes). Moreover, at 2 months, 30-44 min/d of tummy time was associated with a higher total development score (vs. <15 min/d; B=11.14; 95%CI: 1.60,20.68). At 6 months, 61-120 min/d (vs. <30min/d; B=27.12; 95%CI: 11.93,42.32) and >120 min/d (vs. <30 min/d; B=33.80; 95%CI: 18.90,48.70) of tummy time were associated with higher total development scores. Differences in threshold doses between some developmental outcomes were observed. For gross motor development, threshold doses were 30-44 min/d at 2 months and 45-60 min/d at 4 and 6 months. Infants with higher tummy time preference (score >3) at 4 and 6 months, compared to those with a lower preference had more frequent and longer tummy time bouts.

Conclusion: Infant preference and ability to participate in more frequent and longer bouts of tummy time increased in the first 6 months of life. This finding may explain why the optimal amount of tummy time needed for advanced development appeared to increase with age. Parents of infants with lower tummy time preference may need additional support to facilitate optimal amounts of tummy time.

OD1-24 Sedentary Behaviour and Type 2 Diabetes and Cardiovascular Disease: An Umbrella Review

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Sedentary Behavior

Purpose: Diabetes effects 451 million adults worldwide and cardiovascular disease (CVD) causes 17.9 million deaths/year. High sedentary behaviour (SB) has been linked to increased risk of type 2 diabetes (T2D) and CVD, however, an umbrella review comparing and contrasting all reviews would allow for summation of higher-level evidence. Thus, the primary purpose of this umbrella review is to summarize the link between SB and T2D and CVD.

Methods: Databases (PubMED, EMBASE, Scopus, Web of Science, PsycINFO, SPORTDiscus, CINAHL and Cochrane Library) were searched with the assistance of a librarian. The titles/abstract review followed by full text review was done by two independent researchers. At both screening stages, discrepancies were settled by a third researcher. Reviews were included if they: (1) comprised of any population; (2) incorporated a SB intervention or exposure measured by any means except lack of physical activity; (3) contained any/or no comparison group; (4) measured T2D and/or CVD as an outcome; (5) embodied a systematic review design with or without a meta-analysis; and (6) were published in English. Data from each of the included reviews were extracted independently by one researcher and checked by a second researcher for accuracy. Two researchers assessed the quality of each review independently using the AMSTAR 2 tool and discrepancies were resolved by a third researcher. Results were described using a narrative approach.

Results: A total of 12 reviews were included. For T2D, 11 reviews were included, 7 included a meta-analysis, and all 7 found an association between increased SB and incidence of T2D. For CVD, 9 reviews were included, 5 included a meta-analysis, and all 5 found an association between increased SB and incidence of CVD. The association between SB and T2D was stronger than the association between SB and CVD.

Conclusions: This umbrella review highlights clear and consistent associations between increased SB and incidence of T2D and CVD among middle-aged adults. Intervention research using objective measures of SB are needed to provide more robust evidence for these associations. Future work should also focus on older adults and clinical populations (i.e., those "at risk" for or diagnosed with T2D or CVD).

OD1-25 Comparing the policy and practice impacts of highly cited and high altmetric publications in physical activity research

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SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: Physical Activity

Purpose: A gap remains between availability and dissemination of evidence-based physical activity (PA) policies and interventions, and application in "real world" settings. There is a need to better understand the meaning of research impact and whether the research on PA that is widely cited or popular in media (e.g., high Altmetric scores) is also translated into policy. The present study aims to describe highly cited and high altmetric publications in PA research and explore their impact on PA policy and practice.

Methods: A review was conducted to collect both the top 100 highly cited and high altmetric publications with "physical activity" and "physical inactivity" in the title from the last ten years. Descriptive information included: 1.Study design; 2.Study population; 3.Age group; 4.Type of PA study (Measurements/trends; correlates/determinants; health outcomes; interventions; and policy); 5.Implications (use in local/regional/global policy proposals/laws/regulations) and, 6.Number of citations or Altmetric score. From the top 100 highly cited/high altmetrics publications, the top three first authors overall, in interventions, and in policy were asked to interview on research dissemination and implications on PA policy and practice.

Results: For publication type, the most frequent for highly cited work were health consequences (40%, altmetrics=42%); followed by measurement/trends (23%, altmetrics=10%), correlates/determinants (21%, altmetrics=26%), policy (11%, altmetrics=5%), and interventions (5%, altmetrics=17%). When examining study design for highly cited publications, cross sectional studies had the most publications (87%, altmetrics=42%); followed by systematic reviews (38%, altmetrics=18%), longitudinal (8%, altmetrics=40%), and experimental (5%, altmetrics=17%). Interviews highlighted inadequate capacity for dissemination (e.g., funding, training, resources), journal bias, and lack of incentives as barriers. Individual behaviors (e.g., social media use, networking, training) and perspectives were also important in dissemination efforts.

Conclusions: Overall, most study designs tend to be observational. However, high altmetric publications had more representation of experimental studies. Both groups had little representation of policy and intervention publications, highlighting a barrier to dissemination as observational studies may be informing policy and practice. Building capacity for research dissemination and putting mechanisms in place (e.g., incentives to disseminate beyond journal publication) that support dissemination may help to produce research that has more direct implications for policy and practice.

OD1-26 The association between activity space built-environment characteristics and physical activity during pregnancy and early postpartum – evidence from MADRES cohort

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Background: Studies have shown positive associations between residential greenness, parks and open space access, and walkability and women's physical activity (PA) during pregnancy and postpartum. However, research that examines the day-level relationship of Global position systems (GPS)-based dynamic exposures to these built-environment (BE) characteristics and PA outcomes remained limited. This study investigated the associations between dynamic daily BE exposures and the day-level PA outcomes in Hispanic, predominantly low-income pregnant women during the pregnancy and postpartum periods.

Methods: Smartphone location and accelerometer-assessed PA data of women (N = 552 person-days) were collected across three measurement bursts (i.e., 1st and 3rd trimesters, and 4-6 months postpartum) between 2016 and 2018. Each measurement burst lasted four days (2 weekdays and 2 weekend days). Time-weighted activity surfaces (TWAS) were derived from location data using Kernel Density Estimation methods and integrated with BE layers (e.g., walkability index score) to derive dynamic daily BE exposures. Mixed-effects models examined the associations of dynamic daily BE exposures with women's day-level moderate to vigorous PA (MVPA) minutes and whether the associations differed by daily averaged temperature, pregnancy and postpartum periods, weekdays vs. weekend days, pre-pregnancy body mass index, maternal parity, employment status, and neighborhood cohesion and safety.

Results: On days when women were exposed to any parks and open space as estimated through TWAS, they engaged in more MVPA. Additionally, walkability from TWAS was positively associated with women's MVPA minutes per day, but only on weekend days or for those whose index child was their first, were obese prior to pregnancy, or lived in neighborhoods with low perceived safety and cohesion. Percent of green space along walkable roads and park proximity from TWAS; however, were not associated with women's day-level MVPA.

Conclusions: Daily exposures to any parks and open space at locations visited and during travel were critical in women's day-to-day PA outcomes during pregnancy and early postpartum. Future PA research should further explore park use behaviors of women of low SES or specific racial/ethnic minority groups and the quality of parks they frequently visited such as its maintenance, safety, and amenities to formulate more targeted and efficacious interventions.

OD1-27 Level of Knowledge, Self-efficacy, and Attitudes towards the Use of Nutrition in the Appalachian Region of Health Practitioners

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The prevalence of chronic disease is rising and therefore presents an imperative need for prevention, likely through nutrition counseling implemented by practitioners. The Appalachian region have high rates of chronic disease, a result of lifestyle factors and poor diet. Although there is research on the positive effects of diet on disease prevention, there is less known about the implementation of nutrition counseling among providers in West Virginia and their level of knowledge, self-efficacy, and attitudes towards the use of nutrition. Therefore, the objective of this study is to investigate the knowledge, self-efficacy, and attitudes regarding the use of nutrition counseling within clinical settings of practitioners in an Appalachian region.

Methods: Data was collected in the Spring of 2021 by using a Qualtrics survey sent to Physicians, Dietitians, Registered Nurses, Physical Therapists, and other providers across an Appalachian state. Means of nutrition knowledge, attitudes, and self-efficacy were calculated and One-Way ANOVA was used to determine differences in mean scores by job title. All data was analyzed using JMP Pro Version 15.0.

Results: When surveyed, 54.55% (n=28) reported that they routinely ask their patients diet related questions, while the other 54.45% reported only asking their patients diet related questions sometimes. The data revealed that there was a significant association between nutrition knowledge and job title (0.013) and self-efficacy and job title (p=0.01) but no significant association between attitude and job title (p=0.24). Additionally, dietitians reported the highest levels of nutritional knowledge with a mean score of 21.5 ± 5.65 (95% CI 18.24, 24.76)and self-efficacy with a mean score of 103.17 ± 11.39 (95% CI 95.93, 110.4) when compared to other practitioners.

Conclusions: All practitioners displayed positive attitudes towards the use of nutrition within clinical settings yet possessed low self-efficacy and knowledge regarding the implementation of nutrition, except for dietitians. Although dietitians are regarded as the nutrition experts, all practitioners play a role in providing nutrition advice and should therefore have improved nutrition knowledge and self-efficacy. Increasing the importance of nutrition knowledge among providers will serve as a method to reduce the prevalence of chronic disease.

OD1-28 Assessing the Relationship Between Mental Health and Eating Styles among College Students

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[1]*West Virginia University, Morgantown, USA*

SIG - Primary Choice: M. Disease prevention and management
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Recent studies have shown that the prevalence of mental illness is on the rise within the college aged population. Mental health is a wide range of conditions that affect mood, behavior and thought with the most common types consisting of depression, anxiety, and increased stress. Mental health problems can impact a variety of lifestyle factors, including eating behaviors. Therefore, the purpose of this study was to determine the association between mental health and eating styles among college students.

Methods: Data was collected in the Fall of 2021 by inviting currently enrolled students to participate in an online survey via Qualtrics. The survey measured depression using the Patient Health Questionnaire (9-Item), stress using the Generalized Anxiety Disorder-7 Item (GAD-7), stress using Cohen's Perceived Stress Scale-10 Item (PSS-10), and eating styles using the Three Factor Eating Questionnaire (TFEQ) which contains subscales of cognitive restraint, emotional eating and uncontrolled eating. Descriptive statistics were computed for all variables and One-Way ANOVA was used to determine differences in mean eating styles scores among different levels of depression, anxiety, and stress.

Results: Respondents (N=1645) had a 13.5 % prevalence of moderately severe depression and 9.7% prevalence of severe depression. The prevalence of moderate anxiety was 21.3% and 18.0% for severe anxiety. High stress impacted 20.3% of respondents. One-Way ANOVA analysis revealed that respondents with severe depression had significantly higher scores in cognitive restraint eating, emotional eating and uncontrolled eating (p<.0001). Individuals with severe anxiety had significantly higher scores in cognitive restraint eating, emotional eating and uncontrolled eating (p<.0001). The data further revealed that individuals with high stress reported significantly higher scores in cognitive restraint eating, emotional eating and uncontrolled eating (p<.0001).

Conclusions: These results suggest that individuals suffering from mental health disorders such as depression, anxiety, and/or stress may also be engaging in unhealthy eating styles. Determining the association between mental health and eating styles will allow for specific nutrition education and food resources to be available for those with depression, anxiety, and/or stress.

OD1-29 Where There Are No Parks: A Mixed Methods Analysis of Community Physical activity and Social Environments and Leisure Time Physical Activity among the Urban Poor in Accra, Ghana.

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Background: A growing body of literature indicates that physical and social environments influence myriad health outcomes including physical activity, obesity and chronic conditions. Additionally, individual perceptions of the physical and social environments affects behaviors such as physical activity. This study examines objective measures and individuals' perceptions of the physical and social environments and the association with leisure time physical activity.

Methods: The study was conducted in three urban poor communities in Accra. Objective measures of the physical activity environment was assessed using Global Positioning System technology. Residents' perception of the physical activity and social environments and their involvement in leisure time physical activity were collected through a survey. Prevalence of leisure time physical activity by perceptions of the physical and social environment were examined using descriptive statistics. Logistic regression analysis was used to predict the likelihood of respondents engaging in leisure time physical activity.

Results: About two-thirds of the study participants did not engage in any leisure time physical activity. There were more "informal" than formal physical activity space(s) in the study area. About 4 in 5 of the respondents indicated that there were physical activity spaces in their community and about a quarter reported high crime level. Respondents' perception of the absence of physical activity spaces and high crime level were associated with a lower likelihood on engaging in leisure time physical activity.

Conclusions: Interventions aimed at encouraging leisure time physical activity in urban poor areas should address the broader physical activity and social environments.

S.1V.07 - Co-creation and dissemination of research with children: Lessons learned and reflections

Virtual Session #3

May 19, 2022, 12:05 PM - 1:20 PM

Purpose:
To explore innovative methods to effectively engage with young people on an ongoing basis in research on physical activity and healthy eating; and to discuss recommendations for participatory research that optimises and increases the relevance and value of research with, and for, young people.

Rationale:
Working in partnership with young people to co-produce physical activity and diet research has increasingly emerged as a promising method – from consultation, material and content design, to dissemination. This approach has led to exploring creative methodologies to achieve positive behaviour change. This symposium will share practical lessons learned on co-creation and dissemination of research with young people, and how these insights can be translated across different contexts.

Objectives:
 The symposium will (i) showcase new ways of engaging with young people in physical activity and diet research; (ii) describe insights from participatory research with young people in different contexts and populations; (iii) share learnings of what works when involving young people; and (iv) discuss challenges, future directions and recommendations of how co-creation and dissemination of research with young people can ensure that programmes and studies are relevant to their priorities and needs.

Summary:
In Talk 1, Professor Kelly Mackintosh will explore the power of co-creation, illustrating how children's creative minds can lead to innovative ways to promote and relay individual health behaviours. Talk 2, delivered by Dr

Katharina Kariippanon will discuss challenges and considerations of engaging young children from diverse sociocultural and linguistic backgrounds in sharing their views and experiences of 24hr movement behaviours. In Talk 3, Dr Melody Smith will share challenges and highlights of co-producing creative dissemination outputs with children on health-promoting neighbourhood design.

Format:

The format includes an introduction by the Chair (Dr Andrea Smith; 2 min) followed by the three oral presentations (15 minutes each). The Discussant (Dr Catherine Draper) will subsequently provide a brief overview (3 min) of the topics presented during the session, allowing 20 minutes for a general discussion between presenters and delegates moderated by the Discussant.

Interaction:

Delegates will be encouraged to ask questions during the General Discussion. The Discussant and Chair will also prepare pertinent questions to facilitate interactive exchange with attendees during the General Discussion.

The power of co-design for physical activity: what have PlayDoh and instruments got to do with it?

Prof. Kelly Mackintosh[1], Prof. Melitta McNarry[1]
[1]*Swansea University, Swansea, United Kingdom*

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Physical activity (PA), including how and in what context it is included, is associated with numerous health benefits. However, a large proportion of youth fail to meet recommended PA guidelines. One potential solution is to utilise and integrate technology, such as device-based assessments of PA in combination with personalised feedback, to enhance youth's understanding of, and motivation for, PA. We are increasingly using monitors with multiple tri-axial sensors operating at high frequencies, producing large volumes of data, that are difficult to interpret. Technology enables the creation of novel ways to contextualise physical activity levels (PAL) through various tangible, visual and audible outputs. This presentation will explore the power of co-creation, illustrating how youth's creative minds can lead to innovative ways to promote and translate individual health behaviours.

Methods: The iterative co-design process leading to the development of simple data representations, including those you can touch, hear and/or see, will be evaluated. The role of 'model (i.e., using PlayDoh), show and tell' as a youth-centred methodology to explore perceptions of representing PA will be discussed, with data presented from semi-structured interviews and focus groups with children, parents, teachers and stakeholders.

Results: The approaches taken assimilate large volumes of complex data into one simple format. Whilst some data representation processes highlight patterns within data that enable researchers to identify different postures and behaviours, they are generally not accessible or meaningful to children. Whilst 3D-Printing and LED light-strip visualisations provide less context, they are easily interpretable and may be more accessible by children. Indeed, children were enthusiastic for the concept of visualising PA through both lights and a tangible object, as well as audibly, demonstrating significant untapped potential to enhance the translation of important health messages.

Conclusions: Results suggest that data feedback, irrespective of form, may offer a unique strategy for enhancing both researchers and participants' knowledge of PAL. Indeed, such approaches may facilitate positive behaviour change, likely through embedding the target audience in the development process. Future research should seek to utilise co-design processes to enhance children's PAL through more effective intervention designs, as well as associated dissemination.

Enabling the Inclusion of the Voices of Children on 24hr Movement Behaviours in the Early Years: Reflections from Six Diverse Country Settings

Dr. Katharina Kariippanon[1], Associate Professor Catherine Draper[2], Dr. Nicolas Aguilar-Farias[3], Dr. Guan Hongyan[4], Dr. Asmaa el Hamdouchi[5], Dr. Himangi Lubree[6]

[1]University of Wollongong, Wollongong, Australia, [2]University of the Witwatersrand, Johannesburg-Braamfontein, South Africa, [3]Universidad de La Frontera, Temuco, Chile, [4]Capital Institute of Pediatrics, Beijing, China, [5]Université Ibn Tofail, Rabat, Morocco, [6]KEM Hospital Research Centre Pune, Pune, India

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Purpose: Since the release of the World Health Organisation's *Guidelines for physical activity, sedentary behaviours and sleep for children under 5 years of age*, there is increasing interest in examining how young children, globally, perceive and experience these '24hr movement behaviours' in their daily lives. However, conducting qualitative research with young children presents a host of challenges. Additional layers of complexity come into play when undertaking international research across culturally, linguistically, and socio-economically diverse populations.

Methods: Interviews and focus groups were held with 3-5-year-old children from rural and urban areas in Australia, Chile, China, India, Morocco and South Africa. The children shared their experiences, perceptions and preferences around the 24hr movement behaviours, constructed their 'ideal day' and discussed barriers and enablers of outdoor play. Individual and collective researcher reflexivity guided the decision making as this research was designed, conducted and the findings interpreted.

Results: The findings showed that there is variation in how the global trends disrupting physical activities, sedentary behaviours and sleep in daily life, affect young children. Central to engaging young children in a meaningful way to examine this topic, was an awareness of the diverse contextual influences on how 24hr movement behaviours are conceptualised, and consideration of the effects of contextual nuances on methodological choices. Identifying suitable methods, developing appropriate questions, building rapport, managing power dynamics and being cognisant of non-verbal behaviour, shaped the design and data collection processes, while utilizing the Framework Method allowed for a systematic yet flexible approach to the analysis. The interpretation of findings was grounded in each researchers' knowledge of the local context, coupled with an examination of their own biases.

Conclusion: The voices of children have been recognized as a powerful force for change, and young children's viewpoints need to be considered in policy and practice decisions regarding the role of 24hr movement behaviours in the healthy growth and development of children. Conducting participatory research to elicit young children's perspectives requires considerable researcher reflexivity. Future research should investigate

how to effectively engage young children in the discourse on how to promote healthy levels of 24hr movement behaviours.

Neighbourhoods for Healthy Kids: Understanding children's meanings, priorities, and preferred dissemination techniques

Associate Prof. Melody Smith[1], Dr. Victoria Egli[1], Ms. Tiffany Williams[1], Ms. Tessa Pocock[1], Prof. Sandra Mandic[2], Dr. Lisa Williams[1], Mr. Ananth Narayanan[1]

[1]The University of Auckland, Auckland, New Zealand, [2]Auckland University of Technology, Auckland, New Zealand

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Neighbourhood environments can have significant impacts on children's wellbeing. There is a paucity of research that has examined neighbourhood and health priorities, strengths, and needs from children's perspectives. We used child-centred methods to understand the meanings children place on neighbourhoods and health, to identify priorities for health-promoting neighbourhoods, and to determine child-preferred dissemination techniques.

Methods: This was a cross-sectional participatory research project with children across four primary schools in Aotearoa New Zealand. Creative, play-based methods were used with children to introduce the topic. Children worked in groups with researcher support to refine descriptions of health, neighbourhoods, and statements for what makes a healthy neighbourhood. Children were then supported to choose a dissemination method from a suite of options and develop outputs for dissemination with stakeholders. A range of researcher-generated output types are proposed from this research, targeted to specific stakeholders. Data used to generate outputs included researcher written reflections; and children's textual, graphical, and audio-visual data collected from post-it notes, posters, art, 3-D models, presentations, and videos. This presentation will share definitions and messages generated by children, and outline and reflect on the methods used to generate dissemination outputs for schools.

Findings: A diverse array of topics were identified by children in the context of health-promoting neighbourhoods, including the importance of nature, reducing litter, being physically active, maintaining social connections, promoting mental health, reducing smoking, and medicalisation of health and health promotion (e.g., having access to hospitals). Children created a range of dissemination outputs to share their messages, including videos, stop-start motion movies, posters, presentations, plays, and 3-D models.

Conclusions: When given the opportunity to share their ideas, children generate unique and localised insights about healthy neighbourhoods that are specific to children but also consider the wider community. Children had a wide range of ideas and preferences for dissemination outputs. Use of creative research techniques and allowing a range of options is recommended to engage children and support them to share information in ways that are meaningful to them. School-focused dissemination outputs have prioritised sharing all work prepared by children. Policy/planning dissemination is the next stage of this research.

Supl.Virtual 01 – Other

Virtual Session #1

May 19, 2022, 12:05 PM - 1:20 PM

Two-year outcomes of scaling-up a secondary school-based program: Physical Activity 4 Everyone (PA4E1)

Dr. Rachel Sutherland[1,2,3,4], Mr Matthew Mclaughlin[1,2,3,4], Dr. Elizabeth Campbell[1,2,3,4], Dr. Nicole Nathan[1,2,3,4], Mr. Tom McKenzie[1,2,3,4], Ms. Lynda Davies[1,2,3,4], Prof. Luke Wolfenden[1,2,3,4], Prof. John Wiggers[1,2,3,4]

[1]School of Medicine and Public Health, University of Newcastle, Callaghan, Australia, [2]Hunter New England Population Health, Wallsend, Australia, [3]Hunter Medical Research Institute, New Lambton Heights, Australia, [4]Priority Research Centre for Health Behaviour, University of Newcastle, Callaghan, Australia

SIG - Primary Choice: E. Implementation and scalability
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Small-scale research trials of programs found to be effective on a small scale should be scaled-up to reach more people. In scaling-up, adaptations are often made, some of which may lead to scales of economy whereby the cost-per-participant is reduced. This presentation discusses the scale-up of an efficacious secondary school-based program: 'Physical Activity 4 Everyone' (PA4E1) to reach more schools. Specifically, this presentation will outline: (i) schools uptake of the seven PA4E1 physical activity promoting practices during a 24-month scale-up trial (primary outcome); and (ii) the cost per school and student of PA4E1.

Methods: A cluster-randomised controlled trial using a type III hybrid implementation-effectiveness design in 49 lower socio-economic secondary schools across New South Wales, Australia. Schools were randomised to an intervention (n = 24) or control group (n = 25). The original efficacy trial version of PA4E1 was adapted (n=20 adaptations), resulting in an adapted implementation intervention consisting of seven implementation support strategies. This support was developed to support schools to implement the seven PA4E1 practices over 24-months. The primary outcome was the proportion of schools implementing at least four of the seven physical activity practices, assessed via computer-assisted telephone interviews with Head Physical Education teachers. Secondary outcomes included the mean number of physical activity practices implemented, as well as the cost of PA4E1. Logistic regression models assessed program effects.

Results: At 24-month follow-up, significantly more schools in the intervention group (16/23, 70%) implemented at least four of the seven physical activity practices than the control group (0/25, 0%) ($p < 0.001$) and intervention schools were implementing an average of 3.6 more practices than control schools (4.1 (1.7) vs. 0.5 (0.8), respectively) ($P < 0.001$). The total cost of the program was $415,112 AUD ($17,296 per school; $117 per student).

Discussion: The scale-up trial findings show that the implementation support strategies were delivered at one-quarter of the cost of the efficacy trial and can lead to the high uptake of physical activity practices by schools. Policymakers and practitioners responsible for advocating for physical activity in schools should assess the scalability of PA4E1 for further adaptation and dissemination.

Activity levels of grade 8 students before and during COVID-19 pandemic: A comparative analyses using accelerometer data

Dr. Louise C. Mâsse[1,2], Dr. Olivia De-Jongh González[1,2], Mr. Mark Pitblado[1,2], Ms. Iyoma Y. Edache[1,2], Dr. Lucy LeMare[3]
[1]University of British Columbia, British Columbia, Canada, [2]BC Children's Hospital Research Institute, British Columbia, Canada,
[3]Simon Fraser University, British Columbia, Canada

SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and sedentary behavior

Background: COVID-19 and the measures used to curtail the pandemic, such as the closure of schools and recreational facilities, as well as the cancellation of children's activities, likely impacted children's physical activity and sedentary behaviours. In this study, we compared the activity levels of grade 8 students who were exposed to pandemic conditions versus those who were not.

Methods: A sample of 371 grade 8 Canadian students (aged 14±0.4 years old, 54% girls) wore wrist accelerometers (AX3 – Axivity Ltd., UK) for 7 full days. Prior to the declaration of the COVID-19 pandemic in March 2020, data were collected from 44% of the sample, while the remainder of the sample had their data collected after the declaration of the pandemic (Spring 2021). The raw accelerometer data were processed with the GGIR v2.5-0 package in R v4.1 using Philips et. al (2013) cut-points to compute levels of sustained inactivity (excluding sleep), light, moderate, and vigorous physical activity. Linear regression models, adjusted for demographic covariates (child's sex and age, parental educational attainment, and household income), were used to compare activity levels between students who were not exposed to pandemic conditions versus those who were. Child's sex was explored as a potential moderator in all analyses.

Results: Exposure to pandemic conditions was significantly associated with increased time spent inactive (67 minutes/day vs. 92 minutes/day; β=0.15, p=0.006). During the pandemic, light physical activity increased (147 vs. 164 minutes/day; β=0.13, p= 0.011), while there was no significant difference observed in moderate or vigorous physical activity. Finally, child's sex did not moderate any of the associations.

Conclusions: Our results suggest that sedentary behaviour in children was significantly higher under pandemic conditions, which may have detrimental effects on children's health. In contrast, a slight increase in light physical activity was observed, but this was not reflected in decrease in moderate-vigorous physical activity levels. Future longitudinal studies will be crucial in ensuring children are not set on long-term unhealthy trajectories as a result of the COVID-19 pandemic.

Longitudinal changes in children's diet, physical activity and screen time during the transition to secondary school: A comparative analysis of data collected before and during COVID-19

Dr. Louise C. Mâsse[1,2], Dr. Olivia De-Jongh González[1,2], Dr. Claire N. Tugault-Lafleur[3], Ms. Nasim Niknejad[1,2], Dr. Rhona Hanning[4]
[1]University of British Columbia, British Columbia, Canada, [2]BC Children's Hospital Research Institute, British Columbia, Canada, [3]University of Ottawa, Ontario, Canada, [4]University of Waterloo, Ontario, Canada

SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Background: The transition from elementary to secondary school is associated with deteriorating lifestyle habits (diet, screen time (ST), and physical activity (PA)) and there is evidence that the COVID-19 pandemic has negatively impacted children's health and well-being. This study compared changes in lifestyle behaviours of Canadian children who transitioned from elementary to secondary school, and examined whether these trajectories differed prior to, and during the pandemic.

Methods: A sample of 689 children reported their health behaviours in grade 7 and 498 of them reported their behaviors when they transitioned to secondary school (grade 8). Approximately 40% of the full analytical sample (n=1187) had their data collected before the pandemic, with the remaining having their data collected during the pandemic. Online 24-hour dietary recalls and questionnaires were used to evaluate dietary quality, PA and ST. Mixed effect linear and logistic regression models examined changes in health behaviours that occurred before and during the pandemic, with sex entered as moderator.

Results: Some lifestyle behaviours deteriorated as a result of the transition, with grade 8 students reporting significantly lower total Healthy Eating Index scores (p=0.023), fewer servings of fruit, (p=0.005), and more weekdays and weekend days ST (p=0.001 and p=0.004, respectively) compared to grade 7 students. Sex also moderated the transition effect, where weekend days ST increased in grade 8 only for boys (p=0.020), and PA decreased only for girls (p=0.006). Finally, we found significant pandemic effects, with students reporting higher servings of both fruit (p=0.012) and vegetables (p=0.013) on weekdays during the pandemic, compared to the non-pandemic sample. However, students reported more ST during the pandemic, both on weekdays (p<0.001) and weekend days (p=0.003).

Conclusions: The transition to secondary schools negatively affected lifestyle behaviours including both boys' and girls' diet and ST, and girls' PA. While children's ST were higher during the pandemic, some dietary improvements were also observed, which may be explained by greater availability of healthier foods at home. Future research should explore how specific environmental factors dynamically interact to shape boys' and

girls' health behaviours during the transition, and examine the long-term impact of COVID-19 on children's lifestyle behaviours.

Associations of infant food exposures with early childhood appetitive traits

Dr. Tonja Nansel[1], Dr. Leah Lipsky[1], Dr. Jenna Cummings[1], Dr. Myles Faith[2]
[1]National Institute of Child Health and Human Development, Bethesda, USA, [2]University at Buffalo SUNY, Buffalo, USA

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Early childhood appetitive traits are associated with adiposity and diet quality and are influenced by both genetic and environmental factors. However, specific environmental influences on appetitive traits are unclear. This study examined prospective associations of infant food exposures with subsequent appetitive traits in early childhood.

Methods: Data are from the Pregnancy Eating Attributes Study, a cohort followed from early pregnancy through 1-year postpartum, and the Sprouts follow-up study, which enrolled offspring from this cohort at child age 3.5y (n=160). At infant ages 6, 9, and 12 months, mothers completed infant food frequency questionnaires including food items contributing to >85% of nutrient intake and querying age at introduction and current intake frequency. Age at introduction and intake frequency of fruit, vegetables, discretionary sweets, and discretionary savory foods were calculated. At child age 3.5y, mothers completed the Child Eating Behavior Questionnaire, a measure of appetitive traits including food responsiveness, enjoyment of food, desire to drink, satiety responsiveness, slowness in eating, emotional overeating, emotional undereating, and food fussiness (values range from 1-5). Multivariate linear regression analyses examined associations of (1) age of introduction of food groups (in months) and (2) intake frequency (per day) of food groups at age 1y with appetitive traits at age 3.5y, controlling for household income, maternal age and education, and breastfeeding duration.

Results: Younger age at introduction of discretionary savory foods (b=-0.07±0.04, p=.049) and older age at introduction of fruits (b=0.20±0.08, p=0.01) were associated with greater emotional over-eating, while older age at introduction of vegetables (b=0.23±0.11, p=.03) was associated with greater food fussiness. Age at food group introduction was not associated with other appetitive traits. Less frequent intake of discretionary savory foods (b=-0.27±0.11, p=0.02) was associated with greater slowness in eating. No associations of intake frequency with other appetitive traits were observed.

Conclusions: Associations of infant food exposures with emotional overeating are consistent with literature suggesting stronger environmental underpinnings of emotional eating. Associations of age at vegetable introduction with food fussiness and intake frequency of discretionary foods with slowness in eating further suggest the relevance of early food exposures as a potential environmental influence on appetitive traits.

The Family Meal Framework: A new tool in family meal research

Ms. Georgia Middleton[1], Prof. Rebecca Golley[1], Dr. Karen Patterson[1], Prof. John Coveney[1]
[1]*Caring Futures Institute, Flinders University, Adelaide, Australia*

SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: The family meal has been recognised as an integral part of family life and a potential health-promotion strategy. Existing research has identified associations between family meal frequency and positive health outcomes for families, and there is emerging research exploring the causal pathways between these associations. A knowledge gap in this field is a comprehensive, holistic understanding of the components required for families to execute the family meal with regularity. Therefore, the purpose of this research was to produce a framework of the components required to execute the family meal.

Methods: Grounded theory methodology and methods informed data collection and analysis of two temporal datasets. Qualitative interviews were conducted with parents in the 1990s and with parents in 2020, with the use of semi-structured interview guides, to explore family meal practices and experiences. The analysis culminated in the production of The Family Meal Framework.

Results/findings: The sample included 54 parents from 28 families, providing a wide range of household types and demographics. The five main components of The Family Meal Framework comprised the cognitions (invisible work considering the needs of the family), actions (physical tasks required for the family meal), outcomes (the event of the family meal), the beliefs and feelings (expectations and attitudes toward the family meal), and the person(s) responsible (who undertakes the work). These were identified as the components necessary for executing the family meal, and they present a highly intertwined, reactive, daily cycle, open to influence and change over time.

Conclusions: Furthering our understanding of the components of the work required to execute the family meal allows us to utilise the family meal more effectively as a health-promoting activity. The Family Meal Framework provides a unique, comprehensive understanding of the components necessary to execute the family meal, which has not been explored previously. It offers discrete opportunities for interventions, with the ability to target specific components of The Family Meal Framework to effect change. Additionally, it offers opportunities for industry and practice, with the ability to provide services to families targeting specific components of The Framework to make the family meal more accessible and achievable.

Impact of Menu Box Delivery Service in Australian long day care services to improve menu guideline compliance: cluster randomised controlled trial

Ms. Shabnam Kashef[1], Dr. Dorota Zarnowiecki[1], Dr. Vicki Brown[2], Dr. David Cox[3], Prof. Rebecca Golley[1]
[1]Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Bedford Park, South Australia, Australia, [2]Deakin Health Economics, Institute for Health Transformation, Deakin University, Geelong, Victoria, Australia, [3]Commonwealth Scientific and Industrial Research Organisation (CSIRO) Health and Biosecurity, Adelaide, South Australia, Australia

SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Globally, children are not meeting the recommended serves of the five food group foods, particularly vegetables. The childcare setting has been identified as an opportune setting to improve children's diet quality. This study aims to evaluate the effectiveness of a menu box delivery service tailored to the childcare setting to improve menu compliance with recommendations and improve children's vegetable provision and consumption while in care.

Methods: Eight South Australian long day care centres were randomly allocated to intervention or comparison groups in an 8-week cluster randomised controlled trial conducted in 2020. The intervention group trialled a menu box delivery service that provided recipes and all ingredients required for lunch and snacks in centres, underpinned by a 4-week menu that met guidelines. The standard practice comparison group received access to online cooks training and menu assessment tool. The primary outcomes were menu guideline compliance, which was measured by menu review, and child dietary provision and consumption. Dietary data for 224 children was measured using a modified plate waste and digital photography estimation methodology and results were compared using descriptive data and analyses using a linear mixed model.

Results/Findings: At follow-up mean servings of vegetables provided on intervention centre menus increased from baseline to follow-up (0.8±0.2 vs 2.0±0.7), whereas mean number of serves on comparison centre menus were similar at baseline and follow-up (0.9±0.3 vs 1.0±0.3). Median vegetables served at mealtimes was slightly greater in the intervention group (n=98), 0.9 (0.7–1.2) serves, compared to the comparison group (n=126), 0.8 (0.5–1.3) serves, at follow-up. However, median consumption of vegetables was similar between the intervention and comparison group, 0.5 (0.2 – 0.8) serves, and comparison group, 0.5 (0.3–0.9) serves. The difference between groups for provision and consumption was not significant (p>0.05).

Conclusion: Although findings were not statistically significant, they do provide insight into the application and effectiveness of a contemporary food service model in the long day care setting and highlight opportunities to improve and refine such a model. A combination of strategies that combine the menu and mealtime environment itself could support the translation of provision to consumption.

Supl.Virtual 03 – Other

Virtual Session #2

May 19, 2022, 12:05 PM - 1:30 PM

A systematic review of the intervention characteristics, and behavior change theory and techniques used in mother-daughter interventions targeting physical activity.

Ms. Carol Brennan[1], Dr. Grainne O Donoghue[1], Dr. Amanda M. Hall[2], Dr. Alison Keogh[3], Associate Professor James Matthews[1]

[1]*School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin, Ireland, [2]Primary Healthcare Research Unit, Faculty of Medicine, Memorial University, St John's, Newfoundland, Canada, [3]Insight Centre for Data Analytics, University College Dublin, Dublin, Ireland*

SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Growing gender disparities in levels of physical inactivity put women and female youths at a greater risk of associated health problems. Mother-daughter interventions have been proposed as means to promote physical activity in this at-risk cohort. However, there is a lack of clarity as to if and why these types of interventions might be effective. Therefore, the study aim was to review the intervention characteristics, and behavior change theory and techniques used in these interventions to promote physical activity for mothers and daughters.

The systematic review was prepared in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (2020) guidelines and was registered with the International Prospective Register of Systematic Reviews. PubMed, EMBASE, PsycINfO, CINAHL and Cochrane Library (Wiley) databases were searched for English language studies from inception to 13th May 2020. Interventions of any design that targeted daughters and mothers' physical activity were included. Data was extracted using the Template for Intervention Description and Replication (TIDieR) checklist, and the Behavior Change Technique (BCT) Taxonomy v1.

4962 articles were screened and 11 unique studies met the inclusion criteria. Due to the heterogeneity in study outcome measures, meta-analysis was not conducted. The risk of bias was high across studies. Narrative summary highlighted many studies used social cognitive theory as a theoretical foundation. However, of these studies, only a small number measured the related theoretical constructs. Most interventions were community-based, and less than three months in duration with multiple sessions per week. Thirty-seven behavior change techniques were identified across studies. Some of these techniques showed promise including credible source, information on the health consequences of the behavior and the self-regulatory techniques of goal-setting, self- monitoring and problem-solving.

This review contributes to the literature by augmenting our understanding of mother-daughter PA interventions, through highlighting the need to consider theories other than social cognitive
theory and providing some clarity as to the characteristics of interventions that might increase PA levels of daughters and their mothers. Furthermore, as few interventions were delivered in the home or through an online environment, there is a need to design and test remote/home-based interventions with this cohort.

Periconceptional folic acid supplementation and the risks of small and large for gestational age at birth: a prospective cohort study in China

Dr. Qianling Zhou[1], Miss Meijing An
[1]Department of Maternal and Child Health, School of Public Health, Peking University, Beijing, China

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Some studies have demonstrated the protective effects of periconceptional folic acid supplementation (FAS) on the occurrence of small for gestational age (SGA). However, the effect of periconceptional FAS on the occurrence of large for gestational age (LGA) is still unclear. Besides, homocysteine (Hcy) concentration during pregnancy has found to be associated with birth weight. This study aimed to explore the independent effects of periconceptional FAS on the risks of SGA and LGA, and to test the potential mediation role of maternal Hcy during pregnancy on the above associations where a significant effect existed.

Methods: A large-scale prospective birth cohort was conducted among pregnant women from June 2018 to August 2019. Periconceptional FAS was evaluated by a self-administered questionnaire in early pregnancy. Neonatal birth weight was measured at delivery in the hospital. Maternal serum Hcy concentrations were measured in early and late pregnancy as part of the routine prenatal care. Logistic regression analyses were performed to assess the associations between FAS during preconception and/or early pregnancy and the occurrence of SGA or LGA. A mediation model was constructed to determine the role of maternal Hcy on the above associations.

Results: FAS before pregnancy (risk ratios [RR]=0.819, 95% confidence interval [CI]: 0.672-1.000, P=0.05), during early pregnancy (RR=0.622, 95%CI: 0.451-0.858) and from pre-pregnancy to early pregnancy (RR=0.564, 95%CI: 0.371-0.857) were associated with lower risk of LGA. However, no significant association was found between periconceptional FAS and SGA birth. Maternal Hcy concentration in late pregnancy mediated the independent effects of maternal FAS during preconception and early pregnancy on the risks of LGA birth.

Conclusion: Periconceptional FAS was associated with lower risks of LGA, which may be mediated by the reduced serum Hcy concentration in late pregnancy. The recommendation of periconceptional FAS should be complied with to achieve the optimal fetal growth.

The influence of maternal dietary pattern during pregnancy on the occurrences of low birth weight and small for gestational age: a prospective birth cohort in China

Dr. Qianling Zhou[1], Miss Lulu Wang[1]
[1]*Department of Maternal and Child Health, School of Public Health, Peking University, Beijing, China*

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: This study was conducted to investigate the dietary pattern of pregnant women in Tongzhou District of Beijing, and to explore the association between maternal dietary pattern and low birth weight (LBW) and small for gestational age (SGA).

Methods: This was a prospective cohort study conducted in the Tongzhou Maternal and Child Health Hospital from July 2018 to February 2019. Maternal socio-demographic and lifestyle information was obtained from questionnaires in three different trimesters, and pregnancy outcomes were obtained from the hospital information system. Inconsecutive 2-day 24-h dietary surveys were used to assess maternal diet in both the 1st and 2nd trimesters. The principal component analysis was used to extract dietary patterns during pregnancy. Multivariate logistic regression analysis was performed to explore the association between maternal dietary patterns and the occurrences of LBW and SGA.

Results: A total number of 3856 pregnant women were included in this study. The prevalence of LBW and SGA were relatively low, at 3.8% and 6.0%, respectively. Six dietary patterns were extracted in the 1st trimester, including "milk-fast food" pattern, "eggs-fish-shrimp" pattern, "vegetables-mushrooms and algae-poultry meat" pattern, "potatoes-fruit-nuts" pattern, "dry beans-snacks" pattern and "livestock meat" pattern. In the 2nd trimester, five dietary patterns were extracted, including "eggs-vegetables-mushrooms and algae" pattern, "milk-snacks-fast food" pattern, "fruit-potatoes-nuts" pattern, "poultry meat-livestock meat-beans" pattern and "fish and shrimp" pattern. Pregnant women adhering to the "milk-snacks-fast food" pattern (OR=0.525, 95%CI: 0.282-0.977) and "poultry meat-livestock-beans" pattern (OR=0.579, 95%CI: 0.359-0.933) in the 2nd trimester had a lower risk of SGA. Pregnant women adhering to the "fruit-potatoes-nuts" pattern in the 2nd trimester had a lower risk of LBW (OR=0.433, 95%CI: 0.199-0.940).

Conclusion: Pregnant women should consume sufficient fruits, milk and meat in the 2nd trimester to prevent the occurrences of relatively low birth weight. This study provides a scientific basis for dietary guidance and intervention for pregnant women in China.

Examining the state, quality and strength of the evidence in the research on built environments and physical activity among adults: An overview of reviews from high income OECD countries

Dr. Stephanie Prince Ware[1,2], Ms. Samantha Lancione[1,2], Dr. Justin Lang[1,2], Mr. Nana Amankwah[1], Dr. Margaret de Groh[1], Ms. Alejandra Jaramillo Garcia[1], Ms. Katherine Merucci[3], Dr. Robert Geneau[1]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Built environments have been implicated in the development of chronic disease, with physical activity (PA) considered one of the critical mechanisms for this relationship. Substantial growth in research on BEs and PA makes navigating the available evidence challenging. Our objective was to examine and describe the current state, strength and quality of research looking at associations between built environments and PA in the domains of active living (i.e., leisure [LTPA], transportation [TrPA], school/occupation [SOPA]) and total PA (ToPA) among adults from high-income OECD countries.

Methods: We conducted an overview of systematic reviews. A systematic search of six bibliographic databases and grey literature from January 2000 to May 2020. Review quality was assessed with the AMSTAR2. Results by age group were synthesized narratively and direction of association displayed using harvest plots. Certainty of the evidence was assessed using a modified GRADE approach.

Results: The overview included 116 reviews. Most evidence was cross-sectional and of low-to-very low quality. Moderate-to-high certainty of evidence supported positive associations between environments that support active transportation (e.g., walkability, walking infrastructure, street connectivity, land-use mix) and TrPA among adults/working-aged adults.Point of decision prompts hold promise for increasing ToPA. Evidence from older adults was of very low certainty and largely equivocal. There was little-to-no evidence for young and middle-aged adults and SOPA.

Conclusions: While there has been an increase in evidence from observational and natural experiment studies, most has been related to active transportation infrastructure and point of decision prompts. There remains a need for these studies to evaluate built environments for LTPA and SOPA and among younger and older adults, and for high quality reviews to summarize this evidence. Interventions that target changes to the built environment show promise for promoting PA among adults, providing an important means to combat the global physical inactivity crisis.

Examining the state, quality and strength of the evidence in the research on built environments and physical activity among children and youth: An overview of reviews from high income OECD countries

Dr. Stephanie Prince Ware[1,2], Ms. Samantha Lancione[1,2], Dr. Justin Lang[1,2], Mr. Nana Amankwah[1], Dr. Margaret de Groh[1], Ms. Alejandra Jaramillo Garcia[1], Ms. Katherine Merucci[3], Dr. Robert Geneau[1]
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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: Built environments have shown to be associated with health, with physical activity (PA) considered one of the critical pathways for achieving benefits. Navigating available evidence on the built environments and PA is challenging given the number of reviews. Our objective was to examine the current state and quality of research looking at associations between built environments and overall (ToPA) and domains of PA (i.e., leisure/recreation [LTPA], transportation [TrPA], school/occupation [SOPA]) among children and youth (1–18 years).

Methods: We systematically searched the grey literature and six bibliographic databases from January 2000 to May 2020. Review quality was assessed using the AMSTAR2. Results by age group were synthesized using narrative syntheses and harvest plots, and certainty of the evidence was assessed using a modified GRADE approach.

Results: This overview included 65 reviews. Most reviews were of very low-to-low quality. High certainty was found for positive associations between TrPA and walking/cycling/active transportation infrastructure. There was high certainty for positive associations between streets/play streets and ToPA, alongside lower certainty for TrPA and LTPA. Very low-to-moderate certainty supports schoolyards designed to promote PA were positively associated with ToPA, but mixed for SOPA (except children). Less consistent positive associations were found for forests/trees, greenspace/open space, recreation facilities, street lighting, traffic safety, population/residential density, proximity/access to destinations, neighbourhood characteristics, and home environments. There is very low-to-moderate certainty for negative associations between greater distance to school and traffic volume and domains of PA. Generally, null or mixed associations were observed for aesthetics, parks, active transportation comfort infrastructure, land-use mix, street connectivity, urban/rural status, and public transit.

Conclusions: There remains a need for high quality systematic reviews to evaluate the effects of environmental changes across the pediatric age spectrum and using a PA domain approach. Given the global

physical inactivity crisis the built environment remains and important means to promote PA among children/youth.

Assessing organizational capacity to address food insecurity using a mixed-method approach

Dr. Jemima John[1], Ms. Jennifer Gonzalez[2], Ms. Heidi McPherson[1], Dr. Esperanza Galvan[2], Dr. Staci Lofton[2], Ms. Nikki Browning[3], Dr. Shreela Sharma[1]
[1]The University of Texas Health Science Center at Houston School of Public Health, Michael and Susan Dell Center for Healthy Living, Houston, USA, [2]Harris Health System, Houston, USA, [3]Houston Food Bank, Houston, USA

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Nutrition

Purpose: Economic and social hardships –particularly due to the COVID-19 pandemic- have exacerbated food insecurity concerns and minority and low-income populations have been disproportionately affected. Thus, the Health Equity Collective ("Collective") community coalition of 475 members from over 145 multisectoral organizations was formed with a vision to reduce food insecurity in the Greater Houston area. This mixed-methods study evaluated member organizations' capacity to address food insecurity with emphasis on screening, referral, and response coordination.

Methods: A Qualtrics survey and follow-up focus groups with representatives from multisectoral organizations were administered to assess organizations' capacity to address food insecurity. Focus groups were audio-recorded and transcribed by Webex videoconferencing and were independently verified by Collective interns. Data were cleaned and analyzed using NVivo 11 and the research team met to discuss findings and reconcile differences. A general inductive approach guided discovery of themes.

Results: Seventy-six organizations participated in the Qualtrics survey and fell into three categories: 1) Currently screening for food insecurity (n=39); 2) Not screening with zero intentions to screen within 12 months (n=21); and 3) Not screening but planned to commence within 12 months (n=5). Eleven organizations did not disclose future screening intentions. Presently, all five focus groups (n=22) within category one have been completed. Participants were 70% female, from the healthcare sector (59%), and 52% non-Hispanic White. Predominant impediments to screening and referral were "clinic culture", "impact of COVID-19", "language and cultural barriers", and "patients' hesitation to disclose". Conversely, common recommendations for facilitating screening and referral efforts were "staff training and education", "cultural sensitivity and awareness of population", and "use of care coordination platform". Participants shared that the Collective could "provide networking opportunities for shared learnings", "implement a resource directory" and "emphasize a focus on upstream influences" to drive uptake of recommendations. Focus groups for categories two and three are ongoing.

Conclusion: Recommendations to enhance screening and referral efforts must focus on organizational staff responsiveness and sensitivity to patients' needs. Greater attention to shared resource capacity across sectors and the upstream factors that drive food insecurity inequities is also warranted.

Few relations of reward-related eating with diet quality, intake timing and frequency in a national cohort of U.S. emerging adults

Dr. Leah Lipsky[1], Dr. Carolina Schwedhelm[1,2], Dr. Denise Haynie[1], Dr. Jenna Cummings[1], Dr. Tonja Nansel[1]
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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: While reward-related eating behaviors have been implicated in the etiology of overweight and obesity, associations of reward-related eating with dietary intake are unclear. This study investigated relations of reward-related eating with overall diet quality and meal-specific eating patterns in a national sample of U.S. emerging adults.

Methods: Data come from the NEXT Generation Health Study, an observational prospective study of US 10th graders who completed an annual survey from 2010-2017. A subsample (n=476, age=22.6±0.5 years) completed three 24-hour dietary recalls in the final year (wave 7). Diet quality outcomes calculated from the combined recalls included adherence to U.S. dietary guidelines (Healthy Eating Index-2010), nutrient density (Nutrient Rich Foods 9.3 score), whole plant food density (cup or ounce equivalents per 1000 kcal), empty calories (kcal/day and % of total energy intake from added sugar, solid fat, and excessive alcohol), and daily energy intake (kcal/day). Day-level meal pattern outcomes included intake frequency (occasions/day), eating spread (duration between first and last eating occasion), meal spread (mean duration between eating occasions), time of first and last eating occasions, and maximum meal energy intake (kcal at largest meal). Self-reported reward-related eating behaviors were assessed using the Power of Food Scale (PFS, wave 6) and the modified Yale Food Addiction Scale (mYFAS, wave 7). Associations of PFS and mYFAS with wave 7 diet outcomes, adjusted for covariates, were estimated using linear mixed models with a random intercept for meal pattern outcomes and simple linear regressions for diet quality outcomes.

Results: In bivariate analyses, higher PFS was associated with lower nutrient density (β±S.D.=-1.4±0.8, p=0.10) and higher empty calories (β±S.D.=69.7±20.3 kcal/day, p=0.001; 1.8±0.6 % kcal/day, p=0.002), while higher mYFAS was associated with greater daily energy intake (β±S.D.=117.3±46.9 kcal/day, p=0.001). Estimates were similar after adjusting for covariates, except the association of PFS with nutrient density was attenuated (β±S.D.=-1.2±0.9, p=0.15). PFS and mYFAS were unassociated with meal patterns.

Conclusions: In this large, national cohort, greater reward-related eating was associated with greater intake of nutrient-poor/energy-dense foods but was unassociated with meal patterns. Further research is needed to elucidate mechanisms linking reward-related eating with diet-related outcomes.

O.1V.01 - Determinants of Behavioral Nutrition and Physical Activity in Elderly

Virtual Session #1

May 19, 2022, 2:35 PM - 4:05 PM

The Socio-ecological Correlates of Meal Skipping in Community Dwelling Older Adults: A Systematic Review

Ms. Holly Wild[1, 2,] Ms. Yeji Baek[1], Miss Shivangi Shah[1], Dr. Danijela Gasevic[1], Dr. Alice Owen[1]
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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Nutrition

Purpose: To systematically examine, appraise and synthesise the current literature exploring the association between socioecological factors and meal skipping in community dwelling older adults

Methods: EMBASE, PsycINFO, CINAHL and MEDLINE electronic databases were searched from inception to March 2021 for original research studies on the association between socio-ecological factors and meal skipping in community dwelling adults 65+ years.

Results: The database search identified 473 studies, and 23 of which were eligible for the review. The frequency of meal skipping ranged between 2.1% to 61%. This review identified four domains of socio-ecological correlates associated with meal skipping in older adults: socio-demographic, behavioural, biomedical, psychological and social.

A majority of the studies selected, highlighted that the prevalence of meal skipping was higher for men, for those who lived alone and for those who experienced economic and social disadvantage. Low psychological wellbeing was associated with meal skipping in numerous studies, conversely, higher levels of happiness were associated with a lower risk of meal skipping behaviour. This review also highlighted that health behaviours such as smoking and alcohol were key correlates of meal skipping.

Conclusion: This review identified multiple factors associated with meal skipping in older adults and can help inform the development of targeted interventions to improve nutrition and health in this population group.

Systematic review registration: PROSPERO (CRD42021249338)

Socio-ecological correlates of meal skipping in community dwelling older adults

Ms. Holly Wild[1,2], Dr. Danijela Gasevic[1], Prof. John McNeil[1], Dr. Alice Owen[1]
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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Nutrition

Purpose: Meal skipping may impact the nutritional status of older adults increasing the risk and severity of chronic disease. This study aimed to determine the prevalence and socio-ecological correlates of meal skipping in community dwelling Australian adults aged 70 years of over.

Methods: Cross-sectional analysis of 10,564 adults aged ≥70 years (mean age 78.0 ± 4.1, 54.5% females), participants in the ASPirin in Reducing Events in the Elderly (ASPREE) Longitudinal Study of Older Persons (ALSOP). Factors hypothesized to be associated with meal skipping were self-reported and included: demographic, socio-economic, behavioural, biomedical, social and psychological factors. Meal skipping was assessed via: "How often do you miss meals?". Participants could choose from a range of answers, from which a binary variable was created 'rarely/never or yes'. The association between socio-ecological factors and meal skipping was examined using multivariable binary logistic regression. Odd ratios (OR) and 95% confidence intervals (CI) were reported.

Results: The prevalence of any meal skipping in this cohort was 19.5%. The odds (OR [95%CI]) of meal skipping were lower in adults aged 85+ years (vs. 70-74 years 0.58 (0.47-0.73), those who lived outside urban areas (vs urban 0.81 [0.62-0.83]), and with ≤12 years of education (vs >12 years 0.84 [0.72-0.92]). Higher odds of meal skipping were observed for those who lived alone (vs those living with others 1.72 [1.54-1.92]), were current smokers (vs never smoked 2.39 [1.8-3.10]), consumed over 4 alcohol drinks per day (vs never drinkers 1.56 [1.12-2.18]), had self-reported poor oral health (vs self-reported excellent oral health 1.57 [1.00 -2.46]), experienced regular physical pain (vs rarely or no pain 1.23 [1.02 – 1.48]), or with depressive symptoms (vs who experience them rarely or never 1.43 [1.21-1.83]).

Conclusion: The results indicate that one fifth of the population of apparently healthy older adults skip meals. Greater meal skipping was observed among those who reported living alone, current smoking and greater alcohol consumption, poor oral health, regular physical pain and depressive symptoms. Addressing these correlates of meal skipping may assist in targeting interventions to improve nutritional reserve and advance healthy ageing.

Correlates of physical activity among community-dwelling older adults: a cross sectional study

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[1]Monash University, School of Public Health and Preventive Medicine, Melbourne, Australia

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Identifying and addressing the barriers to physical activity in older age will help promote equity in PA and PA-related health equity. This study aimed to investigate the demographic, socio-economic and behavioural factors associated with intensity of usual PA amongst Australian community-dwelling adults aged 70 years or older.

Methods: This cross-sectional study utilised pre-existing data from the ASPirin in Reducing Events (ASPREE) clinical trial and ASPREE Longitudinal Study of Older Persons (ALSOP) sub-study. A total of 11,461 participants (mean age (SD) = 75.1 (4.2) years, 53.4% females) self-reported their usual intensity of PA, as well as demographic, socio-economic and behavioural factors. Multinomial logistic regression was conducted to determine the factors associated with PA in Australian community-dwelling older adults.

Results: Of 11,416 participants, 3,813 (33.4%) reported rarely or never exercised or engaged in at-most light intensity PA, 5,791 (50.7%) participants engaged in moderate and 1,812 (15.9%) engaged in vigorous intensity PA. Compared to people who rarely/never exercise or only exercise at light intensities, the odds (OR, (95% CI)) of exercising at moderate (M) and vigorous (V) PA, respectively, were lower among people of older age (M: 0.55 (0.49-0.61)) and (V: 0.34 (0.28-0.41)), females (M: 0.59 (0.54-0.65)) and (V: 0.39 (0.35-0.45)), reported never or former alcohol consumption (M: 0.64 (0.53-0.78)) and (V: 0.68 (0.52-0.90)) and in people classified as overweight or living with obesity (M: 0.46 (0.41-0.51)) and (V: 0.26 (0.22-0.30)). In contrast, the odds of exercising at a greater PA intensity were higher among people who reported being former or never smokers (M: 1.31 (1.03-1.67)) and (V: 2.16 (1.44-3.24)), earning an annual income between $50,000-$99,999 or more (M: 1.59 (1.37-1.84)) and (V: 1.98 (1.62-2.42)) or were living in more socio-economically advantaged areas (M: 1.17 (1.02-1.34)) and (V: 1.61 (1.32-1.96)).

Conclusion: Interventions to address the barriers to PA participation in older adults may be key to increasing PA levels in this population group. Special attention should be directed towards females, those who are classified as overweight or obese, current smokers, those of lower socio-economic status or living in areas of greater socio-economic disadvantage.

The association of physical activity with major adverse cardiovascular events and disability-free survival in older adults: a prospective cohort study

Mr. Yang Chen[1], Dr. Danijela Gasevic[1], Dr. Alice Owen[1], Miss Shivangi Shah[1], Prof. John McNeil[1]
[1]*Monash University, School of Public Health and Preventive Medicine, Melbourne, Australia*

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: Physical activity (PA) can help protect from a range of health outcomes. However, less is known on the association between usual PA intensity with major adverse cardiovascular events (MACE) and surviving free from disability in older age. This study aims to explore the association of PA with MACE, and disability-free survival in the community-dwelling Australian adults aged 70 years or older.

Methodology: This prospective cohort study utilises data from the ASPirin in Reducing Events in the Elderly (ASPREE) clinical trial and the ASPREE Longitudinal Study of Older Persons (ALSOP) sub-study. Baseline participant data were collected through questionnaires and in-person clinical visits. Cox proportional hazards models, adjusted for putative confounders, were used to explore the associations of usual PA intensity with MACE and disability-free survival. Disability-free survival is defined as survival free from dementia, persistent physical disability, or death. The composite endpoint was derived from the first occurrences of the endpoints events of death, dementia, and persistent physical disability.

Results: 11,416 participants (mean age (SD) = 75.1 (4.2) years, 53.4% females) were followed for a median of 4.7 years, and 367 (3.21%) participants developed the MACE outcome, while 832 (7.29%) participants developed the composite endpoint of death, dementia, or persistent physical disability. Compared to those who never/rarely exercised, exercising in light, moderate, and vigorous-intensity PA was association with 47% (HR 0.53, 95% CI:0.30-0.97), 58% (HR 0.42, 95% CI:0.23-0.76), and 62% (HR 0.38, 95% CI:0.20-0.72) lower risk of developing MACE, respectively (p<0.001 for all). The risk of not surviving free from disability was lower by 56% (HR 0.44, 95% CI:0.31-0.63), 65% (HR 0.35, 95% CI:0.25-0.50) and 74% (HR 0.26, 95% CI:0.18-0.40) for older adults who participated in light, moderate and vigorous-intensity PA, compared to those who never/rarely exercised (p<0.001 for all).

Conclusions: The results of the study indicate that being active at any intensity is beneficial for health of older adults when compared to being never or rarely active. Older adults should be encouraged to be active at the intensity suitable to their health condition, to promote healthy ageing, increase disability-free survival and minimise the risk of developing MACE.

The association between walking for transport and all-cause mortality in older adults: a prospective cohort study

Miss Shivangi Shah[1], Dr. Alice Owen[1], Mr. Yang Chen[1], Prof. John McNeil[1], Dr. Danijela Gasevic[1]
[1]Monash University, School of Public Health and Preventive Medicine, Melbourne, Australia

SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity
Purpose: Walking for transport may help integrate adequate levels of physical activity in the daily routine of older adults, however, less is known about its effect on all-cause mortality in this population group. This study aims to investigate the association between transport-related walking and all-cause mortality among community-dwelling Australians aged 70 years and over.

Methods: This is a prospective cohort study of 11,705 adults (mean age=75.1 years, 53.2% females) part of the ASPirin for PReventing Events in the Elderly [ASPREE] clinical trial and ASPREE Longitudinal Study of Older Persons [ALSOP] sub-study. To assess transport walking frequency participants were asked how often they would usually walk to get around. They could choose from the following responses: never, rarely, once a week, more than once a week, every day. Categories never and rarely were combined for analysis due to a small number of participants in each category. All-cause mortality was defined as any cause of death that occurred after enrolment in the trial and was detected at any point during the ASPREE trial. Cox proportional hazards models (hazard ratios [HR] and 95% CI), adjusted for putative confounders, were used to explore the associations between transport walking and all-cause mortality.

Results: During a median follow-up period of 4.7 years, 462 participants (3.95%) died from any cause. Compared to those who never/rarely walked for transport, walking once a week, and every day was associated with a 30% (HR 0.70 CI: 0.48-1.01) and 26% (HR 0.74 CI: (0.56-0.97) lower risk of all-cause mortality, respectively. The risk of all-cause mortality was also lower for older adults reporting transport walking of more than once a week, compared to those never/rarely walking, however, the result did not reach statistical significance (HR 0.87 CI: 0.65-1.15).

Conclusions: The study results suggest that any transport-related walking during the week compared to never or rarely walking for transport is favourable. Community-dwelling older adults should be encouraged to engage in walking for transport to boost their physical activity levels, lower the risk of all-cause mortality, and promote healthy ageing.

His and Hers: Associations between self and partner physical activity and gait speed

Dr. Elizabeth Richards[1], Dr. Melissa Franks[1], Dr. Sharon Christ[1], Dr. Shirley Rietdyk[1]
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SIG - Primary Choice: A. Ageing
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Gait speed is associated with fall-risk, functional ability, disability, and mortality; making understanding factors influencing gait speed extremely relevant for public health. When partners walk together, activity may be increased and maintained due to social support and accountability. How partner activity influences individual gait speed is not clear. This study examines associations of individual gait speed with self and partner physical activity and whether partners exercise together.

Methods: Participants were 72 romantic couples; ages 25-79. Gait speed was measured using the Midlife in the United States Survey (MIDUS) protocol. Weekly physical activity (MVPA) was assessed with Actigraph™ GT3X accelerometers. An actor-partner interdependence model was estimated in a structural equation modeling framework. Average gait speed across two trials on a clear path walking alone was modeled for husbands and wives simultaneously. Linear and quadratic associations of MVPA with self and partner gait speed were tested (covariates: self-rated health, husband's age, and whether the partners report exercising together).

Results: No linear associations of MVPA with self or partner's gait speed were found. Husband's and wife's own MVPA were associated nonlinearly with their own gait speed. Gait speed increased as MVPA increased up to the average MVPA levels and then MVPA had diminishing to no additional effects on gait speed. Husband's MVPA was marginally ($p = 0.07$) associated with wife's gait speed through the quadratic effect. Exercising together did not associate with either partner's gait speed directly, but did have a marginal moderation effect on the quadratic component of the MVPA effect for husband's own gait speed ($p = 0.086$).

Conclusions: Findings suggest one's own MVPA is associated with gait speed at lower levels of MVPA with diminishing associations as higher MVPA levels. Further, when husbands report exercising alone, their gait speed is faster at the lowest levels of MVPA compared to husbands who exercise with their partner, with no significant differences at higher MVPA. Future research should identify how health is impacted by the trade-off between increased physical activity and reduced gait speed when romantic partners walk together.

Coaching for Healthy AGEing: a cluster-randomised controlled trial

Dr. Juliana Olivera[1,2], Prof. Catherine Sherrington[1,2], Prof. Margaret Allman-Farinelli[3], Prof. Adrian Bauman[3], Prof. Kirsten Howard[2], Prof. Stephen R Lord[4], Prof. Dafna Merom[5], Prof. Chris Rissel[2], Prof. Judy M Simpson[2], Dr. Constance Vogler[6], Dr. James Wickham[7], Prof. Allison Tong[2], Associate Prof. Anne Tiedemann[1,2]

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and nutrition

Purpose: There is a risk that promoting physical activity among older people could increase fall rates.The Coaching for Healthy AGEing (CHAnGE) trial is a cluster-randomised controlled trial measuring the effect of a combined physical activity and fall prevention program on physical activity and falls among community-dwelling people aged 60+ years.

Method: Seventy-two clusters (605 people) were randomly assigned to control (35 groups; healthy eating intervention, involving education brochure and phone coaching) or intervention (37 groups; involving fall prevention and physical activity plan, one physiotherapist visit, 12 months of phone coaching, activity monitor, tailored fall prevention advice, education brochure). Physical activity was objectively measured using ActiGraph GT3X+ and expressed in counts/min/day (CPM/day) and daily steps, both assessed at 6 and 12-months post-randomisation. Falls were recorded with monthly falls calendars over 12 months. Between-group differences in physical activity were estimated using linear regression adjusted for corresponding baseline scores. Between-group differences in the number of falls over the 1-year study period were estimated using negative binomial regression models. Analyses took cluster randomisation into account.

Results: Participants had a mean age of 74 years (SD 8.0) and 70% were female. We found a significant between-group difference in physical activity counts at 6 months (mean difference=21.3 CPM/day, 95%CI 3.66 to 39.0, p=0.02); however, this effect was not maintained at 12 months (5.31 CPM/day, 95%CI -21.2 to 31.9, p=0.70). We identified a significant increase in steps/day in the intervention group compared to the healthy eating group at 6 months (649 steps/day, 95% CI 283 to 1015, p=0.001) and 12 months (460 steps/day, 95% CI 26 to 895, p=0.038). The intervention group reported a lower fall rate (193 falls, 0.71 falls per person per year, SD 1.09) than the healthy eating group (229 falls, 0.87 falls per person per year, SD 1.80); however, this difference was not statistically significant (IRR 0.86, 95% CI 0.6 to 1.1, p=0.29).

Conclusions: A combined physical activity and fall prevention intervention significantly improved physical activity without increasing falls among community-dwelling people aged 60 years and older. There was a non-significant reduction in the rate of falls in the intervention group

O.1V.02 - Predictors and its impact on behavioral nutrition and physical activity change

Virtual Session #2

May 19, 2022, 2:35 PM - 4:05 PM

Theory-based physical activity and/or nutrition behavior change interventions for cancer survivors: A systematic review

Miss Beatriz Francisco[1], Prof. Eliana Carraça[2], Miss Inês Nobre[3], Dr. Helena Cortez-Pinto[1], **Dr. Inês Santos[1,2]**

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Theory-based interventions, using evidence-based behavior change techniques, aimed at promoting long-term health behavior change in cancer survivors are effective, but remain scarce. Prior research has shown that internal (better quality) motivations play an important role in long-term, sustained, behavior adoption, supporting the use of self-determination theory (SDT) as a valid framework. However, no previous systematic review has examined SDT-based PA and/or dietary behavior change interventions in cancer survivors. Therefore, this study aims to synthetize such information.

Methods: Scientific articles were identified through electronic database searches (PubMed, Web of Science and Psychology and Behavioral Sciences Collection) and reference scanning. Searches included various combinations of three sets of terms: 1) terms concerning the health condition or population of interest (e.g., cancer); 2) terms concerning the intervention (e.g., lifestyle/behavioral interventions); and 3) terms concerning the behavior change outcomes of interest (e.g., diet, physical activity). Clinical or community lifestyle/behavioral intervention studies targeting energy balance-related behaviors and weight loss and/or maintenance in adults (≥18y) diagnosed with any type of cancer (at any stage of disease/treatment) were included. Pharmacological and surgery-based intervention studies were excluded.

Results/findings: The search yielded 36 potentially relevant papers after title/abstract screening. Full-text screening and data extraction are currently being performed by two independent researchers, according to a data extraction form previously developed by the authors. The same two researchers are assessing study methodological quality using the Quality Assessment Tool for Quantitative Studies, developed by the Effective Public Health Practice Project. Results deriving from the narrative synthesis of the characteristics and effectiveness of the interventions will be summarized in tabular form and will be presented at the ISBNPA annual meeting.

Conclusions: Systematically identifying and summarizing relevant information on SDT-based physical activity and/or nutrition behavior change interventions for cancer survivors can contribute to the development of more effective interventions designed to promote adherence to lifestyle behaviors.

Children consumption of sugar-sweetened beverages (SSB) and neighborhood food swamp exposure.

Miss Summaya Abdul Razak, Dr. Juliana Cohen, Ms. Qianxia Jiang, Dr. Abiodun ATOLOYE, **Mr. Curtis Antrum**, Dr. Kristen Cooksey-Stowers
[1]*University of Connecticut, Storrs, USA*

SIG - Primary Choice: B. Motivation and behavior change
Age Category: All ages
Subject Category: Nutrition

Purpose: Increased consumption of sugar-sweetened beverages (SSBs) among young children is a critical public health challenge associated with an increased risk of childhood obesity and chronic diseases. This study examines the association between the level of food swamp exposure at the neighborhood level and child SSB consumption inside quick service restaurants (QSRs).

Methods: 2019 data from a cross-sectional study was used to assess the level of food swamp exposure (high vs. low) surrounding four QSRs and SSB consumption among children. Sugar (g) from beverages consumed by children in QSRs was measured using plate-waste methodology. Beverages with sugar more than 26.0g were considered SSBs. Neighborhoods were classified as low or high food swamps based on the Physical Food Environment Index (PFEI) (calculated as the ratio of unhealthy food outlets to total food outlets). Logistic regression was conducted to analyze the relationship between neighborhood food swamp exposure and children's QSR SSB consumption. In a secondary analysis, differences by child race/ethnicity were examined.

Results: We analyzed SSB intake data from a total of 149 children. 82.6% (123) of children consumed beverages with high sugar levels in QSRs. SSBs were consumed by 83% of children in QSRs located in food swamps compared to 81.8% of children in QSRs located in non-food swamp areas. Controlling for gender, age, and state, children patronizing QSRs in food swamps did not differ in their likelihood of consuming SSBs relative to children in QSRs located in non- food swamp areas (aOR=0.4, 95%CI:0.1-1.4). Hispanic children were more likely than non-Hispanic children to consume SSBs in QSRs (aOR=4.8, 95%CI: 1.6-14.2).

Conclusion: Generally, these findings suggest that there are ethnic differences in SSB consumption among children within QSRs. Children are more likely to acquire and consume SSBs in QSRs relative to healthier alternatives regardless of neighborhood status. This suggests that policies to reduce SSB consumption among children should focus on QSR settings, minimize SSB options on the menu, and incentive non-SSB drinks. Further investigation of ethnic disparities in the consumption of SSB among children is required.

Psychological distress and its association with sugar-sweetened beverage, discretionary foods and alcohol intakes in women during COVID-19

Dr Siew Lim[1], Dr. Jessica Grieger[2], Dr. Nahal Habibi[2], Mr. Hung Vo[3], Mr. Salman Sabir[3], Dr. Sharleen O'Reilly[4], Dr. Cheryce Harrison[1], Dr. Lisa Moran[1], Dr. Jo Enticott[1], Prof. Helena Teede[1]

[1]Monash Centre for Health Research and Implementation, Clayton, Australia, [2]Adelaide University, Adelaide, Australia, [3]Ambulance Victoria, Melbourne, Australia, [4]University College Dublin, Dublin, Ireland

SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Women experience unique mental health and lifestyle behavioural risks that are likely exacerbated by the COVID-19 pandemic conditions. The aim of this study is to explore psychological distress and the intakes of sugar-sweetened beverage (SSB), discretionary foods and alcohol in women of reproductive age (18-50 years) during COVID-19 in Australia.

Methods: Women aged 18 to 50 years in Australia were invited to participate in a national online survey from 15th October to 7th November 2020. Psychological distress was measured using Kessler-10. Frequencies of SSB, discretionary food and alcohol intake were collected. Univariate and multivariate binomial logistic regression were conducted. Adjusted models include age, ethnicity, employment status change, living circumstances, household income, fruit and vegetable intake, physical activity, sitting time and weight.

Results: A total of 1005 women were included. About 40% of the women experienced high or very high levels of psychological distress (K10 scores >22), 46% had higher intake of SSB (>1/week), 15% had higher intake of discretionary food (3 or more a day), 48% had higher intake of alcohol (twice or more a week). Higher SSB intake was associated with higher psychological distress, lower household income, living with family, ethnicity (being Australian, New Zealander or Pacific Islander) and lower level of physical activities. Ethnicity, lower physical activity and higher sitting times were significant in the adjusted models. Higher discretionary food intake was associated with higher psychological distress, lower household income, weight gain, change in employment status and higher fruit intake. Only higher psychological distress, weight gain and higher fruit intake remained significant in adjusted models. Higher alcohol intake was associated with older age, higher household income, ethnicity (not from Asian background), not living with family and higher physical activity level. Only household income, ethnicity and physical activity remained significant in adjusted models.

Conclusions: Psychological distress was significantly associated with higher intake of discretionary food intake which remained significant after controlling for sociodemographic factors. Psychological distress was also significantly associated with SSB but this may be mediated by sociodemographic factor, weight or other lifestyle behaviours. Psychological distress was not significantly associated with greater alcohol intake during the pandemic.

Supporting behaviour change: Implementation of Healthy Conversation Skills in the Bukhali trial in Soweto, South Africa

Associate Professor Catherine Draper[1], Ms. Gugulethu Mabena[1], Ms. Lebo Motlhatlhedi[1], Ms. Nomsa Thwala[1], Dr. Wendy Lawrence[2,3], Dr. Susie Weller[4], Dr. Sonja Klingberg[1], Dr. Lisa J Ware[1], Prof. Stephen J Lye[5], Prof. Shane Norris[1,6]

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: All

Purpose: As part of the Healthy Life Trajectories Initiative, the *Bukhali* trial utilises the Healthy Conversation Skills (HCS) approach with 18–28-year-old women in Soweto, South Africa. The *Bukhali* intervention, delivered by community health workers, aims to optimise young women's physical and mental health to establish healthier trajectories for themselves and, where relevant, the next generation. Health behaviours addressed in the *Bukhali* intervention include healthy eating, physical activity, sedentary behaviour, screen time, and sleep. The purpose of this presentation is to report on the process evaluation of implementing HCS, to identify implementation challenges, and make recommendations for HCS adaptations.

Methods: Data were generated from intervention session records (n=7418), individual in-depth interviews with participants (n=35), focus groups (3) and debrief sessions (13) with the community health workers who deliver the intervention. Qualitative data from the debrief sessions, focus groups and interviews were analysed for content, employing both deductive (directed content analysis) and inductive (conventional content analysis) approaches.

Results: The findings indicated that the HCS approach was not implemented as originally intended. Challenges were reported regarding participants' willingness to set behaviour change goals, and prioritise health and health behaviour change, as well as participants' exposure to trauma, influencing their ability to prioritise health behaviour change. While community health workers were able to identify strengths of the HCS approach, there were challenges with contextual adaptation, especially using HCS in a multilingual setting such as Soweto. Recommendations are made for contextual adaptations of the HCS approach, including the simplification of the goal setting tool, linguistic adjustments, adapting HCS training for a trial setting, and adopting a trauma-informed perspective to health behaviour change.

Conclusions: These findings provide insight into the implementation of HCS in a low-income setting. Furthermore, this work extends our understanding of challenges to health behaviour change for young women in a low-income setting, highlighting the role of trauma, and the need for a trauma-informed perspective to understand behaviour change in this context.

Which dietary changes to achieve nutritional adequacy while reducing diet cost in the French West Indies?

Dr. Marlène Perignon[1], Dr. Rozenn GAZAN[2], Dr. Viola LAMANI[1], Dr. Zoé COLOMBET[1], Dr. Caroline MEJEAN[1], Dr. Florent VIEUX[2], Dr. Nicole DARMON[1]
[1]MoISA, Univ Montpellier, CIHEAM-IAMM, CIRAD, INRAE, Institut Agro, IRD, Montpellier, France, [2]MS-Nutrition, Marseille, France

SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The French West Indies are facing increasing rates of obesity and diet-related chronic diseases. Food prices are ~30% higher in these territories compared with mainland France, while a large part of their populations is socioeconomically disadvantaged. Economic affordability of a healthy diet is therefore a key issue in this region. Our objective was to identify dietary changes that would allow Guadeloupean and Martinican adults to achieve nutritional adequacy while reducing the cost of their diets.

Methods: Dietary intakes of 1061 adults (≥16y) were obtained from a cross-sectional survey (2013-2014) conducted on a representative sample of the Guadeloupean and Martinican populations. Diet cost was based on mean prices of 1357 foods compiled from a Martinican supermarket website. For each adult, optimized diets respecting all nutritional recommendations and with minimized departure from the initial diet were designed with linear programming under 3 scenarios: i)all nutritional constraints, ii)all nutritional constraints without exceeding initial diet cost, and iii)all nutritional constraints while reducing diet cost by 30%.

Results/findings: When cost was not constrained (scenario i), achieving nutritional adequacy while departing the least from individual food intakes induced an increase in cost for most adults (74%).

When cost was not allowed to increase (scenario ii), achieving nutritional adequacy induced an increase in the consumption of fruit & vegetables, unrefined starches, dairy products (especially milk), eggs and vegetable fats, and a decrease in sweetened beverages (especially among <30y), refined starches, sweetened products, meat and fish.

When a 30% reduction of cost was imposed (scenario iii), achieving nutritional adequacy induced the same types of dietary changes than with scenario ii, but modified their magnitude (and thus the effort for consumers), notably a smaller increase in vegetables (+7g/d vs. +86g/d) but a larger increase in dairy (+90g/d vs. +72g/d) and starchy foods (+112 vs. +54g/d), and a larger reduction in meat (-48g/d vs. -12g/d). Increases in fruits (~+80g/d) and unrefined starches (+127g/d) and decrease in sweetened beverages (~-100g/d) were still observed.

Conclusions: Nutrition prevention programs promoting the affordable dietary changes identified in the present study could help improve nutritional adequacy of the Guadeloupean and Martinican populations.

trips4health: Bus use impact and process evaluation of a COVID-interrupted randomised controlled trial to increase public and active transport

Associate Prof. Verity Cleland[1], Ms. Ting Zhao[1], Mr. Oliver Stanesby[1], Kylie Ball[2], Prof. Stephen Greaves[3], Ms. Gudrun Wells[1], Dr Melanie Sharman[1], Ms. Megan Morse[5], Ms. Lexie Magill[4], Prof. Leigh Blizzard[1], Ms. Katie Cooper[5], Dr. Siobhan Harpur[1], Mr. Dion Lester[6], Prof. Andrew Palmer[1], Dr. Julie Williams[7]

[1]University Of Tasmania, Hobart, Australia, [2]Deakin University, Geelong, Australia, [3]University of Sydney, Sydney, Australia, [4]Tasmanian Government Department of State Growth, Hobart, Australia, [5]Metro Tasmania, Hobart, Australia, [6]Local Government Association of Tasmania, Hobart, Australia, [7]Tasmanian Government Department of Health, Hobart, Australia

SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Public transport users accumulate more physical activity than motor vehicle users, but evidence of effective, scalable strategies for increasing public transport is sparse. The single-blinded parallel group randomised controlled trial (RCT), trips4health, was designed in partnership with a public transport provider, state government, and local government to increase transport-related physical activity through increased public transport use. trips4health was placed on hold (March 2020) then abandoned (May 2020) due to the COVID-19 pandemic; by then, one third of the target sample had been randomised. This paper reports process evaluation data undertaken prior to outcomes analysis, and bus use outcomes data.

Methods: Over a four-month intervention phase, participants (n=110) were randomised to: an incentives-based intervention (bus trip credits for reaching bus trip targets; weekly text messages; written physical activity guidelines); or an active control (written physical activity guidelines). Measures collected prior to randomisation and immediately post-intervention were self-reported demographic, self-reported and measured health characteristics, and self-reported and smartcard-measured bus use (% using the bus, average weekly trips, % meeting targets). Process evaluation (using the UK Medical Research Council framework) focused on reach, acceptability, fidelity, and feasibility using administrative data and post-intervention surveys (analysed descriptively), and semi-structured interviews (analysed thematically).

Results/Findings: 116 participants completed baseline measures, 110 were randomised, and 64 completed post-intervention measures (58% retention). Participants were aged 18 – 80 years with females (70%) and tertiary educated participants (55%) over-represented. trips4health was implemented with high fidelity, and the intervention was acceptable to participants and stakeholders. Incentives were well-received with 90% of participants agreeing they were liked and were helpful for increasing bus use. Over the intervention phase, 55% of intervention versus 40% of control group participants travelled by bus; intervention group participants made 2.5 trips/week while control group participants made 1.8 trips/week; and 42% of intervention and 25% of control group participants met weekly bus trip targets.

Conclusions: trips4health demonstrated high fidelity, was acceptable to participants, and highly feasible with partner support, but reach could be broadened. The intervention appeared to positively impact bus use. Combined, these data provide promising preliminary evidence that public transport incentives may increase bus use.

S.1V.04 - Scalable approaches to supporting workers to stand up, sit less and move more at work

Virtual Session #2

May 19, 2022, 4:20 PM - 5:35 PM

Prolonged sedentary time is now recognised as a key risk factor for poor health and wellbeing. One of the key settings targeted for intervention has been the desk-based workplace, with evidence rapidly building that demonstrates interventions that reduce prolonged workplace sitting are efficacious, feasible, and acceptable. Sit-stand workstations have been rapidly adopted by end-users; however, evidence of their usage in isolation is mixed and their up-front cost may be viewed as a barrier. This symposium brings together researchers and industry leaders from the US and Australia to discuss how they are developing and evaluating scalable approaches to support workers to stand up, sit less and move more at work.

Prof Paul Estabrooks will chair the symposium and open the presentations with an overview of the field of sedentary behaviour interventions in the workplace. He will also provide the broader background and considerations when translating research into practice.

Betsey Banker, wellness consultant, will then provide an industry perspective on why workplaces are investing in sit-stand workstations, what additional evidence is needed to support their adoption, and the impact that movement can have on worker wellbeing.

Professor Matthew Buman and Professor Mark Pereira will introduce the US-based Stand and Move at Work intervention along with the design and rationale for a hybrid effectiveness-implementation trial that will evaluate the effectiveness, implementation, and cost-utility of the intervention.

Professor Genevieve Healy and Dr Ana Goode will then discuss the development and national implementation trial of the Australian-based BeUpstanding program, reporting on preliminary uptake and effectiveness findings. This online program uses a train-the-champion approach to support work teams to stand up, sit less and move more for their health and wellbeing.
The symposium will conclude with discussion of the key learnings so far and implications for translating research into practice and working with industry partners.

Taking a Stand for Employee Wellness: The Science of Helping Employees Move More for Better Health

Ms. Betsey Banker[1]
[1]*Wellness Consultant, Seattle, USA*

SIG
- Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The sedentary nature of office work is a growing concern. Researchers have studied various physical and mental health problems linked with sedentary behavior, and the World Health Organization ranks physical inactivity as the fourth leading risk factor for global mortality. There are clear health risks associated with sitting still, and benefits of moving more, yet sitting during office work has increased during the COVID-19 pandemic given new work from home policies. Intervention studies that incorporate sit-stand workstations and other environmental supports in the workplace (or at home) have only been scaled to real-world settings in a limited way. The purpose of this presentation is to provide an industry-informed perspective on approaches to reduce workplace sedentary time. The presenter is a wellness educator with 6+ years of industry experience and a vast knowledge of employee health and well-being, especially the promotion of workday physical activity and ergonomics. She has worked with clients in healthcare, education and office sectors to introduce healthy habits and create cultures where people can thrive.

Methods/results: This presentation will focus on four industry-informed strategies for implementing and scaling interventions in the workplace to reduce sedentary time: (1) create policies that set the intention from worksite leaders and give the program structure and backing; (2) select equipment and environmental supports that meet standards for safety, ergonomics, and compatibility; (3) educate employees on the many benefits of the program and how to participate; and (4) reiterate why and how to continue a work styles that promotes comfort and well-being. Key challenges that must be addressed throughout program implementation including promoting good working postures and mindfulness, helping make movement throughout the day a sustained habit, and continuing to change corporate culture to one that is supportive of less sitting and more standing and moving.

Conclusion: Implementing programs to reduce sitting in the workplace have the potential to improve health and support more productive and satisfied employees. To achieve this goal, programs must enact policies and education that promote changes in culture and education across the workplace.

Stand & Move at Work II: A group randomized hybrid effectiveness-implementation of a work-based intervention to reduce sitting and increase light-intensity physical activity

Dr. Matthew Buman[1], **Dr. Mark Pereira[2]**, Prof. Paul Estabrooks[4], Prof. Genevieve Healy[3], Dr. Ana Goode[3], Ms. Sarah Rydell[2], Ms. Miranda LaRouche[1], Dr. Matthew Martin[1], Dr. Alexis Koskan[1], Mr. Nathan Mitchell[2], Dr. Tzeyu Michaud[4], Dr. Wen You[5]

[1]*Arizona State University, Phoenix, USA, [2]University of Minnesota, Minneapolis, USA, [3]University of Queensland, Brisbane, Australia, [4]University of Nebraska Medical Center, Omaha, USA, [5]University of Virginia, Charlottesville, USA*

SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Sit-stand workstations are a fast growing employee benefit, yet evidence-based interventions are not being implemented to support their use. Our purpose to was evaluate effectiveness, implementation, and incremental cost benefit of an evidence-based workplace intervention to reduce sitting and increase light-intensity physical activity at work.

Methods: Stand & Move at Work (SMW) is a multicomponent, social-ecological behavioral intervention tested in 24 industry, government, and academic worksites (*N*=630 workers). The intervention was shown to reduce sedentary time, reduce body weight and improved chronic disease risk factors among those with high baseline risk, and reduce musculoskeletal pain. In this symposium we will report on the design and rationale of an ongoing 2-arm group-randomized hybrid effectiveness-implementation (type 2) trial that tests the role of expert-based facilitation to enhance effectiveness and implementation of the *SMW* intervention. We used the *Integrated - Promoting Action on Research Implementation in Health Services (iPARIHS)* framework to inform our expert facilitation strategy through: (a) examining implementation outcomes from our efficacy trial; (b) conducting 35+ industry-based discovery interviews; and (c) piloting our enhanced implementation strategy in new worksites. We are recruiting 24 new worksites across the United States (N employees > 1200) and then randomizing worksites to 12 months of either: (a) *SMW* (web-delivered); or (b) *SMW+* (web-delivered + expert facilitation). Our dual primary outcomes are reductions in sedentary time (measured with activPAL micro accelerometers) and intervention fidelity. We also assess incremental cost benefit of our interventions.

Conclusions: The potential health benefits of sit-stand workstations and associated worksite health promotion programs will not be realized in the workforce at large until we test the most effective and efficient way to implement evidence-based interventions. This project is among the first initiatives to address this growing trend in worksite health. Optimal strategies for delivering the SMW intervention will be identified and new knowledge will be generated on how facilitation can enhance implementation fidelity of workplace health initiatives, both of which will increase the public health impact of evidence-based interventions.

Uptake and effectiveness of the BeUpstanding program supporting workers to stand up, sit less and move more: preliminary findings from a national implementation trial

Prof. Genevieve Healy[1], **Dr. Ana Goode[1]**
[1]*The University of Queensland, Brisbane, Australia*

SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Purpose: The web-based BeUpstanding program was designed to provide work teams with a low cost/no cost intervention to address the emergent work health and safety issue of excessive sitting. This evidence-informed and world-first program supports a workplace champion to adopt, deliver and evaluate the 8-week program within their work team. In June 2019, a national implementation trial of BeUpstanding was initiated in Australia, addressing questions regarding uptake, delivery, effectiveness and cost. The purpose of this study is to report on selected uptake and effectiveness findings from the trial to date.

Methods: The trial is conducted in collaboration with workplace health and safety policy and practice partners with recruitment via partner-led referral pathways targeting desk-based work teams from across Australia. A single-arm, repeated measures design is used to examine the short-term (end-of-program) and long-term (9 months post-program) impacts. The self-reported data are collected through the online program via surveys and toolkit analytics and by the research team via telephone calls with champions. Indicators of uptake (number and characteristics of organisations, champions and staff) are described, while mixed models examining all evaluable staff were used to evaluate the impact on the primary effectiveness outcome (workplace sitting time as a percent of the workday).

Results: Preliminary findings show that of the 639 organisations who unlocked the toolkit, 136 were eligible for the trial with 102 (75%) consenting. Consents were from all 19 industries and from all state and territories across Australia. Champions (n=158) were typically female (75.3%) with the majority having an occupational health and safety role (67.1%) and experience in delivering health promotion programs (64.6%). A mix of senior management (45.6%), middle management (37.3%) and general employees (17.1%) took on the champion role. Workplace sitting time reduced significantly (-8.3% [95% CI -9.5%, -7.1%], $p<0.001$) in the 78 clusters who have completed their post-program evaluation (n=2561/4579 staff; response rate 56%).

Conclusions: These preliminary findings demonstrate that a "train-the-champion" approach can be successfully used across a broad range of industries and locations to help teams reduce workplace sitting. The implications of COVID-19 on the trial, and preliminary implementation findings will also be discussed.

D2S.1v.01 - Exploring Meaningful Health Promotion Research and Collaborations in the Caribbean

Virtual Session #2

May 19, 2022, 6:00 PM - 7:30 PM

Danielle Walwyn, Health Caribbean Coalition

Purpose: The Caribbean region consists of a chain of islands surrounding the Caribbean Sea. Given the region's colonial history and geographic positioning, the Caribbean faces many unique challenges emerging from global issues. For example, poor health outcomes (including non-communicable diseases) related to the broken global food system and climate change. To equitably tackle the most pressing issues it is imperative that researchers from within and outside the Caribbean meaningfully engage local researchers in the development, execution, and evaluation of research conducted in their local territory. Cross-sharing of best practices from both parties throughout the research process is also pivotal in enriching the research and research experience. As international interest grows in conducting research in the Caribbean, an exploration of meaningful research and collaborations is critical in creating sustainable research-based solutions to the region's most pressing issues.

Methods: This session will be led by health promotion researchers from Antigua and Barbuda. Using an interactive story based on case studies, participants will develop an understanding of the unique research landscape and multi stakeholder relations needed to execute meaningful health promotion research in the Caribbean. Participants will also be introduced to culturally affirming research methodologies developed by Caribbean researchers for use in this unique context. Caribbean-Soca movement breaks will be integrated throughout the interactive experience. A key output from this session will be gauging interest in launching an ISBNPA special interest group (SIG) for those who may be interested in learning more about executing health promotion research in the Caribbean. This first of its kind SIG, has the potential to strengthen ISBNPA's reach, create a platform for cross-sharing, capacity building and amplification of work by Caribbean-based researchers.

Conclusion: This Dare2Share activity provides insight into executing meaningful health promotion research in the Caribbean, and an opportunity to develop a community of health promotion researchers from across the globe who are interested in meaningfully collaborating with the Caribbean community in developing innovative solutions to unique challenges.

D2S.1v.02 - How to co-design a health intervention

Virtual Session #1

May 19, 2022, 6:00 PM - 7:30 PM

Dr. Jill Ryan

Co-design is an innovative and inclusive approach to product and service design that is widely used in technology fields to innovate and develop products that are closely aligned with user needs and the user experience. These days, a small number of researchers have started to integrate elements of codesign into public health settings, recognising the significant benefits it could have for health evidence translation.
In this seminar, researchers with substantial expertise in physical activity promotion, public health, and perhaps most importantly, design, will take you through a codesign process to demonstrate how it can work and what the potential benefits could be. Over the course of the 90-minute workshop, participants and facilitators will work together to codesign a physical activity intervention for a setting and population of our choosing. The workshop will harness core characteristics of codesign, including rapid iteration and the use of objects/activities as metaphor in order to design an intervention that is rooted in the real experience of physical activity.

Supl.Virtual 02 - Novel approaches to behavioral nutrition and physical activity science

Virtual Session #2

May 19, 2022, 6:00 PM - 7:30 PM

Fitspiration Content Analysis and Its Effects on Physical Activity Behaviour: A Systematic Review

Ms. Rebecca Coulter[1], Dr. Sam Liu[1], Dr. Kayla Nuss[1]
[1]*University of Victoria, Victoria, Canada*

SIG - Primary Choice: D. e- & mHealth
Age Category: Young adults 19-24 yrs
Subject Category: Physical Activity
Background: Although physical activity is essential for health, the majority of the general population do not meet physical activity guidelines. Social media is increasingly popular and has been identified as a tool to increase physical activity among users. The goal of the "Fitspiration" on social media is to increase physical activity through sharing inspiring content and images. However, there is a large variety of fitspiration content and the overall effect on physical activity is unclear. The objectives of this study are to 1) examine the types of fitspiration content analyzed in the literature, and 2) examine the effect of fitspiration content on physical activity behaviours.

Methods: This systematic review was conducted according to PRISMA guidelines. The following search terms were used: "Fitspiration" AND content AND content analysis, "Fitspiration" AND "physical activity" OR exercise. Studies from January 2011 to November 2022 were included. Thematic analysis was used to answer our research questions.

Results: Of the 32 studies initially identified, following the exclusion criteria a total of 13 studies were included. The majority of fitspiration content on social media featured images of women (67%), a thin body type (45%) specific body parts (43%) and are perceived to objectify the subject in some way. Physical activity measures included fitness facility check-ins, exercise program adherence, distance covered in a 10-minute treadmill exercise bout and compulsive exercise scores. Two studies found significant effects of fitspiration on physical activity behaviour, specifically significantly higher compulsive exercise scores in adults who post fitspiration content and a significant increase in exercise program adherence in fitspiration consumers.

Conclusions: Although most fitspiration content focuses on appearance, studies examining perceptions of fitspiration content suggest that appearance focused content is seen as unattainable, potentially leading to body dissatisfaction. According to Social Cognitive Theory, fitspiration content may affect physical activity behaviour through personal, behavioural and environmental processes, however, the included studies show little evidence that fitspiration content increases physical activity. Fitspiration content has the greatest potential to affect outcomes through modeling, however, future content may focus on attainable personal goals rather than appearance-based goals.

Changes in domains of physical activity and sedentary behaviour during the transition to retirement across socio-economic groups: a systematic review of longitudinal studies

Ms. Nina Vansweevelt[1], Prof. Filip Boen[1], Prof. Jannique van Uffelen[1], Prof. Jan Seghers[1]
[1]KU Leuven, Leuven, Belgium

SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Middle aged adults 45-64
Subject Category: Physical activity and sedentary behavior

Purpose: The transition to retirement seems to influence physical activity (PA) and sedentary behaviour (SB) differently in low and high socio-economic status (SES) groups. However, this topic has not been extensively reviewed. Therefore, this review aims to investigate whether there are substantial differences between low and high SES groups in how retirement impacts their PA and SB in specific domains.

Methods: We searched five databases with free and thesaurus terms, related to 1) retirement, 2) PA and/or SB and 3) prospective or longitudinal study design. Inclusion criteria were: investigating statutory retirement, measuring PA and/or SB at least once before and once after retirement, reporting information to distinguish effects between SES groups and being published in a peer-reviewed journal. Due to the large heterogeneity in the included papers, results are reported by means of a narrative synthesis, combined with harvest plots based on direction of effect. Papers were classified per outcome into three categories: 1) more favourable changes for high SES, 2) more favourable changes for low SES, 3) no information on direction of effect. 'More favourable' was defined as larger increase in PA, smaller decrease in PA, larger decrease in SB or smaller increase in SB.

Results: We included 24 papers from 19 studies. Twenty-one papers focused on PA, three on SB and five examined both. For the outcomes 'total PA', 'occupational PA' and 'total sitting time', nearly all studies found more favourable changes for high SES groups. For 'recreational PA', 'transport PA', 'SB (all)' and 'screen time', the picture was less clear but there seemed to be a tendency towards more favourable changes for high SES groups. Changes in 'household/caregiving PA' did not appear to differ between low and high SES groups.

Conclusions: These results suggest that changes in PA and SB differ between low and high SES groups, with mostly more favourable changes for high SES groups. Moreover, the differences seem to depend on the domain of PA or SB. Thus, when implementing interventions to optimize movement behaviour in retiring adults, it might be important to target PA and/or SB in specific domains in low SES groups specifically.

The short-term effect of a mHealth intervention on gestational weight gain and health behaviors: A Canadian pilot study

Dr. Sara C S Souza[1], Dr. Danilo F da Silva[1], Dr. Taniya Nagpal[2], Mr. Kevin Semeniuk[1], Dr. Zachary M Ferraro[3], Dr. Leanne M Redman[4], Dr. Garry Shen[5], Dr. Kristi B Adamo[1]

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SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Physical Activity

Purpose: Gestational weight gain (GWG) and behaviours during pregnancy have been shown to impact several maternal-infant health outcomes. Since healthcare provider guidance on weight gain and healthy behaviors alone has failed to help women to meet guidelines during pregnancy, a practical adjunctive approach is to deliver evidence-based information through mobile health (mHealth) interventions. The present study aimed to assess the short-term effect of an app-based mHealth intervention to promote adequate GWG and healthy behaviors.

Methods: Pregnant women across Canada, aged 18-40 years with a pre-pregnancy body mass index between 18.5-39.9 kg/m^2, and between 12-20 gestational weeks were included in the study. A Fitbit Charge 2 and a Withings scale were provided to participants to monitor their GWG, physical activity (PA), diet, and sleep. We tested whether a higher app usage (>=3.8 min·week^{-1}) between 12-20 and 24-28 gestational weeks improved GWG, diet, PA, and sleep, compared to lower app usage (<3.8 min·week^{-1}). Two-way mixed ANOVA for repeated measures was used to estimate the effect of the app usage and time, as well as their interaction on weight gain and healthy behaviours. The likelihood ratio was used to examine the association between app usage categorization and GWG classification. Cramer's V statistic was used to estimate the effect size of the association.

Results: Twenty-nine pregnant women were recruited and participated in the trial. Pregnant women using the research app more frequently had higher daily moderate-to-vigorous PA (MVPA) when compared with women with a lower usage (mean difference: 17.84 min/day, 95% CI: 2.44-33.25). A moderate effect size was found for the association between app use categorization and rate of GWG, showing a greater adherence to the GWG guidelines in women in the higher app usage group *vs.* the lower app usage group (n=4, 28.6% *vs.* n=2, 15.4%; Cramer's V=0.212). Considering other PA, diet, and sleep variables, no app categorization effect was observed.

Conclusions: A short-term higher usage of this research app had a positive effect on objectively-measured MVPA. These findings suggest that the proposed research app has potential to improve adherence to Canadian prenatal activity guidelines that specifically recommend this intensity level.

What factors are associated with the sustainment of weekly physical activity implementation in Australian elementary schools?

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: We aimed to: (1) identify school-level and teacher-reported factors associated with the sustainment of weekly physical activity implementation in elementary schools following withdrawal of an effective implementation intervention; and (2) determine teacher's perceived usefulness of suggested support strategies for sustaining intervention implementation.

Methods: A secondary exploratory analysis was employed of data from the intervention arm (n = 31 schools) of a randomised controlled trial. Self-report survey data from 134 classroom teachers in New South Wales, Australia collected following withdrawal of initial implementation support (follow-up T1) and six-months following completion of support (follow-up T2) were used. The outcomes of sustainment of weekly overall physical activity and energisers (short classroom physical activity breaks) implemented was measured as the difference in mean minutes of physical activity and energisers implemented at T1 and T2. An adapted version of the Program Sustainability Assessment Tool (PSAT) was used to measure capacity for program sustainability across seven key domains at follow-up T2. Linear mixed regressions were conducted to evaluate associations between school sociodemographic characteristics (e.g., school size, remoteness and type) and teacher-reported factors (e.g., strategic planning, environmental support, program adaptation, organisational capacity, program evaluation, funding stability and communications) and the sustainment of physical activity and energisers implemented across the school week. Perceived usefulness of 14 proposed sustainability support strategies was measured via the teacher survey at follow-up T2 and reported descriptively.

Results: No school sociodemographic factor was statistically associated with the sustainment of overall weekly physical activity or energisers implemented. Teacher-reported factors in two PSAT domains – 'strategic planning' and 'program evaluation' were statistically negatively associated with the sustainment of weekly energisers implemented (-6.74, 95% CI: -13.02; -0.47, p = 0.036 and -6.65, 95% CI: -12.17; -1.12, p = 0.019 respectively). 'Provision of physical activity equipment packs that enable energisers or integrated lessons' was the sustainability support strategy perceived useful by the most teachers (85%).

'Not just for fun anymore': a qualitative exploration of social norms related to the decline in non-organized physical activity between childhood and adolescence in Australia

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Physical activity (PA) tends to decline during childhood and adolescence. In Australia, this decline has been shown to particularly occur in the domain of non-organized PA (e.g. active play and informal sport). A better understanding of the reasons for the decline in non-organized PA may support strategies to strengthen enablers of participation and counter barriers. To our knowledge, no previous studies have explored social norms specifically related to the decline in non-organized PA during adolescence. This study aimed to explore the PA stories of young adults who withdrew from non-organized PA and overall PA between childhood and adolescence. Specifically, we sought to explore potential social norms related to types of non-organized PA; and the perceived barriers and enablers of participation in non-organized PA during adolescence.

Methods: This study was influenced by a pragmatist research paradigm. Participants were young adults (18-22y) who were recruited from undergraduate, vocational and special entrance classes, as well as two churches in the Illawarra region, Australia. Screening surveys were used to select participants who reported a declining pattern in non-organized PA and overall PA between 11y and 15y. Recruitment was stratified by sex and socioeconomic status. Data collection occurred via semi-structured interviews (n=22) with embedded Life History Calendars, a creative approach designed to mimic the process of autobiographical recall. Thematic analysis was supported by concept and pattern coding.

Results: Findings revealed that social norms were related to an interplay of adult modelling/influence, concerns about being childish, puberty, identity development, adult choices and responsibilities, and changing life circumstances. Barriers to participation centred on fears of being different, bullying, peer judgement and rejection. Enablers of participation included safe people and places, accessible games (e.g. handball/foursquare) and, for girls, having an identity that supported challenging gender norms.

Conclusions: Future PA promotion strategies may involve 'reframing' childhood activities to be appropriate for adolescents, and emphasising identity-congruent types of PA (e.g. active video games, drama games). Such

strategies may be implemented in a similar style to after-school intramural sports to allow youth to participate despite potential changes in their life circumstances during adolescence.

A Randomized Online Grocery Store Experiment to Test Modified Nutri-Score and Chilean Warning Labels in the Kingdom of Saudi Arabia

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Background: One common strategy for governments to tackle the non-communicable diseases (NCD) epidemic is front-of-package (FOP) nutrition labeling. The Kingdom of Saudi Arabia (KSA) is considering implementing an FOP label policy that is most effective for its population. FOP labels can focus solely on identifying healthier foods, less healthy foods, or both. Although each FOP label works differently and has different potential unintended consequences, head-to-head comparisons are limited. Objective: The objective of this study was to test two promising strategies: Chilean warning labels (high-in-nutritional attribute X) and Nutri-Score (NS) labels (A = healthiest, to E = least healthy), which were modified to also show the percentage of sugar per serving.

Methods: We conducted a hypothetical online shopping study with 656 KSA residents by employing a three-arm randomized controlled trial (RCT)— no-label control, warning label, and NS label conditions—to estimate the effects of the FOP labels.

Results: Relative to the control, the NS label improved the overall diet quality of shopping baskets, measured by weighted (by serving size) average NS point, by 2.6 points ($p < 0.01$), whereas the Chilean warning labels did not. The effect of the NS label equates roughly to a one-letter grade improvement in diet quality. The warning labels were more effective at decreasing per serving energy (kcal; $p < 0.1$) and saturated fat (g; $p < 0.05$) intake from food and beverages purchased, whereas the reduction in sugar (g) intake per serving was greater with the NS label ($p < 0.01$).

Conclusions: Both Chilean warning labels and modified NS labels positively influenced food and beverage choices among KSA participants, but there were differential effects across the two labels. Therefore, the choice of one label over another should be made by considering these findings, along with a stated public health objective and target population.

Associations between the surrounding school-built environment and adolescents' moderate- to vigorous-intensity physical activity and active school travel: Results using longitudinal data from the COMPASS study

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: This study aimed to: 1) describe the change in adolescent moderate- to vigorous-intensity physical activity (MVPA) and active school travel over a four-year period, 2) examine associations between the surrounding school built environment and adolescent MVPA and active school travel, and 3) examine whether the built environment moderates any change in adolescent MVPA and active school travel over time.

Methods: Participants were adolescents aged 13-18 (n = 20,221) from 91 schools in Ontario and Alberta, Canada who participated in at least one year (2013-14, 2015-16, 2016-17, 2017-18) of the COMPASS project and had built environment data available at baseline (2013-14). They completed a school-based student questionnaire about their demographic information, amount of MVPA, and frequency of active travel to and from school. Retail, recreation, and park densities were measured at 500 m, 1000 m, and 1500 m buffers using DMTI geospatial data. Walk Scores from a publicly available website were collected based on school addresses. MVPA was square root transformed. Multilevel modeling was conducted that adjusted for individual-level and school-level covariates.

Results: MVPA (B = -0.50, 95%CI: -0.54, -0.46) and likelihood of active travel to (OR=0.94, 95%CI: 0.90, 0.97) and from (OR= 0.88, 95%CI: 0.85, 0.92) school decreased over time. When time was held constant, several positive associations were observed between the surrounding school built environment, MVPA (park density, recreation density), and active school travel (walk score, retail density, recreation density). Adolescents attending schools in very walkable areas, and areas with a higher retail density at 1000 m had an increased likelihood of active school travel over time. The likelihood of active travel to school in areas with higher park (1000 m), recreation (1500 m), and retail (1500 m) densities remained stable over time. The same effect was not apparent for active travel from school and MVPA.

Conclusion: Findings reaffirm that adolescents experience a decrease in MVPA and active travel as they age. However, features of the built environment may buffer these tendencies and facilitate active travel. Other student-level and school-level factors may be more important than the surrounding school built environment for promoting student MVPA.

Conclusions: These findings contribute to improving broad understanding of what determinants may need to be addressed; and which sustainability strategies may support the sustainment and continued benefit of school-based interventions targeting healthy behaviours, specifically in relation to weekly physical activity implementation.

Supl.Virtual 04 – Other

Virtual Session #3

May 19, 2022, 6:00 PM - 7:30 PM

A Systematic Review and Meta-Analysis of School Mealtime Management and Its Link to Food Intake and Waste

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Mealtime management is an important determinant of consumption and waste in school cafeterias. The objective of this systematic review is to synthesize the findings on two factors of mealtime management - *time allocated to eat* and *the sequencing of playtime-mealtime* - and their relationship with food and nutrient consumption/waste of school lunches.

Methods: Following the Cochrane Collaborate Guidelines, a search was conducted in Ovid (Medline), Ebsco (Agricola, ERIC, CINAHL) and ProQuest Dissertations & Theses Global. This systematic review includes a total of 21 studies published between 1990 and 2021, eleven of which were used in meta-analysis.

Results: The opportunity time to eat, which is the time that students spent seated at the table to eat and socialize, ranged from 10.3 to 29.5 min, with 7-9.5 min for eating and 4.5-21.5 min for socializing. Most of the studies reported an overall opportunity time to eat of less than 20 minutes. Nine studies explored the relationship between duration of lunchtime and consumption and reported mixed results for entrees, fruit, vegetables, whole grains, and nutrient intakes. Combining the reported results, consumption of fruits and vegetables (FV) was positively associated with time seated at table. Additionally, allowing more time to eat was found to be related to an increased FV consumption. Meta-analysis of six studies reporting consumption of fruits and vegetables when recess was scheduled after lunch (default scenario) vs recess scheduled before lunch (reverse recess) show that recess before lunch is associated with significantly higher fruit consumption (d=0.23, 95% CI: 0.05, 0.41, n=6) but not for vegetable consumption (d=0.10, 95% CI: -0.02, 0.22, n=6).

Conclusions: Findings support the minimum of 20-min seated at table recommendation. However, the recess before lunch recommendation should be applied with caution. There is significant evidence showing the relationship between mealtime management and food consumption. However, future research also needs to focus on assessing intakes of certain nutrients based on the requirements of the National School Lunch Program (NSLP). This may facilitate better decision making about NSLP practices, programs, and policies that influence student consumption patterns across settings and interventions.

A Systematic Review and Meta-Analysis of Active Video Game (AVG) Interventions Targeting Physical Activity

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SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Physical Activity

Purpose. Research on digital games to increase physical activity (PA), i.e., active video games (AVGs), has proliferated over the past two decades. As past reviews rapidly become outdated, updated, high-quality reviews that identify overarching insights into when and why AVGs are more or less successful are necessary.

Methods. We undertook a meta-analysis examining published interventions wherein AVG technology represented >50% of the intervention. Studies had to target PA, include ≥2 conditions (within- or between-subjects) with ≥10 participants/condition, and involve longitudinal AVG exposures. We searched PubMed, EBSCO (PsycINFO, Sport Discus, MEDLINE), Web of Science, and Google Scholar and identified 25 studies from 5,590 English articles published between 1996 and 2020, 20 with data sufficient for meta-analysis. Standardized mean differences (Hedges' g) were calculated using the random-effects model, and quantitative analyses were run on the confined data derived from the last measure of the intervention and control groups. Multiple outcomes for each study were combined by calculating the individual Hedges' g with fixed-effect model. The PA assessment method (objective vs. subjective) was included as a binary moderator. A meta-regression was applied to assess the effect of intervention length.

Findings. The mean sample size was n=110. 50.70% of the participants were men. 69.23% of studies included general population samples; among the 30.77% that targeted those with specific health conditions, overweight/obese (k=2) and cardiac event (k=2) were more common. The most common platforms used were the Wii (32%), Kinect/Xbox (20%), and Playstation (16%). The most common comparison condition was no treatment (52%), followed by conventional PA intervention (40%), and sedentary games (8%). The analysis moderated by PA assessment method showed a significant effect favoring AVGs with objective (g=0.628; 95% CI=0.325-to-0.932; p<0.001) relative to subjective (g=0.313; 95%CI=0.058-to-0.567; p=0.016) measures. Evidence of heterogeneity and inconsistency was identified for the model (Q=216.7; I_2=91.2; tau_2=0.20). The meta-regression showed no association between intervention length and effect size (coefficient=0.005; p=0.64).

Conclusions. AVGs represent a promising tool for promoting PA in both the general population and clinical subpopulations. However, significant variability in AVG quality, study design, and impact were also detected. Suggestions for improving AVGs and related research will be discussed.

Physical Activity mitigates the link between Adverse Childhood Experiences and Depression among U.S. adults.

Mr. Michael Royer[1]
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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Background: Adverse Childhood Experiences (ACEs) are potentially traumatic occurrences involving exposures to unique types of neglect, abuse, and family problems involving substance abuse, mental health, divorce, incarceration, suicide, and death. ACEs contribute to health problems in adulthood, including depression. Past research has found that physical activity can alleviate depression. Little is known about the relationship between ACEs and physical activity among U.S. adults.

Methods: This retrospective study of U.S. adults (n=117,204) from 21 states and the District of Columbia involved a secondary data analysis of the 2020 Behavioral Risk Factor Surveillance System to construct general linear models and use multivariable regression for (1) examining the links between ACEs and depression, ACEs and physical activity, and physical activity and depression; and (2) determining the extent to which physical activity protects against ACEs increasing the odds of depression.

Results: Study findings indicate ACEs was significantly linked to depression (B=0.048, SE=0.005; 95% CI=0.047,0.049). Significant inverse associations were detected between ACEs and physical activity (B-0.006, SE 0.001; 95% CI=-0.007, -0.005), and between physical activity and depression (B=-0.076, SE=0.003; 95% CI=-0.081, -0.071). Physical activity significantly protected against ACEs increasing the odds of depression (B=-0.009, SE=0.002, 95% CI=-0.012, -0.007).

Conclusions: This research addressed a critical knowledge gap for the link between ACEs and physical activity. Study findings indicate physical activity protects against the cross-sectional effect of ACEs on depression. Future studies should apply physical activity interventions to alleviate depression among U.S. adults with high ACEs.

Compositional analysis of physical activity and sedentary time in relation to cardiometabolic risk in pre-school children

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Participating in recommended amounts of physical activity (PA) and limiting sedentary time (SED) during early childhood are important for health and development. Additionally, there is increasing interest in both the way in which PA and SED are accumulated (i.e., 'bout' lengths) and the daily time-use composition of these behaviours, as these may be important for young children's health. This study aimed to examine associations between the PA and SED time-use composition, including short and long bouts, and cardiometabolic risk factors in 4-year-old children.

Methods: Accelerometer (hip-worn GT3X) and cardiometabolic risk data from the Barwon Infant Study (south-eastern Australia) 4-year review were analysed (n=467). Short and long SED, light-, moderate-, and vigorous-intensity PA (LPA, MPA, and VPA) bouts were classified as ≤1-minute and >1-minute, respectively. A time-use composition of eight distinct components (time in total volumes and short and long bouts of SED, LPA MPA and VPA) was constructed using compositional data analysis. Linear mixed models with within-child clustering examined associations between this composition and cardiometabolic risk factors: body mass index [BMI], percent body fat, triceps and subscapular skinfold thickness, blood pressure, heart rate, carotid-femoral pulse wave velocity, and aortic and carotid intima-media thickness.

Results: Adjusted models showed a higher ratio of long vs. short LPA bouts was associated with higher z-BMI (β=1.69, standard error [SE]=0.83, p=0.04), percent body fat (β=10.72, SE=3.71, p=0.004), and z-triceps (β=1.90, SE=0.93, p=0.04). Conversely, a higher ratio of long vs. short MPA bouts was associated with lower z-BMI (β=-0.99, SE=0.46, p=0.03) and percent body fat (β=-4.63, SE=1.93, p=0.02). A higher total volume of MPA vs. VPA was associated with higher percent body fat (β=4.07, SE=1.63, p=0.01) and z-triceps (β=1.05, SE=0.43, p=0.01).

Conclusions: Accumulating LPA in short bouts and MPA in long bouts and accumulating a high total volume of VPA may be beneficial for adiposity markers in young children. These results highlight the importance of breaking up SED and promoting sustained, higher intensity PA from a young age.

Effects of 12-weeks cycling workstation intervention on cardiometabolic risk factors in healthy office workers: the REMOVE study

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The aim of the present study was to investigate the effects of a cycling workstation intervention (60 min per working day) for 12 weeks among healthy tertiary employees on physical activity (PA), sedentary behaviors (SB), body composition, biological parameters and physical fitness. We hypothesized that the daily use of portable pedal machine (PPM) will increase PA, reduce SB and improve cardiometabolic parameters compared to a control condition with no intervention.

Methods: A prospective, open-label, multicenter, randomized controlled trial was conducted in office-sitting desk workers. Forty healthy office workers has been recruited from six tertiary worksites in Clermont-Ferrand, France. Thirty-two participants completed the study. Subjects has been randomly assigned to either: i) an intervention group (PPM3) who performed 60min of cycling workstation per working day (n=17; 44.9±8.6 years; 23.7±3.5 kg/m2), or ii) a control group with no intervention (CTRL) (n=15; 43.7±9.7 years; 23.3±3 kg/m2). Every following outcomes were assessed at baseline (T0) and at 3 months (T1): 7-days PA and SB (3-D accelerometers), body composition (bioelectrical impedance), physical fitness (aerobic fitness, upper and lower limb strength), metabolic outcomes (glycemia, insulinemia, lipids profile and inflammatory cytokines).

Results: Subjects in the PPM3 group significantly reduced sitting time (63.2±6.9 vs 59.7±7.7 %, p≤0.01) and increase both light intensity (201.2±56 vs 227.1±54.2 min/day, p≤0.01) and moderate-to-vigorous (22.9±12.1 vs 31.9±20.4 min/day, p≤0.01) PA. Intervention enabled to reduce significantly waist to height ratio (-0.01±0.04, p≤0.05) and improve aerobic fitness during a submaximal exercise (157.3±19.2 vs 153.1±18.5 bpm, p=0.012). PPM3 group improved significantly Δus-CRP (-0.11±1.3, p=0.008), Δtotal cholesterol (-0.06±0.1, p=0.028) and ΔLDL cholesterol (-0.09±0.3, p=0.048) compared to CTRL group after intervention.

Conclusion: Implementation of PPM in worksite among normal-weight individuals have shown several positive effects on PA, SB, anthropometric measurement, physical fitness and cardiometabolic parameters. The REMOVE study provides new insight in a field that remains poorly explored with a potentially huge impact in primary prevention for global health. To our knowledge, this trial is the first to assess the effects of the use of

cycling desk (PPM) on physical activity, sedentary behaviors and cardiometabolic risk factors of normal-weight tertiary employees.

Children's sex, weight and mental health are associated with physical activity parenting practices

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Background: Physical activity (PA) parenting practices are strategies parents use to regulate children's PA. Few studies have explored how child characteristics influence parents' use of specific PA parenting practices. This study evaluated how children's weight and mental health were associated with parents' PA parenting practices.

Methods: A total of 296 Canadian parents and their grade 8 children (46% girls) completed the validated PA parenting practices item bank measuring their use of nondirective support, autonomy support, coercive control, rewards, expectations, facilitation, allowance of unsupervised PA, and guided choice. Self-reported height, weight, weight concerns, self-esteem and anxiety were collected from youth using online questionnaires. Covariate-adjusted regression models evaluated the association between each parenting practice and child-level variables. Models were stratified by children's sex.

Results: Parents reported higher PA expectations for boys compared to girls (p=.016). However, these expectations were lower among parents of boys who reported greater weight concerns (β=-.22 p=.042). Parents of girls who had greater weight concerns (β=.35 p=.001) and higher self-esteem (β=.27 p=.007) also reported higher PA expectations, compared to parents of girls with lower weight concerns and self-esteem. Parents of girls who had greater weight concerns and self-esteem used more nondirective (β=.29 p=.007 and β=.23 p=.025, respectively) and autonomy supportive (β=.40 p<.001 and β=.30 p=.004, respectively) practices. In contrast, parents with less anxious boys used more autonomy supportive practices compared to parents with more anxious boys (β=-.28 p=0.013). Parents of girls with greater self-esteem (β=.33, p=0.001) and of boys with lower weight concerns (β=-.26 p=.010) provided more guided choices to participate in PA. Parental PA facilitation was higher when the child had higher self-esteem, regardless of the child's sex (β=.24, p=.027 and β=.30, p=.003 for boys and girls, respectively). Finally, parents of boys with overweight/obesity reported using more rewards (β=.24 p=.020) and coercive parenting practices (β=.21 p=.049) with their child.

Conclusions: Children's sex, weight status and mental health are associated with PA parenting practices. While it is understood that child-level factors shape

parenting practices, it is important to support parents' use of parenting practices that support participation in PA regardless of their child's sex, weight or mental health.

Effect of COVID-19 on mothers' and fathers' feeding practices and the moderating role of parenting styles and family functioning

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Background: As food parenting practices (FPP) are dynamic, situational and dependent on transitory sources of familial stress, the COVID-19 pandemic might have forced parents to adapt their FPP. However, familial characteristics like parenting styles and family functioning could potentially help families navigate through this challenging time. This study examined whether FPP of mothers and fathers during the COVID-19 pandemic differed from those unexposed to pandemic conditions, and whether these differences were moderated by family functioning and parenting styles.

Methods: Two independent samples of Canadian parents (78% mothers) of grade 7 students completed online questionnaires about their FPP, parenting styles and family functioning in 2019 (n=270 unexposed to pandemic conditions) and 2020 (n=357 exposed to pandemic conditions). Linear and ordered regression models were used to compare FPP of parents exposed and unexposed to pandemic conditions. Interaction terms were included to test for the potential moderating effect of family functioning and parenting styles. All models were adjusted for sociodemographic covariates and stratified by parental sex.

Results: Mothers' exposed to pandemic conditions reported more frequent family meals than unexposed mothers (p=.015). Additionally, mothers with an authoritative parenting style reported healthier food availability (p=.006) than mothers with an authoritarian parenting style in the exposed sample, whereas the opposite effect was seen in the unexposed sample. Among fathers, family functioning moderated the effect of exposure to pandemic conditions on three FPP: emotional feeding (p=.027), food monitoring (p=.010) and coercive practices (p=.027). Specifically, among low family functioning households, fathers in the COVID-exposed group reported lower use of these 3 practices compared to unexposed fathers. However, among high family functioning households, there were no differences in FPP scores between COVID-exposed and unexposed fathers.

Conclusions: Our results suggest that being exposed to pandemic conditions might have affected FPP, but this effect differed for mothers and fathers and in some cases, was moderated by family functioning or parenting styles. Fathers from low functioning families and authoritarian mothers had lower overall engagement in some FPP in the pandemic context. Future research is needed to assess whether the changes in parental feeding engagement during the COVID-19 pandemic impact children's eating behaviors.

S.2V.05 - Innovative approaches to overcome lack of active travel data in low- and middle-income countries

Virtual Session #1

May 20, 2022, 8:30 AM - 9:45 AM

Purpose:
This symposium explores various innovative approaches in obtaining data amidst the lack of routinely collected active travel data in low- and middle-income countries (LMICs).

Rationale:
Physical inactivity prevalence in adults and adolescents are 27.5% and 81%. However, much of the physical activity studies were done in Western or high-income countries; other regions where most LMICs are located are underrepresented. This is mainly due to the lack of routinely collected physical activity data in many of LMICs. Many people are not meeting the recommended physical activity levels. However, most people undertake some form of travel every day in the form of motorized transport or active travel, such as walking or cycling. Active travel can be harnessed to increase overall physical activity. Many will meet the recommended activity levels if people walk or cycle a part of their journeys.

Objectives:
    (i)   to learn from the experiences of those conducting active travel studies in LMICs;
    (ii)   to bring together active travel researchers from different LMICs to inform what worked in their active travel studies;
    (iii)   to explore findings on what works in different these different settings and population; (iv) to share results on methods which have proven successful in this population.

Summary:
Rizka Maulida (University of Cambridge) will introduce the symposium. Three 10-min presentations will follow it. First, Rizka will discuss an ecological study in 31 of mostly low- and middle-income Asian countries using datasets from various publicly available datasets to examine environmental associated factors of active travel. The second presentation will be given by Rahul Goel (Indian Institute of Technology Delhi). He will discuss his work using Google Street View imagery to estimate motor vehicle and active travel use in cities worldwide and its application in LMICs. Lastly, Silvia Gonzalez (Universidad de los Andes) will present her work on the diversity of active travel data reported by LMICs participating in the Global Matrix 3.0 initiative. To conclude,

Olga Lucia Sarmiento (Universidad de los Andes) will summarise the session and facilitate discussion amongst speakers and the audience.

Format:
The Chair will introduce the session (5-min), followed by three 10-min speaker presentations by the speakers, allowing 25-min for discussion and questions led by the Discussant.

Interaction:
The discussant will facilitate discussion among speakers as well as the audience.

Environmental correlates of adolescent active travel to school in Asia: an ecological study

Ms. Rizka Maulida[1], Dr. Rahul Goel[2], Dr. SM Labib[3], Dr. Tolu Oni[1], Dr. Esther Van Sluijs[1]
[1]MRC Epidemiology Unit, University of Cambridge, Cambridge, United Kingdom, [2]Indian Institute of Technology Delhi, New Delhi, India, [3]Department of Human Geography and Spatial Planning, Utrecht University, Utrecht, Netherlands

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: To examine the association of country-level proxies of built, social, and natural environment factors with the prevalence of active travel to school in Asia

Methods: This ecological study involved 31 Asian countries with data on adolescent active travel to school from World Health Organization's (WHO) Global School-based student Health Survey (GSHS). The main dependent variable was country-level prevalence of active travel to school (based on N= 154,920 participants). Independent variables were derived from country-level data from publicly available datasets, such as WHO's Global Health Observatory (GHO) and World Bank, and included variables that represented one country's built, social, and natural environments. We selected urban population percentage and vehicle ownership as proxies for built environment. We selected school enrolment percentage, secondary school enrolment gender parity index, country income level, road traffic death rate, and general insufficient physical activity prevalence to represent social environment. We selected temperature, rainfall, PM2.5, and elevation to represent natural environment. Association of each independent variable and dependent variable were analysed individually using linear regression.

Results: Analyses are ongoing. The prevalence of adolescent active travel to school was 55%. Preliminary analysis showed that a 10% increase in urban population percentage and 10% percentage of secondary school enrolment, there is a 3% drop in active travel to school prevalence, while a 10% increase in general insufficient physical activity, there is a 5% drop in active travel to school prevalence. Full results will be presented.

Conclusion: The use of an ecological study design enabled us to study macro-level correlates of adolescent active travel and generate an overview of the region as means to inform regional stakeholders and appropriately design future studies. However, evidence generated from ecological study are always prone to ecological fallacy thus cannot be inferred to individuals. The presentation will discuss the main strengths and limitations of the study design and its utility in resource-poor settings.

Estimating city-level active travel prevalence using street imagery

Dr. Rahul Goel[1], Ms. Kelly Kokka[2], Dr. James Woodcock[2]
[1]Transportation Research and Injury Prevention Centre, Indian Institute of Technology Delhi, New Delhi, India, [2]MRC Epidemiology Unit, University of Cambridge, Cambridge, United Kingdom

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Physical Activity

Purpose: Street imagery is a promising big data source providing current and historical images in more than 100 countries. Previous studies used this data to audit built environment features. Here we explore a novel application, using Google Street View (GSV) to predict travel patterns at the city level.

Methods: We present two sets of analyses—first, a proof-of-concept using cities within Great Britain and the other for a global set of cities. For British cities, we manually annotated images into seven categories of road users. We developed regression models with population-level use of cycling and other modes of transport as outcomes and the counts of images of road users as predictors. For the global analysis, we used machine learning to identify road users in the images and developed similar regression models specific to levels of cycling and motorcycling.

Results: The proof-of-concept study in Britain demonstrated success. The count of images from Google Street View for different transport modes correlated well with the levels of active travel modes in the cities. The initial results with 40 cities across multiple countries show promising results.

Conclusion: A prediction model developed from this work could be a powerful tool to map active travel use across a large part of the world. The discussion will include the application of the results and the way forward.

Active transportation surveillance in the low- and middle-income countries participating in the Global Matrix 3.0

Miss Silvia Gonzalez[1,2], Dr. Salomé Aubert[1], Prof. Richard Larouche[1,3], Dr. Mark Tremblay[1]
[1]Healthy Active Living and Obesity Research Group, Children's Hospital of Eastern Ontario Research Institute, Ottawa, Canada,
[2]School of Medicine, Universidad de los Andes, Bogota, Colombia, [3]Faculty of Health Sciences University of Lethbridge, Alberta,
Canada

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: To identify the main sources of data used by low- and middle-income countries to determine the prevalence of active transportation among children and youth in the Global Matrix 3.0 initiative.

Methods: Eighteen low- and middle-income countries (Bangladesh, Botswana, Brazil, Bulgaria, China, Colombia, Ecuador, Ethiopia, Ghana, India, Lebanon, Mexico, Nepal, Nigeria, South Africa, Thailand, Venezuela, and Zimbabwe) participated in the Global Matrix 3.0 initiative and developed Report Cards on Physical Activity of Children and Youth. The development of the Report Cards followed a harmonized process, with common benchmarks and grading schemes to grade 10 common indicators. One of the indicators was active transportation and the benchmark used to assess this indicator was the percentage of children and youth who use active transportation to get to and from places. Countries provided their best data available to inform this indicator. Data sources from 15 countries were identified and compared.

Results: The main sources of active transportation data in this group of low- and middle-income countries were school-based surveys (46%), followed by household surveys (26.7%) that included nutrition, health, and demographic surveys. Also, physical activity surveys were reported in 3 countries, China, Bulgaria, and Thailand. Pedestrian safety/road traffic injuries surveys were the source of data for South Africa and India. The majority of countries used self-reported measures, and only one reported using Google Earth to estimate distances between home and school. The main strength of the survey data used was the national representativeness for the majority of countries. However, the surveys reported only assessed active transportation to/from school and no other destinations.

Conclusions: We observed that the data sources to inform the active transportation indicator in low- and middle-income countries participating in the Global Matrix 3.0 were diverse and from multiple sectors. Standardized and comparable measures of active transportation are needed. The multiple indicators and approaches identified to measure active transportation in low- and middle-income countries can guide efforts to improve active transportation surveillance.

Virtual posters OD2

May 20, 2022, 10:50 AM - 12:05 PM

OD2-01 Use of behaviour change techniques in exercise interventions targeting fall prevention in community-dwelling older adults: a secondary analysis of a systematic review

Ms. Wing S. Kwok[1,2], Dr. Juliana Oliveira[1,2], Dr. Samuel Nyman[3], Associate Prof. Anne Tiedemann[1,2], Dr. Marina Pinheiro[1,2], Prof. Catherine Sherrington[1,2]

[1]Institute for Musculoskeletal Health, The University of Sydney and Sydney Local Health District, Sydney, Australia, [2]School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia, [3]Bournemouth University Clinical Research Unit, Department of Medical Science and Public Health, Bournemouth University, Bournemouth, United Kingdom

SIG - Primary Choice: B. Motivation and behavior change
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Purpose: To summarise the use of behaviour change techniques (BCTs) in exercise interventions targeting fall prevention and explore the impact of using BCTs on the effectiveness of fall prevention exercise interventions in community-dwelling older adults.

Methods: A secondary analysis of a Cochrane Review published in 2019. We extended the search to January 2021. We included all randomised controlled trials that investigated the effect of an exercise intervention, compared to usual care or control, on falls in community-dwelling people aged 60+ years. Any components in the intervention that facilitate the change of exercise participation were coded according to 93 techniques within 16 clusters in the BCT taxonomy. Descriptive statistics were used to describe the use of BCTs in all exercise interventions. Meta-regression was undertaken to explore whether the number of BCTs on exercise impacts on falls. Subgroup analyses were conducted to compare the effects on falls in the interventions with more BCTs (defined as greater than the median number of BCTs) and those with less BCTs in each cluster.

Results: This secondary analysis included 169 exercise interventions in 125 studies. The median number of BCTs used per intervention was eight, with a range from three to 20. The most used BCT clusters were 'goals and planning', 'shaping knowledge', 'comparison of behaviour' and 'repetition and substitution'. No BCTs were used in 'regulation', 'identity', 'scheduled consequences', 'self-belief' or 'covert learning'. Seventy-eight interventions in 67 studies with reported falls rate were included in the meta-regression. There was no significant relationship (p=0.72) between the total number of BCTs and exercise impact on falls (rate ratio (RaR) 0.99, 95% CI 0.95 to 1.04). The only cluster of BCTs that was significant (p=0.04) in the subgroup analysis was 'repetition and substitution', with behavioural practice and graded tasks being the commonly used BCTs in the cluster. Falls rate compared with control was reduced by 36% in the interventions with more BCTs in repetition and substitution (RaR 0.64, 95% CI 0.53 to 0.77).

Conclusion: BCTs in repetition and substitution are particularly effective in exercise interventions targeting falls prevention in community-dwelling older adults.

OD2-02 Using Ecological Momentary Intervention (EMI), Community Health Workers, and Video Feedback to Reduce Cardiovascular Risk in Diverse Children

Dr. Jerica Berge[1]
[1]*University of Minnesota, Arden Hills, USA*

SIG - Primary Choice: D. e- & mHealth
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Objective: Given the low to moderate success of childhood obesity interventions to date and the high prevalence of childhood obesity disparities across race/ethnicity, a new way to intervene is needed. The current study describes a randomized controlled trial (RCT) designed to test combinations of intervention elements targeting family meals and healthful home food environments to reduce cardiovascular risk in children.

Methods: The study, called Family Matters, is a single site RCT evaluating an intervention using innovative methods including ecological momentary assessment (EMI), community health workers (CHWs), and video feedback. Participants (n=525) will be randomized into one of three arms (n=175 per arm) that combine intervention elements to identify the most effective components. Participants will be recruited from primary care clinics in Minnesota from Black, Latinx, American Indian, Asian, and White households.

Results: Family units with children ages 5-10 will be randomized to one of three study arms: (1) EMI, (2) EMI+Community Health Worker (CHW)+in-home visits or (3) EMI+CHW+virtual visits. All arms will receive 16 weeks of EMI. Arms 2 and 3 will additionally receive eight in-home education visits by CHWs focused on family meal quality and quantity, a meal prep activity, and video feedback on mealtimes every-other-week for 16 weeks, delivered simultaneously with EMI. Arm 3 will include all elements of Arm 2, but will be conducted virtually.

Conclusions: This study will synthesize the evidence-base on family meals, utilize innovative methods, and partner with CHWs to implement an effective and scalable intervention to reduce childhood cardiovascular risk.

OD2-03 A cross-sectional study describing factors related to the sustainment of physical activity and nutrition interventions in childcare services.

Mrs. Noor Imad[1,2], Dr. Alix Hall[2], Dr. Nicole Nathan[2], Mr. Adam Shoesmith[2], Mrs. Nicole Pearson[2], Ms. Melanie Lum[2], Dr. Serene Yoong[1,2]
[1]Swinburne Unviersity of Technology, Victoria, Australia, [2]Hunter New England Population Health, NSW, Australia

SIG - Primary Choice: E. Implementation and scalability
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Many evidence-based physical activity and nutrition interventions exist within the childcare setting, however, they are not implemented in an ongoing way. Therefore, there is a need to identify potential factors that may be important to the long-term sustainment of these interventions. This study aims to describe the factors related to the sustainment of physical activity and nutrition interventions in childcare.

A cross-sectional study was undertaken with a nationally representative sample of 400 Australian childcare services currently implementing physical activity and nutrition interventions. A nominated supervisor from each service completed a survey via a Computer Assisted Telephone Interview or online. Factors perceived to be influential to intervention sustainment were assessed using a 29-item measure of sustainability determinants, reflecting four domains of the Integrated Sustainability Framework (Outer Contextual Factors, Inner Contextual Factors, Processes and Characteristics of the Intervention). Participants indicated the extent to which they agreed with each item using a 5-point Likert scale, with response options ranging from 1 (strongly disagree) to 5 (strongly agree). Domain scores were calculated for each service by averaging item responses, with a higher domain score representing a higher level of a particular domain.

Highly preliminary data with ongoing data collection from 400 services nationally, found that the lowest scoring domains were Processes (mean = 3.9), which included factors of partnership/engagement and training/support/supervision; and Outer Contextual Factors (mean = 3.9), which included factors of policy and legislation, and socio-political context. Conversely, Inner Contextual Factors (mean = 4.2), including factors of leadership/support and staffing turnover, and Characteristics of the Intervention (mean = 4.3), including factors of adaptability, benefits/need ranked the highest.

It is crucial to develop a comprehensive understanding of the factors that may impede or promote the ongoing delivery of an intervention in order to develop strategies to improve intervention sustainment in childcare settings. The development of these strategies informed by these factors will help guide the development of future interventions to support sustainment. This study suggests that 'Processes' and 'Outer Contextual Factors', may need to be considered when developing an intervention to support the sustainment of physical activity and nutrition interventions in childcare settings.

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Advancing Behavior Change Science

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MAY 18–21, 2022

ABSTRACT BOOK

OD2-04 Developing a Core Outcome Set for Early intervention trials to Prevent Obesity in Children (COS-EPOCH): results from an international e-Delphi study

Dr Vicki Brown[1,8], Prof. Marj Moodie[1,8], Ms. Marufa Sultana[1], Ms. Kylie Hunter[2,8], Dr. Rebecca Byrne[3,8], Dr. Anna Lene Seidler[2,8], Prof. Rebecca Golley[4,8], Prof. Rachael Taylor[5,8], Dr. Kylie Hesketh[6,8], Dr. Karen Matvienko-Sikar[7,8]
[1]Institute for Health Transformation, Deakin University, Melbourne, Australia, [2]NHMRC Clinical Trials Centre, University of Sydney, Sydney, Australia, [3]Queensland University of Technology, School of Exercise and Nutrition Sciences, Brisbane, Australia, [4]Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Adelaide, Australia, [5]Department of Medicine, University of Otago, Otago, New Zealand, [6]Institute for Physical Activity and Nutrition, Deakin University, Melbourne, Australia, [7]School of Public Health, University College Cork, Cork, Ireland, [8]Centre for Research Excellence in the Early Prevention of Obesity in Childhood, Sydney, Australia

SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: All

Purpose: Core Outcome Sets (COS) are agreed minimum sets of outcomes recommended for measurement and reporting in studies for specific health areas. This study describes the development of a COS for randomised controlled trials evaluating interventions for the prevention of obesity in 0-5 year olds (COS-EPOCH). A key step in COS development is to elicit views on the importance of potential outcomes from key stakeholders. This presentation outlines results from an international e-Delphi study aiming to understand the outcomes considered most important to key stakeholder groups (identified as parents/caregivers, policy-makers/funders, researchers, clinicians, community stakeholders).

Methods: The development of the COS follows the Core Outcome Set-STAndards for Development recommendations. A scoping review identified 128 outcomes that were examined in an e-Delphi study conducted between August and December 2021. The three round e-Delphi survey asked stakeholders to rate the importance of outcomes, where 1-3 signified an outcome that is 'not that important', 4-6 'important but not critical' and 7-9 'critically important'. Responses were analysed both within and between stakeholder groups and consensus was defined as >75% of participants in each group scoring the outcome as 'critically important' and <15% scoring the outcome as 'not that important'.

Results/findings: 206 participants completed Round 1 of the e-Delphi, with 141 completing Round 2. Round 3 closes in December 2021. By the end of Round 2 all stakeholder groups agreed that 'child time spent sedentary', 'child physical activity', 'child diet quality', 'child dietary intake', 'parent/caregiver role-modelling of healthy eating' and 'household food security' were critically important outcomes. Other outcomes, including 'child screentime' and 'child health-related quality of life' were rated as critically important by only some groups.

Conclusions: Final e-Delphi results will be presented to a stakeholder consensus meeting in early 2022 and the COS will be available for presentation at ISBNPA. The COS will provide trialists with recommended standardised sets of outcomes for early childhood obesity prevention interventions. A dissemination plan will encourage and support uptake of the COS, with the ultimate aim of facilitating evidence comparison and synthesis to better understand the effectiveness of early childhood obesity prevention interventions.

OD2-05 Parents' Perceptions of Children's Dietary Patterns During the Early Stages of the COVID-19 Pandemic in Ontario, Canada

Dr. Shauna Burke[1,4], Ms. Emilia Klassen[1], Ms. Anam S. Feroz[2], Prof. Jennifer D. Irwin[1], Associate Professor Danielle Battram[3], Katie J. Shillington[1]
[1]Western University, London, Canada, [2]University of Toronto, Toronto, Canada, [3]Brescia University College, London, Canada, [4]Children's Health Research Institute, London, Canada

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: The COVID-19 pandemic has resulted in numerous changes in the lives of children and families, including those related to the family food environment. The purpose of this study was to explore parents' perceptions of the impact of the COVID-19 pandemic on the foods and beverages provided to and consumed by their children during the early stages of the pandemic in Ontario, Canada.

Methods: An online survey was administered to eligible families in May and June 2020. A single open-ended question was used to understand parents' views regarding the impact of the COVID-19 pandemic on children's dietary patterns. Thirty parents (M_{age} = 44.7, SD = 4.4) of children between the ages of 7 and 14 were included in the study. The data were analyzed by two independent reviewers using an inductive, data-driven thematic approach.

Results: Four themes emerged from parents' responses pertaining to the food-related impact of the pandemic on their children: changes in family routines, shifts in child feeding responsibilities, changes in food preparation and family eating patterns, and changes in diet quality. Specifically, parents identified an overall lack of family routine during early stages of the pandemic, and a shift from mostly parent responsibility to an increased amount of child responsibility regarding the foods and beverages consumed in the home environment. Parents reported several changes in food preparation and family eating patterns such as more cooking and baking, the consumption of fewer foods and beverages from outside of the home, and an increased frequency in preparing and consuming family meals. Lastly, while some parents suggested that their children were consuming higher-quality foods at the beginning of the pandemic, others noted a greater availability of snacks, convenience foods, and 'comfort' foods in the home.

Conclusion: Interestingly, many of the nutrition-related changes identified by parents at the start of the pandemic (e.g., more family meals, greater child involvement) were viewed as positive. While the long-term impact of the COVID-19 pandemic on children's dietary patterns remains unknown, these findings could serve to promote healthy family food environments via the identification of effective nutrition-related strategies and behaviors, both currently and post-pandemic.

OD2-07 Maternal dietary quality in pregnancy and childhood eating behaviours at 5-years-old: Findings from the ROLO study.

Ms. Anna Delahunt[1], Prof. Fionnuala McAuliffe[1]
[1]*UCD Perinatal Research Centre, Dublin, Ireland*

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Introduction: Maternal dietary intake during pregnancy is an important determinant of birth outcome and offspring health. The impact of in-utero fetal programming on the relationship between maternal diet throughout pregnancy and eating behaviors in early childhood has not been extensively researched. This study examined associations between maternal dietary quality in early, mid and late pregnancy and childhood eating behaviours at 5 years old.

Methods: This is secondary analysis of data from the ROLO (Randomised cOntrol Trial of Low Glycaemic diet in pregnancy) longitudinal birth cohort study. Maternal diet quality was assessed in early, mid and late pregnancy using the Alternative Healthy Eating Index, modified for pregnancy (AHEI-P) (n=504). Children's eating behaviour was measured at 5 years old (n=306) using the Children's Eating Behaviour Questionnaire (CEBQ). One-way ANOVA was used to assess maternal and child characteristics across AHEI-P tertiles. Multiple linear regression, was used to examine associations between maternal AHEI-P score in each trimester and children's eating behaviours at 5 years old.

Results: Differences were observed between mothers age at delivery, maternal BMI at pregnancy booking and Deprivation Index across average AHEI-P tertile score, with those in the lowest AHEI-P tertile, being younger having a higher BMI at pregnancy booking and living in a less advantaged areas (p=<0.001, p=<0.001, p= 0.040) respectively. No differences were seen between child's BMI z-score at 5 years old across maternal AHEI-P tertiles. In adjusted linear regression analysis maternal AHEI-P score in trimester 1 and 2 were negatively associated with 'Desire to drink' (B=-0.035, 95% CI=-0.068, -0.002, p= 0.036; B=-0.033, 95% CI=-0.067,0.000, p=0.048). In trimester 2 only, AHEI-P score was negatively associated with 'Satiety Responsiveness' (B=-0.041, 95% CI= -0.081, -0.001, p=0.045). No associations were observed between maternal AHEI-P score in trimester 3 and children's eating behaviors at aged 5-year-old.

Conclusions: Pregnant women who were younger, had higher early pregnancy BMI and lived in less advantaged areas had poorer quality diets. Tailored dietary education targeting dietary quality in pregnancy, particularly in early pregnancy, and especially to this those younger and with higher BMI, may be an important first step in pre-programming appetitive traits in early childhood.

OD2-08 Maternal wellbeing and childhood eating behaviours at 5-years-old. Findings from the ROLO longitudinal birth cohort study.

Ms. Anna Delahunt[1], **Prof. Fionnuala McAuliffe[1]**
[1]UCD Perinatal Research Centre, Dublin, Ireland

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Introduction: Maternal anxiety or low mood during pregnancy and the pre-school years has been linked with childhood eating behaviors. This study investigated whether maternal wellbeing during pregnancy, at 2 and at 5 years postpartum was associated with childhood appetitive traits at 5 years old.

Methods: This is secondary analysis of data from the ROLO (Randomised cOntrolled trial of a LOw glycaemic diet in pregnancy) study. Maternal emotional wellbeing was measured mid-pregnancy, at 2 and 5-years postpartum using the WHO-5-wellbeing index. Childhood eating behaviours were measured at 5 years old using the Children's Eating Behaviour Questionnaire (CEBQ)(n=308). One-way repeated measures ANOVA was used to assess change in wellbeing over the three time points. Multiple linear regression was performed to examine associations between maternal wellbeing and children's eating behaviours at 5 years old. Regression models were adjusted for maternal BMI at delivery, child breastfeeding exposure, child age at 5-year follow-up, child sex, original RCT group and maternal education.

Results: The mean percentage score for maternal wellbeing mid-pregnancy was 58.17% (n= 618), at 2 years was 60.04% (n=269) and at 5 years 62.87% (n=348). Maternal wellbeing score was higher at the 5-year follow-up than in mid-pregnancy (p= 0.002). No associations were observed between maternal wellbeing mid-pregnancy and children's eating behaviours at 5 years old. In adjusted analysis, maternal wellbeing score at the 2-year follow-up was negatively associated with 'Emotional Overeating' (B=-0.102, p=0.023), Satiety Responsiveness (B=-0.193, p=0.007), Slowness to eat (B=-0.284, p=<0.001) and 'Emotional Undereating (B=-0.20, p=0.002) and positively associated with 'Enjoyment of Food' (B=0.203, p=0.003). At the 5-year follow-up maternal wellbeing score remained negatively associated with 'Satiety Responsiveness' (B=-0.128, p=0.023) and 'Slowness to Eat' (B=-0.128, p=0.015).

Conclusions: Wellbeing at 5 years post-partum was significantly higher than at mid- pregnancy, highlighting potential pregnancy related anxiety and how this may impact emotional wellbeing. Associations were observed at 2 years and 5 years postpartum between maternal wellbeing and childhood appetitive traits at 5 years old. Further research is required to explore further the role of maternal and paternal wellbeing and the development of childhood eating behaviours.

OD2-09 How prevalent are gender norms on adolescent boys' and girls' eating practices and motivation behind food choices?

Miss Alysha Deslippe[1,2], Ms. Patricia Angeles[1], Miss Narges Bouzari[1], Ms. Alicia Walch[1], Dr. Tamara Cohen[1,2]

[1]*Faculty of Land and Food Systems, University of British Columbia, Vancouver, Canada*, [2]*Healthy Starts, British Columbia Children's Hospital Research Institute, Vancouver, Canada*

SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Adolescent boys' and girls' eating practices diverge. Boys often report eating more high caloric foods like fast foods whereas girls report skipping more meals or consuming more fruits/vegetables. Literature suggests that food-related decisions (e.g., type, amount, or motivation behind consumption) partly differ due to gender norms. This includes pressure on body shape (e.g., muscular in men vs. thin in women), concern for health or future household roles (e.g., mothers leading food-related decisions). It is not clear to what extent gender norms impact adolescents' eating practices. Therefore, the purpose of this systematic review is to evaluate differences in boys' and girls' motivation and eating practices.

Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines, four electronic databases (i.e., MEDLINE, Psycinfo net, PubMed, and Web of Science) will be searched. Quantitative studies that describe trends in boys' and girls' eating practices (e.g., intake of fruit/vegetables, fast foods, and skipping meals) using representative population data will be considered. Qualitative studies exploring boys' and girls' motivation behind eating will also be considered. All studies must include adolescents (13-17 years) living without a diagnosed psychological disorder (i.e., depression), pregnancy or severe dietary restriction (i.e., Cronhs). Eligible studies will undergo data extraction and quality appraisal.

Results: Quantitative and qualitative findings will be grouped together by eating practice or motivation investigated. For example, all studies looking at fast food intake. Once complete, the totality of findings across studies will be used to explore differences between boys and girls. Dietary intake from each study will be converted and displayed in 'times consumed per day" to help facilitate comparisons across studies if enough information is available to do so. Qualitative studies will undergo deductive thematic synthesis of themes across studies. Findings will be discussed based on socio-demographic factors like income (high-income versus low-income countries).

Conclusions: Understanding how gender contributes to differences in boys' and girls' eating practices will help inform future dietary interventions. By considering gender, intervention strategies can be targeted to effectively address areas of improvement specific to boys or girls. This may have benefits on intervention relevance and likelihood of uptake.

OD2-11 Movement behaviours among British Columbian children: A comparison between boys and girls

Ms. Iyoma Edache[1], Dr. Eva Oberle[2], Dr. Guy Faulkner[3], Dr. Louise Masse[1]

[1]School of Population and Public Health, University of British Columbia, Vancouver, Canada, [2]School of Population and Public Health, Human Early Learning Partnership, University of British Columbia, Vancouver, Canada, [3]School of Kinesiology, University of British Columbia, Vancouver, Canada

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: It is well established that the transition from childhood to adolescence is associated with a myriad of changes in movement behaviours (i.e., sleep quality, screen time and physical activity). The deterioration in movement behaviours as children age differs by child sex. However, sex differences in movement behaviours during middle childhood have received less attention. The present study examined whether sex is a correlate of movement behaviours in grade 4 children.

Methods: This study is a secondary analysis of a population-level dataset collected with the Middle Years Development Instrument (MDI). The MDI is a self-report survey implemented in participating school districts in British Columbia, Canada to assess markers of positive youth development in grade 4 students (N= 51,248; 48.82% girls; aged 9.5+/- 0.65). Administered between 2015 and 2020, it measured the following movement behaviours: sleep quality, screen time, structured and unstructured physical activity. Multilevel mixed-effect linear models were used to examine sex differences in movement behaviours, after adjusting for school neighbourhood-level covariates (i.e., postsecondary education, income, and visible minority status) from the 2016 census data.

Results/findings: Sex was significantly correlated with all movement behaviours ($p < 0.0$). Compared to girls, boys reported fewer nights of quality sleep (β=-0.05) but spent more time engaging in unstructured physical activity (β=0.02), watching TV (β=0.11) and playing videogames (β=0.36). In terms of participation in structured physical activities, boys spent more time playing team sports (β=0.19) while girls spent more time playing individual sports (β=-0.05).

Conclusions: The identification of sex as a significant correlate of sleep quality, screen time and physical activity during middle childhood may have implications on the strategies used by interventions aimed at improving the movement behaviours of Canadian children in Canada by addressing sex differences. Gaining an understanding of the factors that predict movement behaviours and why it differs by sex of children would help develop better interventions.

OD2-12 Parental perceived barriers and preschoolers' movement behaviours during the COVID-19 pandemic

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Investigation of barriers from parents could help develop potential strategies to promote healthy lifestyle in children. During the coronavirus disease 2019 (COVID-19) pandemic, barriers to promote optimal lifestyle become more complex and multifaceted. This study aims to examine the associations between parental perceived barriers and movement behaviours (physical activity [PA], sedentary behaviour [SB], sleep) among preschoolers in Hong Kong during the pandemic.

Methods: From October to December 2020, 158 parents of preschoolers aged 3 to 6 years in Hong Kong responded to an online survey or a written questionnaire. Parental perceived barriers to child's movement behaviours were assessed by a series of questions, with a higher total score indicating a higher level of perceived barriers. Children's movement behaviours (PA, SB, sleep) were measured using the Parent-reported Preschool-age Children's Physical Activity Questionnaire. Generalised linear mixed models were used to examine the associations between parental perceived barriers and their child's movement behaviours.

Results: A total of 96 parents of preschoolers (4.3 ± 0.8 years, 47.9% boys) provided valid data on both parental perceived barriers and children's movement behaviours. Preschoolers spent 3.9 (± 2.3) hours on total PA per day, including 2.1 (± 1.6) hours of moderate-to-vigorous intensity PA (MVPA). They spent 5.1 (± 2.2) hours, 2.4 (± 1.7) hours, and 8.5 (± 3.1) hours on SB, screen time, and sleep per day, respectively. After adjusting for age, sex, and body mass index of parents and preschoolers, higher total scores of perceived barriers to PA were associated with less MVPA ($\beta = -0.04$, 95% confidence interval [CI]: -0.07 to -0.02) and total PA ($\beta = -0.03$, 95% CI: -0.05 to -0.01) of their child; perceived barriers to screen time was positively associated with preschoolers' SB ($\beta = 0.02$, 95% CI: 0.00 to 0.04) and screen time ($\beta = 0.05$, 95% CI: 0.02 to 0.08). No association was found between perceived barriers to sleep and preschoolers' sleep duration.

Conclusions: Relationships between parental perceived barriers and their child's PA and SB were found during the COVID-19 pandemic. Parental perceived barriers should be targeted to develop behaviour change interventions among preschoolers.

OD2-13 Relationship of BMI and Gut Microbiome in Latino and African American 4th and 5th Grade Students

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Objective: In (N=30; 54% male; 6.5% underweight; 38.7% normal weight; 32.3% overweight; 22.6% obese) predominately Latino (n=20) and African American (n=8) 4th and 5th grade students is there a relationship between BMI and gut microbiota? Understanding such relationships may be helpful in targeting interventions to ameliorate childhood obesity.

Methods: Measures included: Stool samples, body mass index percentile (BMIp), body fat percentage measured by bioimpedance, dietary fat, and physical activity as well as child perspectives on authoritative parenting measured by self-report. Subjects were given a prebiotic fiber (Inulin with oligofructose 4gm twice/school day in 4 oz. orange juice with calcium) for 12 weeks in addition to an 8 module Health Promotion/Transtheoretical Model online program in a school computer lab.

Imputations were done with R (R Core Team, 2018) package mice (van Buuren, & Groothis-Oudshoorn, 2011) and path analysis was used to analyze the data (Kline, 2016). Latent change scores were used to estimate the mean difference between time points. Microbiome data were analyzed using the vegan and ecodist packages in R 3.0.2. The Bray-Curtis dissimilarity index was used to assess differences between samples and results were visualized using hierarchical clustering (using Ward's method) and Non-metric Multidimensional Scaling Ordination (MNDS) plots. Statistical significance for differences in microbiome diversity between pre- and post- prebiotic treatment groups was determined using Adonis. Normalized data were then log-transformed to examine treatment-induced changes in the microbiome. Significance of the difference across the cohort was determined by one-sample t-test.

Results: Lower BMI was associated with lower pre-test BMI, the decrease in their stool Tenericutes and increase in their Actinobacteria (R^2 = 0.466 Change BMI = 0.667 -0.003*BMI_pre -2.603*Change_Tenericutes + 2.14*Change_Actinobacteria. Decrease in body fat was associated with higher pre-test body fat (R^2 = 0.600 Change_bodyfat = 27.032 + 0.746*Body_Fat_pre).

Conclusions: Identifying characteristics of those with changes in the microbiome will help to target those with best likelihood of improvement with this type of intervention. Prebiotics that foster healthy body composition could be considered for inclusion in culturally acceptable foods.

OD2-14 Time for Healthy Habits: a translation trial investigating the effectiveness of remotely delivered healthy eating and active living interventions for parents of 2- to 6-year-old children

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Establishing healthy behaviours in the early years is crucial to reduce the risks of obesity and chronic disease in later life. Evidence demonstrates that interventions targeting parents are more successful than those targeting only children. This translation study, Time for Healthy Habits, expands on previous two previous randomised controlled trials. The study investigated the effectiveness of the Healthy Habits Plus (telephone) and the Time2bHealthy (online) parent-focused interventions compared to an active control in improving fruit and vegetable intake, non-core food intake, body mass index, physical activity, screen time and sleep in 2- to 6-year-old children. A partially randomised preference trial design was used, recruiting 458 parents. In the initial phase of the study, participants were offered the option to choose their preferred intervention. The three intervention groups included Healthy Habits Plus, which involved six telephone calls, Time2bHealthy which involved six online modules, and an active control which included ten information sheets and a summary booklet. Parents completed a telephone questionnaire at baseline and follow-up (9 months post-baseline). The main analysis was on randomised participants alone (n = 240). Analyses were also conducted for preference participants (n = 218), and all participants combined (n = 458). Of the participants who were offered the option to choose their preferred intervention, 89% decided to choose their intervention. Of these, 10% chose the telephone intervention, 61% the online intervention, and 29% chose the written (control) intervention. When compared to the control group, no significant improvement in fruit and vegetable intake (primary outcome) was found for the telephone and online interventions. There was however a significant improvement found in non-core food intake for the telephone intervention participants in the randomised and all participants analyses when compared to the control group. In conclusion, although the majority of participants who were offered a preference chose the online intervention, the most positive results were achieved for the telephone intervention. While no improvement in child fruit and vegetable intake was found for either intervention compared to the control, there was a relative improvement in non-core food intake for the telephone intervention participants in the randomised analysis.

OD2-15 Movement behaviors during COVID-19. A cross-sectional survey among children under five years of Latin American origin or descent from Chile, Mexico, and the US

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Latin American/Latino children face a disproportionate burden from COVID-19. Understanding the impact on their physical activity, sedentary behavior (including screen time) and sleep can provide important information to help promote these behaviors during and post-pandemic. This study aims to report changes in and factors influencing physical activity, sedentary behavior and sleep during COVID-19 among Latin American/Latino children aged 1 to 5 years in Chile, Mexico, and the USA.

Methods: This was a cross-sectional study conducted between April and August 2020 using an open online survey completed by caretakers of children aged 1-5 years. Caretakers were eligible if they resided in one of the survey countries and their children were aged 1 to 5 years. Recruitment occurred via e-mail invitation and social media. The questionnaire enquired about the time spent in each movement behavior during a regular week before and during lockdown, and family and household characteristics, including parental rules around screen time use and access to devices. Changes in meeting World Health Organization global guidelines for physical activity (PA), screen time (ST) and sleep for children under the age of 5 were estimated. Factors associated with changes in movement behaviors were explored using adjusted linear regression models.

Results: A total of 4,136 children (mean age [SD], 3.1 [1.4] years; 51% boys) were included. The proportion of children who met the WHO Guidelines decreased significantly in all countries, with large declines in meeting the physical activity and screen time guideline. Factors associated with changes were being an older child, unable to attend an early childhood education and care service, higher parental education levels, not having the opportunity to play with someone, and not having access to spaces to play.

Conclusions: During COVID-19, Latino parents reported changes in physical activity, screen time and sleep quality among their toddlers and preschoolers. The findings highlight the need to minimize disparities faced by families in Latin America and Latino communities in the US through providing access to early childhood education and care and safe places for children to play.

OD2-16 Parental uptake of a maintenance intervention after children's health camp: self-efficacy as a key factor

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

In Denmark, 990 7-14-old children with social, physical, and mental health challenges attend a 10-week health camp (Danish Christmas Seal House, DCSH) each year to improve life satisfaction and/or obtain a healthier weight. It is challenging for the children to maintain the good results from the camp when returning to their homes and therefore the DCSH developed a 10-week maintenance intervention.

In this study, we identified key areas for parental uptake of the intervention.

The maintenance intervention was delivered by four intervention coordinators from the DCSH. It involved both parents and child and focused on the specific challenges the family faced when the child returned to their home environment.

We conducted a workshop with intervention coordinators and a case study in three different families involving seven observations of home visits and nine interviews with children, parents, and intervention coordinators.

Data were analyzed as a thematic analysis and inspired by principles from collaborative data analysis.

Parents' uptake of the intervention was related to their self-efficacy for supporting their child maintain healthy behavior changes.

The parents in the three families showed different levels of self-efficacy:

In one family, the intervention coordinator arranged specific offers e.g., in the municipality for the child to maintain behavior change. The parent showed low levels of self-efficacy but saw how these initiatives had a positive influence on the child and increased her own self-efficacy to arrange similar initiatives for her child.

In a second family, the parent showed medium levels of self-efficacy. The intervention coordinator gave the parent manageable tasks to maintain the child's behavior change and thereby increase the parent's level of self-efficacy to support her child.

A third parent showed high levels of self-efficacy and believed they could support their child's behavior change without help from the intervention coordinator.

Parental self-efficacy for maintaining healthy behavioral change in their child, appeared to be a key factor for successful parental uptake of the maintenance intervention after a 10-week health camp. It is important to tailor the maintenance intervention to the parents' level of self-efficacy to support them in supporting their children and increase their self-efficacy where needed.

OD2-17 School Bag-Related Factors and Their Implications for Walking and Cycling to School among New Zealand Adolescents

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Excessive school bag weight may be a modifiable barrier to adolescents' active transport to school (ATS). This study examined correlates of school bag weight and adolescents' perceptions of excessive school bag weight for walking and cycling to school among New Zealand adolescents living in diverse settlement types.

Methods: Adolescents (n=1,512) from 17 of 27 secondary schools in the Otago region of New Zealand completed a school bag questionnaire. Of these, 1,115 had their school bag weighed and 985 had their body weight measured. Correlates of adolescents' relative school bag weight and their perceptions of excessive school bag weight were examined using linear mixed models.

Results: Average school bag weight was 5.2±1.9 kg (8.9±3.5% of adolescents' body weight). Most adolescents carried a backpack (92.1%), on both shoulders (85.3%), for 1.4±1.2 hours/day. One-third perceived their school bag to be too heavy for walking (31.2%) or cycling (37.2%) to school, and 57.7% reported pain symptoms and/or fatigue arising from carrying their school bag. Compared to motorised and mixed transport users, ATS users carried lighter school bags (active: 4.8±1.8 kg; motorised: 5.3±1.9 kg; mixed: 5.4±2.0 kg; p<0.05). Positive correlates of relative school bag weight were female gender (regression coefficient (95%CI): 0.53 (0.13, 0.93)) and underweight (2.21 (1.39, 3.02)) whereas negative correlates were Māori ethnicity (-0.87 (-1.41, -0.32)), overweight (-1.84 (-2.35, -1.34)) and obesity (-3.57 (-4.26, -2.87)), and school location in small urban areas (-2.10 (-4.19, -0.01)) and rural settlements (-3.58 (-5.66, -1.49)). Older adolescents, females, those with greater relative school bag weight, and those experiencing school bag-related pain symptoms and/or fatigue were more likely to report excessive school bag weight for both walking and cycling to school. Physically active adolescents were less likely to report excessive school bag weight for walking to school compared to their less physically active peers (-0.03 (-0.05, 0.00)).

Conclusions: Excessive school bag weight for secondary school students is a significant issue and represents one of the barriers to ATS among New Zealand adolescents. More attention needs to be given to reducing excessive school bag weight (both actual and perceived), particularly in female and urban adolescents.

OD2-18 Child versus maternal/household characteristics as predictors of unhealthy snack food intake during infancy and toddlerhood

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Snacking begins early in life and contributes significant amounts of overconsumed nutrients, but little is known about the drivers of snack food intake during early childhood.This study examined child versus maternal/household characteristics as predictors of unhealthy snack food (high in overconsumed nutrients) intake during infancy and toddlerhood.

Methods: A secondary analysis was conducted using baseline data from an ongoing longitudinal feeding intervention including 141 mothers with infants and toddlers (9 to 15 months). Three 24-hour child dietary recalls were collected, and USDA food classifications were used to categorize unhealthy snack foods (e.g., cookies, cakes, chips, melts). Frequency of (times/day) and total energy from (kcal/day) snack foods were calculated. Mothers reported sociodemographics, child temperament (Infant Behavior Questionnaire-Revised), and child eating behavior (Baby Eating Behaviour Questionnaire). Hierarchical multivariable regression examined child (step 1: age, sex, baseline weight-for-length z-score (WFLz), temperament, eating behavior) and maternal/household (step 2: maternal age, pregnancy BMI, number in household, total months breastfeeding, age of solid food introduction) characteristics as predictors of snack food intake (frequency, total energy).

Results/findings: Mothers were on average 32.6 ± 4.4 years old, white (78%), and college graduates (87%). Unhealthy snack foods were consumed 1.3 times/day contributing 7.3% of total daily energy. Maternal prepregnancy BMI (B = 0.03, SE = 0.01, p= 0.03), number in household (B = 0.26, SE = 0.10, p= 0.02), and age of solid food introduction (B = -0.19, SE = 0.10, p= 0.04) were the only significant predictors of the frequency of snack food intake. Infant WFLz (B = 19.8, SE = 9.40, p= 0.04), number in household (B = 30.79, SE = 8.14, p= 0.0002), and age of solid food introduction (B = -0.15, SE = 7.9, p= 0.04) were the only significant predictors of total energy from snack food intake.

Conclusions: Current US dietary guidelines recommend avoiding foods with added sugars and higher sodium before 2 years old. Findings show that unhealthy snack food intake is more closely associated with maternal/household characteristics versus child characteristics. Additional research is needed to understand

broader family influences on snacking behaviors during early childhood when eating behaviors are established.

OD2-19 Investigating Diet, 24-Hour, and Indicators of Mental Health among Children and Youth

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: All

Purpose: To investigate the associations between objectively measured 24-hour movement behaviours, healthy and unhealthy dietary patterns, and indicators of mental health among a sample of children and youth living in Northeastern Ontario.

Methods: This study incorporated elements of community-based participatory research and used a convenience sample of children and youth (n = 58, 56.9% female) in grades 5 to 8 (M_{age} = 11.81 years) from one school in Northeastern Ontario. To assess 24-hour movement, participants wore the GENEActiv Original accelerometer on their non-dominant wrist for 7 consecutive days. Movement behaviour variables included minimal-intensity PA (minPA; a correlate of SB), LPA, MVPA, and sleep. Healthy and unhealthy dietary pattern scores were derived from a participant-completed food frequency questionnaire. The mental health indicator was the total difficulty score (TDS) derived from the Strengths and Difficulties Questionnaire.

Results: Pearson bivariate correlation analyses were performed between average time in LPA, MVPA, minPA, sleep, and unhealthy and healthy diet scores, with TDS. Correlation analyses revealed unhealthy diet scores were significantly associated with TDS**,** r = 0.486, $p < .0001$, as were healthy diet scores, r = 0.285, $p = .030$. LPA, MVPA, SB, and sleep were not associated with TDS (LPA: r = -0.053, $p = .694$; MVPA: r = -0.149, $p = .266$; SB: r = -0.028, $p= .834$; sleep: r = 0.179, $p = .179$). Robust multiple linear regression assessed which variables predicted TDS. Due to issues with multicollinearity, SB was removed from the regression analysis. Robust regression revealed the unhealthy diet score was the strongest predictor of TDS in this sample, β = .44, $p = .003$, followed by average time in MVPA, β = -.33, $p = .045$. Collectively, LPA, MVPA, sleep, healthy diet, and unhealthy diet accounted for 23% of the variation in TDS, $R^2_{adj} = .23$.

Conclusions: Policy, practice, and theory aimed at improving children and youth's mental health should target both movement and diet simultaneously. Within the school context, a whole school approach should be used to apply findings from this research and design initiatives that have a meaningful impact on child and youth mental health.

OD2-20 Socio-demographic and parental correlates of adherence to the no-screen guideline at 2 years: the ELFE birth cohort

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Sedentary Behavior

Background: Excessive screen viewing in infancy and childhood has been associated to consequences on children's development and health. International guidelines call for no screen time before 2 years old. In France, the most prominent guidelines recommend no screen exposure before age 3 years. There is, however, little available data on parental adherence to the no-screen guideline and its correlates in France. We aim to assess the adherence to the no-screen guideline at age 2 years from the French nationwide Étude Longitudinale Française depuis l'Enfance (ELFE) birth cohort. We further aim to investigate how socio-demographic characteristics, parental cultural practices and parental screen viewing time (SVT) predict adherence to the guideline.

Methods: At age 2 years, screen exposure of 13,117 toddlers was reported by their parents in phone interviews. Data on socio-economic and demographic characteristics, parental cultural practices and parental screen viewing time were collected from mothers and fathers. Multivariable logistic regression models were used to examine the associations of socio-economic characteristics, and parental cultural practices with adherence to the no-screen guideline at age 2 years. To assess the role of socio-economic characteristics independent of parental SVT, we stratified analyses on parental SVT.

Results: Adherence to the no-screen guideline was found in 13.5% of respondents. Socio-economic characteristics such as maternal age below 40 years, low parental educational attainment, single-parent household and migration status were associated with lower adherence to the no-screen guideline. Parental cultural practices involving reading were associated with increased adherence (mothers: aOR=1.15; 95% CI=1.08-1.22; fathers: aOR=1.15; 95% CI=1.07-1.23), while cultural practices involving screens were associated with lower likelihood to adhere to the guideline (mothers: aOR=0.73 ; 95% CI=0.69-0.77 ; fathers : aOR=0.81 ; 95% CI=0.76-0.87). In mothers with higher SVT, adherence to the guideline was lower regardless of socio-economic characteristics. In fathers with higher SVT, unfavourable socio-demographic characteristics were associated with much lower adherence to the guideline.

Conclusions: Adherence to the no-screen guideline at 2 years in France was low. Parental cultural activities and parents' SVT are major correlates of adherence to the no-screen guideline and could be considered in targeted public health interventions.

OD2-21 Association between Objective and Perceived Measures of School Neighbourhood Built Environments and Active Transport to School in New Zealand Adolescents

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: The school neighbourhood built environment significantly influences active transport to school (ATS) among adolescents. However, little is known about the association between objectively measured and perceived built environment features in school neighbourhoods and adolescents' ATS rates. The study compared objectively measured and perceived built environment features of school neighbourhoods and examined their association with ATS rates in adolescents.

Methods: Adolescents (n=95; <16 years of age: 68.4%; 58.9% female) who participated in mapping sessions from 11 schools located in small-to-medium urban areas and rural settings in Otago, New Zealand, and were familiar with school neighbourhood environments and living within 4.8 km of their school were included in this study. Adolescents reported their perceptions of the school neighbourhood using a modified version of Neighbourhood Environment Walkability Scale for Youth questionnaire. Objectively measured built environment features were generated using Geographic Information Systems (GIS) based spatial analysis.

Results: Compared to small-to-medium urban areas, objectively measured intersection density was higher, whereas neighbourhood walkability was lower in rural settings. Perceived measures of school neighbourhood built environment features, including land use mix diversity and recreational facilities were higher, whereas land use mix accessibility was lower in rural settings compared to small-to-medium urban areas (all $p<0.05$). In a multivariate analysis, perceived residential density (odds ratio (95% CI): 0.17 (0.04, 0.82)) and traffic safety concerns (0.13 (0.02, 0.95)) were negatively associated with adolescents' ATS rates after adjusting for individual-level correlates, including age and gender. Objectively measured home-to-school distance was also negatively associated with ATS rates after adjusting for individual-level correlates (age and gender) (0.27 (0.13, 0.57)).

Conclusions: School neighbourhood built environment features, including residential and intersection density, neighbourhood walkability, land use mix diversity, recreational facilities, and land use mix accessibility differ significantly between small-to-medium urban areas and rural settings. Future initiatives should consider both objectively measured and perceived school neighbourhood built environment to promote active transport to

school among adolescents because different aspects of the school neighbourhood built environment are captured by the different measures and are often associated with each other.

OD2-22 Patterns of children's screen time, parent-child interactions, and cognitive development in early childhood: A pilot study

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Sedentary Behavior

Purpose: The purpose of this pilot study was to examine: 1) patterns of screen time use in preschool-aged children, 2) the correlations between total duration, patterns of screen time and cognitive development, and 3) the differences in quality of parent-child interactions for two screen-based tasks and a storybook reading task.

Methods: Participants included 44 children aged 3 years and their parents. A 2-week online daily diary was used to assess total duration and patterns of children's screen time (i.e., type, device, content, context). Demographic information was measured using a parental questionnaire. Different domains of children's cognitive development including working memory, self-control, inhibitory control and language were assessed using virtually administered tests during a recorded Zoom session. Parent-child interactions during video, electronic game, and storybook reading tasks were also measured virtually through a separate recorded Zoom session (n = 42). The Parent-Child Interaction System (PARCHISY) was used to determine the quality of the parent-child interactions. Descriptive statistics, Spearman's Rho correlation, and a one-way repeated measures ANOVA with a post-hoc Bonferroni test were conducted.

Results: On average, children spent 103.5 minutes/day engaged in screen time, including 88.7 minutes/day watching a show/movie/video, 7.3 minutes/day playing an electronic game,14.2 minutes/day engaged in educational screen time and 48.1 included co-using with an adult. After adjusting for child age and parental education, medium effect sizes were observed for total screen time (rs=-0.32; p=0.056), show/movie/video viewing (rs=-0.32; p=0.056) and working memory. Educational screen time was significantly positively correlated with vocabulary (rs = 0.38; p = 0.02) and co-use was significantly negatively correlated with self-control (rs= -0.32; p = 0.05). No other significant associations or medium to large effect sizes were observed. Finally, the quality of parent child interaction scores was significantly different between all the three tasks, with the electronic game having the highest quality score and the video having the lowest quality score.

Conclusions: The association between screen time and cognitive development varied by pattern of screen time and domain of cognitive development. Additionally, the quality of parent-child interactions differed between tasks. Findings should be confirmed in larger, more generalizable sample.

OD2-23 Effects of the COVID-19 Pandemic on Physical Activity in Children: A Systematic Rapid Review

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: Prolonged lockdowns, put in place to mitigate the spread of COVID-19, may have altered physical activity (PA). The goal of this systematic rapid review was to synthesize the global impact of the COVID-19 pandemic on PA of children by addressing: the types of PA children participated in, the extent to which PA of children changed, and the biological, social, and environmental factors that affected changes in PA.

Methods: Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines were used to conduct a database search on 03/29/2021. Included studies were peer- reviewed, in English language, and encompassed both a measure of PA during the COVID-19 pandemic and PA data for children aged 18 and younger. The database search yielded 677 unique citations and, ultimately, 69 articles were included in the review.

Results: During the COVID-19 pandemic, frequently reported PA included walking, unstructured play, and virtual PA through online platforms. Of the articles that reported changes in PA of children during the COVID-19 pandemic, 89% reported PA (e.g., frequency, intensity, duration, or the percentage of children who met PA recommendations) of children decreased. Boys, younger children, children who lived with other children, and children with more outdoor play space had higher levels of PA.

Conclusions: The COVID-19 pandemic resulted in decreased PA among children around the world. The results of this review may be helpful in identifying barriers and facilitators to PA in children during the COVID-19 pandemic. Future work in policy and program development is needed to target PA of children beyond the COVID-19 pandemic.

OD2-24 Learned experience and resource dilution: A family systems approach to understand sibling feeding practices

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Firstborn (FB) children have higher rates of obesity than secondborns (SB) perhaps due to differential feeding, yet little is known about how mothers vary their feeding practices with subsequent children in early childhood. Family systems processes of learned experience and resource dilution may offer a potential explanation. Learned experience suggests that parents learn from their experiences parenting their FB, which has effects on SBs. Resource dilution suggests that siblings compete for parents' time, energy, and financial resources, which may impact parenting quality. The aims of this study were to understand how mothers 1) applied what they learned when feeding their FB to feeding their SB and 2) experienced a dilution of established feeding practices with their FB after birth of their SB.

Methods: A purposive sample of mothers from the INSIGHT RCT with a SB child who participated in an observational study, SIBSIGHT (n=30) were recruited to participate in retrospective semi-structured interviews about feeding their children during infancy and toddlerhood. Mothers described contextual factors that contributed to learning and/or dilution in feeding. Interviews were audio-recorded, verbatim transcribed, and coded in Dedoose following a directed inductive and deductive content analysis approach.

Results/findings: Mothers were predominantly white, non-Hispanic, married and had incomes >$50,000. Themes related to learned experience included 1) Use what worked for the FB, 2) Knowledge vs. application in feeding, and 3) It's not so scary the second time. Themes related to resource dilution included 1) Changes in feeding practices after birth of a SB, 2) Survival mode, and 3) I didn't have to do it by myself. Findings suggest that various home environment and psychosocial factors (e.g., household chaos, social support) are critical to understanding the learned experience and resource dilution processes in feeding.

Conclusions: Our preliminary findings highlight a need for future research and programs to utilize family systems processes to support learning and protect against dilution of feeding practices with second and laterborn children. These processes are key to moving beyond a focus on one child per family, thus optimizing responsive feeding practices and reducing obesity risk within entire families.

OD2-25 Proportion of children in the North Pacific Region meeting guidelines for physical activity, recreational sedentary screen time and sleep.

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sleep

Purpose: Little international data are available on the movement behaviours of children aged 5-9 years. This study aimed to estimate the proportion of children in the North Pacific region who met guidelines for physical activity, recreational sedentary screen time (ST) and sleep.

Methods: Cross-sectional data were drawn from the Children's Healthy Living Program. Participants included 943 children living in eleven jurisdictions within four countries of the North Pacific Region. Data were collected between 2012 and 2014. Wrist-worn Actical accelerometry data were used to calculate the time spent in sleep, moderate- to vigorous-intensity physical activity (MVPA), and parent reported surveys were used to determine ST and collect parent and child sociodemographic data. Data were reported as the percentage of children meeting the international guidelines on 24-hour movement behaviours for children and adolescents (aged 5-17 years) for MVPA, sleep and ST (MVPA: >=60 min/day; sleep: >=9 hours/day; ST: <=2 hours/day).

Results/findings: Within the region, 29.6% (95% Confidence Interval 26.7-32.5) of children met all three guidelines for MVPA, ST, and sleep. The proportions of boys and girls meeting all three guidelines were 26.7% (22.7-30.7) and 32.5% (28.3-36.7), respectively. Approximately 98.0% (97.1-98.9) of children met the MVPA guideline, 85.9% (83.7-88.1) met the sleep guidelines and 34.3% (31.3-37.3) met the ST guidelines. The sleep guideline was met by 85.1% of boys and 86.7% of girls, ST guideline by 31.6% of boys and 36.9% girls, and MVPA guideline by 98.9% of boys and 97.0% of girls. The proportion of children from high-income countries that met all three guidelines was 22.8% (19.4-26.2), compared to 40.5% (35.5-45.5) for middle-income countries, with the largest variation occurring for the ST guideline (26.6% versus 46.6%).

Conclusions: The majority of children in the North Pacific Region are not meeting all three international guidelines for MVPA, ST and sleep. Additionally, only 34.3% of children are meeting the ST guideline, which is

considerably lower than that for sleep and MVPA. Future research should focus on ways of reducing screen time in both boys and girls, especially in the North Pacific Region.

OD2-26 The Effect of Physical Activity on Quality of Life in and Parenting Stress in Children with Attention-Deficit / Hyperactivity Disorder: A randomized controlled trial

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Poorer quality of life (QoL) is commonly observed in children with Attention-deficit/Hyperactivity Disorder (ADHD) compared to children with typcial development. Parents of children with ADHD also perceived elevated levels of parenting stress (PS). Previous research has documented the positive effects of physical activity (PA) on ADHD symptoms and specific aspects of functioning (e.g., behavioral, executive). Considering that high parenting stress may further exacerbate the child's symptoms, it is critical to implement ADHD management with broader functioning from both children and parents' perspectives. This study aimed to examine whether a 12-week PA intervention would exert an influence on the QoL of children with ADHD and the PS of their parents.

Methods: Forty-three eligible participants (mean age = 8.8±1.43, 34 boys) diagnosed with ADHD were randomly assigned to PA intervention and control group. QoL of children with ADHD was measured by parent-reported Pediatric Quality of Life (PedsQL^{TM} Generic Core Scales). Parents of the participants also completed the Parenting Stress Index–Short Form (PSI-SF-15). All assessments were conducted before and immediately after the 12-week intervention program. Repeated measures ANCOVA with a 2 (Group: PA vs control) × 2 (Time: pre-test vs post-test) factorial design was used to detect the effect of the PA intervention on QoL and PS outcomes after controlling for age, gender, BMI, ADHD-subtype, and medication use.

Results: The main effect of Group showed that participants in PA intervention group exhibited higher levels of psychological functioning of QoL compared to those of control group ($p = 0.006$, $\eta^2 = 0.199$). Group × Time interaction effects on parenting stress were found to be significant. Specifically, parents of children in PA group reported decreased score on dimensions of parental distress ($p = 0.046$, $\eta^2 = 0.112$) and perceived difficult child ($p = 0.023$, $\eta^2 = 0.142$) after the intervention. No significant main or interaction effects were reported on QoL.

Conclusions: The findings of this study suggest that PA interventions may impact positively on QoL in children with ADHD and PS perceived by their parents.

OD2-27 How do people feel while walking in the city? Using walking-triggered e-diaries to investigate the relevance of social interaction and environmental greenness on everyday walking routes.

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Light to moderate physical activity, which includes walking, is associated with positive effects on physical and mental health. However, concerning mental health, social and physical environmental factors are likely to play an important role. This study aims to investigate person-x-place interactions between environmental characteristics (greenness, social interaction) and momentary affective states. A within-subject design is implemented, in which momentary affective states and environmental characteristics are assessed while participants are walking outside.

Method: On smartphones, coupled with a motion sensor (move3), e-diaries were triggered as soon as people walked 100m outside. E-diaries assessed momentary affective states (valence, calmness, energetic arousal), and social interaction (walking alone; seeing other people while walking; interacting with other people; walking with a known person)) between 6 am and 10 pm over 9 days. The percentage of greenness was determined afterward from recorded GPS and GIS data. Demographics were collected in advance via an online questionnaire. Multilevel models were calculated with R for 46 individuals (Ø age = 41.2, ±13.2; 52% female).

Results: The momentary affective state dimension energetic arousal showed a significant association with social interaction, i.e., participants rated energetic arousal lower while walking alone vs while walking and having interacted with other people. Furthermore, associations with greenness were found: the higher the proportion of surrounding greenness during a walk, the higher calmness was rated, i.e., participants were calmer. Associations with valence were not present.

Conclusion: The findings indicate that the relationship between walking and momentary affective states is moderated by social and physical environmental factors. In the future, the importance of environmental factors should be further investigated. Within-subject designs, and in particular triggered assessments with the addition of GPS, can aid in developing interventions for health-promoting urban environments.

OD2-28 Implementation of food environment policies by the European Union and priority recommendations to create healthy food environments

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: Food environments have an important impact on population diets, obesity and non-communicable diseases (NCDs). Government policies are essential to create healthy food environments. Currently, it is largely unknown to what extent the European Union (EU) has implemented food environment policies and how these policies could be improved to create healthy food environments. This study aimed to assess the strength of EU-level policies, and identify and prioritize actions for the EU to create healthy food environments in EU Member States.

Methods: The Healthy Food En-vironment Policy Index (Food-EPI) was adapted and applied. The Food-EPI included 26 food environment related policy indicators (e.g. price policies) and 24 infrastructure support indicators (e.g. monitoring). Independent food and health experts (n=31) rated the strength of EU-level policies and infrastructure support for each of these indicators (on a 5-point scale, from very weak to very strong) of which we calculated the mean score to determine the strength. Furthermore, experts identified actions to improve food environments in EU Member States and ranked these actions on importance, achievability and pro-equity. The highest prioritised policy and infrastructure actions were identified by summing the ranking scores for each action. A lower sum score indicated a higher perceived priority.

Results: For 65% of the 26 policy indicators, EU-level policies were rated as weak and for 23% as very weak. For 63% of the 24 infrastructure support indicators, EU-level policies were rated as moderate and for 33% as weak. The experts recommended 18 policy and 19 infrastructure support actions to the EU. The Top 5 prioritised policy actions included three actions in the food composition domain (e.g. setting mandatory food composition targets), one action in the food prices domain and one action in the food promotion domain. The Top 5 prioritised infrastructure support actions included three actions in the leadership domain (e.g. developing a high-level NCDs Prevention Strategy) and two actions in the monitoring domain.

Conclusions: There is large potential for the EU to strengthen its policies and infrastructure support in order to improve food environments. This study specifies priority actions for the EU to create healthy food environments.

OD2-29 Associations between parent's perceived neighbourhood environment and objectively measured walkability with their children's physical activity

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: The primary purpose was to examine associations between perceived and objective neighbourhood features and children's parental-reported and pedometer-derived physical activity. The secondary purpose was to examine whether season or socioeconomic status modified these associations.

Methods: Participants for this cross-sectional study were 641 parents and their children (6-10 years) from the Spatial Health Assessment of Physical Environments (SHAPEs) of Things to Come project in Edmonton, Canada. Parents completed the Neighborhood Environment Walkability Scale – Abbreviated. Walkability was also objectively measured at 400 m, 800m and 1200m around the centroid of participants' postal codes. Children's physical activity was measured via StepsCount (SC-T2) pedometers and parental-reported using modified items from the Children's Leisure Activities Study Survey. Regression analyses were performed with interaction terms for season based on date of questionnaire completion and area-level socioeconomic status based on a net educational difference score Multiple imputation was used for missing steps data (n = 192).

Results: Higher perceived residential density was associated with less steps per day (B= - 12.40, 95%CI: -20.8, -4.0). Higher perceptions of traffic hazards were significantly associated with lower square-root transformed parental-reported physical activity (B=-0.42, 95%CI: -0.8, 0.0). Higher perceived aesthetics was associated with higher square-root transformed parental-reported physical activity (B=0.39, 95%CI: 0.0, 0.8). Among participants from higher SES neighbourhoods, higher perceptions of physical barriers was significantly associated with higher steps per day (B=756.89, 95%CI: 84.8, 1429.0), the association was opposite for participants in lower SES neighbourhoods. During winter months, better perceived infrastructure and safety for walking was associated with higher square-root transformed parental-reported physical activity (B=1.90, 95%CI: 0.4, 3.4), the association was opposite in the other months (Spring/Summer/Fall). No other significant associations emerged.

Conclusion: It appears parents' environmental perceptions of their neighbourhood may be more important for their child's physical activity than objectively-measured walkability. Based on these parental perceptions, it may be important to incorporate traffic calming measures (e.g., lower speed limits) and aesthetics (e.g., street trees, natural sights) in new and existing neighbourhoods as well as adequate play spaces in neighbourhoods

with high residential density to increase children's physical activity. Few associations were modified by season or SES.

OD2-30 The perceived availability of food environments around school neighbourhoods among New Zealand adolescents

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Adolescents' perception of the food environment in their school neighbourhood may be associated with the purchase and consumption of energy-dense snack food and soft drinks during their school journey, and obesity. This study examined New Zealand adolescents' perceptions of the availability of food outlets and food advertising in their school neighbourhood.

Methods: Adolescents (n=394; age: 14.9±1.2 years, 62% females) from six secondary schools in Dunedin city, New Zealand, who were "somewhat familiar" or "very familiar" with their school neighbourhood completed the BEATS-Natural Experiment study online survey in 2020–2021. They reported their perceptions of food outlets and food advertising in their school neighbourhood and their mode(s) of transport to school; frequency of snack food and soft drink purchase/consumption during the school journey; and frequency of snack food, soft drink, and fast food consumption during the week.

Results: Overall, 74.9% perceived their school neighbourhood to have many food outlets. A higher proportion of these adolescents compared to those who did not perceive many food outlets were available in their school neighbourhood consumed fast food (p=0.002) or snack food during the week (p=0.032), while a lower proportion reported purchasing/consuming soft drinks during the school journey (p=0.004). In this sample, 58.2% of adolescents reported being aware of food advertising in their school neighbourhood, and a higher proportion of these adolescents consumed energy-dense snacks during the week (p=0.029) compared to those who did not perceive there to be food advertising in their school neighbourhood. Adolescents' perceptions of food outlets and food advertising in their school neighbourhood did not differ by frequency of soft drink consumption during the week or snack food purchase/consumption during the school journey or by their modes of transport to school (active/motorised/mixed).

Conclusions: Most adolescents perceived there were many food outlets and food advertising in their school neighbourhood. Weekly snack food and fast food consumption were higher, and soft drink purchase/consumption during school journey was lower among those who perceived high availability of food

outlets. Limiting the presence of unhealthy food outlets in school neighbourhoods should be considered to address unhealthy dietary habits in adolescents.

OD2-31 Nutrition and physical activity policy environment in five European countries: lessons from the CO-CREATE project

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Nutrition and physical activity policies play a key role in creating environments where healthy behaviours are the easiest ones. The CO-CREATE project investigates how policy changes can support healthy eating and an active lifestyle with the aim of halting the rise of adolescent obesity rates. As part of this project, this research aims to assess the physical activity and nutrition policy environment in 5 European countries participating in CO-CREATE: Netherlands, Norway, Poland, Portugal and the UK.

Methods: Nutrition and physical activity policies were benchmarked using the NOURISHING and MOVING benchmarking tools, which are structured around the NOURISHING and MOVING policy frameworks. They value the strength of policy design, based on evidence-informed and aspirational attributes of effective policy-making that impacts health-related behaviours, and capture policy focus on adolescents. Relevant policies in each participating country were identified based on a comprehensive scan, with a set methodology.

Results: The benchmarks assessed the strengths and weaknesses in the design of policies across the policy areas of the NOURISHING and MOVING policy frameworks. They produced an overall assessment of policy environments for nutrition and physical activity, as well as an assessment of each individual policy area within the frameworks. As such, they identified where there was scope for improvement within a policy area and across the policy environment. For example, the tools helped evaluate the design of health-related food taxes and policies promoting active transport in the 5 countries and allowed a cross-country comparison of these policies. When comparing the overall policy environment across all countries, we found a lack of policies promoting access to open and green spaces and weaknesses in designing restrictions on marketing unhealthy foods to children.

Conclusion: The NOURISHING and MOVING benchmarking tools produce an overall assessment of policy environments for nutrition and physical activity. They identify gaps and assess the strength of actions taken by national governments to promote healthy diets and active lifestyles, and can be used

by policymakers, researchers and civil society to inform advocacy for and design of policies. Strong policies can contribute to environments that can support healthy choices related to nutrition and physical activity.

OD2-32 A bibliometric analysis of outdoor fitness equipment in the Web of Science database

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: Increasing daily physical activity is a crucial issue for public health policy. In addition, growing evidence indicates that community outdoor fitness equipment may provide people with the opportunity to participate in physical activity or exercise. Thus, this study used the bibliometric technique to report the literature development trends regarding outdoor fitness equipment; it also used high citation and keyword co-occurrence of published articles on outdoor fitness equipment to determine the salient research subjects and articles.

Methods: Published studies were obtained from the Web of Science database. Studies were restricted to those published in English-language peer-reviewed journals before September 2021. Three sets of search terms were used: outdoor fitness equipment, outdoor exercise equipment, and outdoor gym. The articles were analyzed with the scientometric tools VOSviewer and HistCite, and co-occurrences and bibliographic coupling analysis were used to visualize the documents' data and draw a scientific knowledge map.

Results: A total of 43 studies were included; 79 keywords and 258 links were presented in the analysis of co-occurrences. The major results of this study are as follows: i) high-frequency keywords included physical activity, outdoor fitness equipment, older adults, built environment, exercise, and park; ii) the number of studies on outdoor fitness equipment is increasing, especially from 2017 to 2020; iii) most studies have used qualitative research, such as interviews or observational research; and iv) the most cited study assessed the impact of an outdoor gym installation on park users' physical activity levels and examined the characteristics of outdoor gym users, and the second-highest study explored the use of outdoor fitness equipment and its relationship with physical activity and social interactions.

Conclusions: The results of this study will help clarify the developing trends in outdoor fitness equipment research, indicate the influence of highly cited articles, and determine future research subjects and trends. Future studies should focus on gaining a deeper understanding of outdoor fitness equipment, which is essential to develop initiatives for designing outdoor areas or parks and to improve public health.

OD2-33 The association between the food environment and adherence to healthy diet quality: The Maastricht Study

Mr. Jeffrey Alexander Chan[1,2], Associate Professor Annemarie Koster[1,2], Prof. Simone Eussen[1,3,4], Dr. Maria GM Pinho[5], Prof. Jeroen Lakerveld[5], Prof. Coen DA Stehouwer[4,6], Prof. Pieter C Dagnelie[4,6], Assistant Professor Ronald MA Henry[4,6,7], Associate Professor Miranda T Schram[4,6,7], Assistant Professor Carla van der Kallen[4,6], Associate Professor Marleen MJ van Greevenbroek[4,6], Dr. Anke Wesselius[8,9], Prof. Hans Bosma[1,2]

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Non-communicable diseases such as diabetes and cardiovascular disease continue to rise worldwide. Unhealthy diets are key behavioral determinants of these diseases, and previous literature has suggested that the geographical food environment including access to unhealthy food outlets may steer individuals towards healthy or unhealthy dietary intake. The purpose of this study is to determine if healthier neighborhood food environments are associated with healthier diet quality.

Methods: A cross-section of participants from The Maastricht study ages 40-75 in the Netherlands were examined (n=7,087). Diet quality was assessed using a food frequency questionnaire which was then used to calculate the Dutch Healthy Diet Index (DHD) ranging from a score of 0 (Unhealthiest) to 140 (Healthiest). A buffer zone encompassing a 1000m radius was created around each participant home address and the Food Environment Healthiness Index (FEHI) was calculated. The FEHI was an aggregate score of available food outlets ranging from -5.0 for least healthy and +5.0 for the healthiest. The individual count of supermarkets, local food shops, restaurants, food delivery, convenience stores, and fast-food retailers were also calculated for each participant. Linear regression models analyzed the association between the FEHI and the DHD score, adjusted for socioeconomic variables. The models were further carried out on individual outlets.

Results: No relationship was identified between either the FEHI (β = .62; 95% CI = -2.54, 3.78) or individual food outlets and diet quality. Similar findings using the FEHI were identified at the 500m (β = .95; 95% CI = -.85, 2.75) and 1500m (β = 1.56; 95% CI = -3.31, 6.43) buffer. There was neither an association between the food environment and individual items of the DHD including fruits, vegetables, and sugar sweetened beverages.

Conclusion: The neighborhood food environment was not associated with dietary quality in the Maastricht area in our sample which could be partially attributable to the limited variation in the FEHI.

OD2-35 How did the Covid-19-Lockdown affect university students' dietary behaviour and weight status?

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical activity and nutrition

Political measures to slow down the Covid-19 pandemic affected people worldwide, and its impact differed strongly over time and between countries, as well as between social groups. While many groups could temporarily go back to a relatively normal life, university students in Germany were forced to solely digital learning for three semesters. Adapting to that situation required substantial changes in everyday life. The current study investigated changes in nutritional behaviour and physical activity.

Two surveys were conducted in July/August 2020 and in June/July 2021. Both times, an online questionnaire was distributed via email among all students of a German university. A total of 827 students completed the first and 956 the second survey. Changes in body weight, physical activity, consumed food groups, food preparation, commensality, grocery shopping, and eating out were assessed. Furthermore, the questionnaire assessed emotional and external eating, worries, and whether people were affected by the pandemic in terms of an infection with the virus, quarantine, job loss, or changes in the housing situation.

In the first survey, 27% of participants indicated weight gain and 22% weight loss during the first lockdown, while in the second survey, 28% reported weight gain and 21% weight loss since the begin of the pandemic. Across both surveys, consumption increased most in sweets and savoury snacks, but also in fresh vegetables and meat substitutes, baked goods, and legumes. The main decrease was in meat products. More than half of the participants indicated to cook more and to take more time for cooking. Regression models revealed changes in sweets consumption as main predictor of weight change among food groups. Physical activity and external eating were associated with weight loss, while emotional eating was associated with both positive and negative weight changes during the pandemic.

While the results showed that the situation impacted students in different ways, it also revealed that changes maintained over time when comparing both survey results. While some seemed to have benefited from having more time and flexibility, others did not. It is possible that life changes strengthen individual health related practices, positive as well as less favourable ones

OD2-36 Is a Short Bout of Activity as Good as a Long Bout for Mental and Physical Energy and Fatigue in Young Adults?

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical Activity

Purpose: Exercise bouts of at least 15 minutes are known to have beneficial effects on physiological and psychological outcomes. Emerging evidence, indicates that short bouts less than 10 minutes also demonstrate improved physiological outcomes. However, little is known about the psychological outcomes of brief exercise bouts, particularly for modes of exercise that are readily available to many young adults, like stair walking. This study assessed the effects of a 4-minute bout of stair walking on mental and physical energy and fatigue feeling states.

Methods: Thirty-six young adult participants were randomized to either stair walking or seated control groups. All participants walked on level-ground from a laboratory to a nearby stairwell (~90 sec) and were seated for 4 minutes before beginning their experimental condition. Stair-walking participants walked up and down one flight of 16 stairs at their own pace for 4 minutes, while control participants remained seated during that time. Participants walked back to the laboratory for post-condition assessments. Measures of blood pressure, heart rate, rated perceived exertion (RPE), and the intensity of feelings of mental energy, mental fatigue, physical energy, and physical fatigue were assessed pre- and post-condition. Separate one-way ANOVAs were conducted on change scores for all variables.

Results: As expected, the stair climbing group experienced significant increases in in heart rate ($F(1,34) = 13.167$, $p < .001$) and RPE ($F(1,34) = 93.844$, $p < .001$) that were not observed in the seated control group. Four minutes of self-paced stair climbing resulted in small changes and insignificant differences within and between groups in blood pressure as well as the mental and physical energy and fatigue scores.

Conclusion: Although a 4-minute self-paced exercise bout conveys short-term physiological health benefits, a 4-minute bout of self-paced indoor stair walking in a stairwell was insufficient to change subjective feelings of energy and fatigue in a sample that exhibited better than typical feelings of energy and fatigue at the pre-test.

OD2-37 COVID-19 and its impact on food access at a private college

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: In 2016, nearly half of college students reported being food insecure. This disparity may have increased with the COVID-19 pandemic as many local, state, and federal measures were taken to mitigate the spread of the virus. As a result, many students lost access to on-campus housing and were forced to find different ways to subsidize their income and to access food. The aims of this study were: 1) to understand how the COVID-19 pandemic impacted food access among students at a private college and 2) to determine what colleges and universities could do to help with food access during a situation such as a pandemic.

Methods: This study utilized a qualitative design to gather information from college students about food access during the pandemic. Students were recruited via campus email listservs and invited to participate in a semi-structured interview. Basic demographic data was collected via a Qualtrics pre-survey. Interviews were conducted with n = 21 participants using Zoom and transcribed verbatim with Otter software. Grounded theory guided the analysis and main themes were organized as they emerged. The study was approved by the University IRB.

Results/Findings: The sample (n = 21) consisted of 86% undergraduate students. Most participants were female (91%) with an average age of 21 years old. 68% reported living off campus. About a third were unemployed yet less than 10% were receiving any type of food assistance including SNAP (5%). Over a third (38%) experienced an increase in cooking frequency during the pandemic. The thematic analysis resulted in five main themes: 1) parents are vital structures for food access, 2) lack of awareness of campus-based food resources, 3) lack of awareness of outside resources, 4) shifts in food purchasing and cooking habits, and 5) stigma around accessing resources.

Conclusions: Given that food insecurity was already an issue for many college students, this study gives insight to how the pandemic impacted student food access. This study is important because it helps raise awareness for college campus food insecurity and highlights the barriers students are facing during the pandemic.

OD2-38 Diet Quality Component Differences Among United States Adolescents Who Misclassified Their Diet Quality

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SIG - Primary Choice: J. Young Adults
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: Lack of awareness about what constitutes good diet quality may lead adolescents to misclassify the healthfulness of their diet. Whether this misclassification is the result of under- or overrating of diet quality is not clear. Thus, the purpose of this study was to determine percentages of United States (US) adolescents who under- or overrated their diet quality and explore diet quality component differences among rating groups of adolescents who misclassified their diet quality.

Methods: Data from two cycles of National Health and Nutrition Examination Survey (NHANES), 2015-2016 and 2017-2018, were used for this study. Self-assessed diet quality was measured by asking adolescents, 16-19 years of age, to rate the healthfulness their diet with responses including excellent, very good, good, fair, and poor. Measured diet quality was assessed using the 2015 Healthy Eating Index (HEI-2015) and based on 24-hour dietary recalls. Correct classification between self-assessed and measured diet quality (100-point scale) included: excellent=90-100, very good=80-100, good=70-89, fair=60-79, and poor=0-59. All others were considered misclassified. Descriptive statistical methods for complex survey designs were used to analyze the data.

Results/findings: Out of 1086 adolescents analyzed, 956 adolescents (88%) misclassified their diet quality. All adolescents in the poor rating group correctly classified their diet quality, while over 99% of adolescents in the other four groups overrated their diet quality. Based on 95% confidence intervals, mean total diet quality differed among four rating groups (fair=40.8, good=45.3, very good=48.9, excellent=52.6) as did 9 of 13 component scores. Component scores generally increased as healthfulness of diet ratings increased from fair to excellent. Total dairy, seafood and plant protein, fatty acids, and sodium mean scores were not significantly different and uniformly low across the four rating groups.

Conclusions: Although total and most diet quality component scores increased as adolescent ratings of their diet quality increased, total scores were below 59% (failing) for all rating groups. Dietary interventions targeting US adolescents should consider all components of the diet; however, particular attention may need

to be directed at total dairy, seafood and plant protein, fatty acids, and sodium intakes given the uniformly low adolescent scores for these dietary components.

OD2-39 A participatory approach to understanding and acting on urban food environments

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adults 19+ yrs
Subject Category: Nutrition

In recent years, food environments have received recognition for their importance on diet-related health and for the ways it improves diets by enhancing its settings and shaping individuals' behaviour. As a result, food environments are considered to have an increasingly important influence on the causes of obesity, as well as a potentially modifiable element for policy intervention. Urban food environments, particularly, are becoming more obesogenic as they promote the consumption of food that is poor in nutrients and high in energy. In addition, the relation between energy-dense food and price is inverse, where foods that are high in fat, salt, sugar and calories (HFSS food) are sold at lower prices compared to a healthier alternative, making them more desirable.

The relationship between the food retail environment, HFSS food consumption and diet-related health are complex. Systems science methods, such as system dynamics (SD) modelling, are seen as potentially useful tools for examining these complex processes. Hence, this study uses Group Model Building (GMB) to build a Causal Loop Diagram (CLD) of the food retail environment inclusive of the drivers that influence the decision to purchase HFSS food and to elicit potential policies that lower the consumption of such food. Group Model Building can be thought of as an organisational intervention procedure where different stakeholders collaborate to share their perceptions about a problem.

The GMB was organised as a knowledge elicitation process that involved a questionnaire, a workbook, and a structured workshop. Thirteen participants, both practitioners and academics, were engaged in this process, to allow an exhaustive discussion on the participants' view about the system. The process was finalised with a conceptual CLD of the urban food environment which will serve as a starting point for building a spatial agent-based model in the future. By describing the followed process and by sharing our experience and insights in applying system approaches in the field of public health we hope to advocate more for its usefulness and encourage public health experts to benefit from the methodology.

OD2-40 Using a novel method to understand adolescent and teachers' perspectives on reducing sedentary time in secondary school

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Adolescents 13-18 yrs
Subject Category: Sedentary Behavior

Purpose: Adolescent physical activity rates decline as they transition from childhood to adolescence and are often replaced by more sedentary pursuits. Adolescents spend over 50% of a 24/hour day and 63% of the school day sedentary. To date few qualitative studies have comprehensive explored adolescents' and teachers perceptions of strategies to reduce sedentary time in the secondary school setting. Stakeholder input is key to research translation, this project aimed to use a novel method to elicit adolescent and teachers perspectives of feasible and acceptable ways to encourage adolescents to "sit less and stand or move more" during the school day.

Methods: Students, teachers and executives from four schools in the Illawarra and surrounding areas (NSW) Australia, were invited to participate. A participatory research design ('problem and solution tree'), guided focus group implementation. This novel technique provided participants with an explanation of the 'problem', then asked them to identify factors that 'contribute to and consequences of' the problem/s. This study invited participants to change from a problem ('high levels of sedentary time' during the school day) to a solution orientation (50% reduction in sedentary time) by providing feasible ideas to reduce sedentary time during the school day.

Results/findings: A total of 55 students (24 from years 7/8; 31 from years 9/10), and 31 teachers/executives participated in the study and were interviewed in three groupings: younger adolescents, older adolescents and teachers/executives. Thematic analysis elicited five main 'problems': lesson structure, non-conducive classroom environment/structure, non-conducive break-time environment, curricular pressures and school related factors increasing sedentary behaviour outside of school. Suggested 'solutions' included: changes to classroom layout/furniture, pedagogical changes, hands on learning, outdoor lessons, more comfortable uniforms, more breaks during class time, more compulsory physical activity and outdoor equipment.

Conclusions: The 'problem/solution' tree method was well received by adolescents and teachers, eliciting a rich set of proposed solutions to reduce adolescent sedentary time during the school day. The suggested solutions could be feasibly implemented in the secondary school setting, even when funding is limited.

Participants suggestions of education, policy changes, pedagogical support and some structural/environmental changes could facilitate ongoing improvements in adolescent sedentary time.

OD2-41 Addressing schoolteacher food and nutrition related health and wellbeing: a scoping review

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: To identify and map international peer-reviewed literature on food and nutrition (FN) related health and wellbeing status and training among in-service and pre-service schoolteachers, including key characteristics of interventions and tools used to measure FN related wellbeing.

Methods: A scoping review protocol was developed based on the Joanna Briggs Institute manual for evidence synthesis, scoping review guidelines, with eligibility criteria determined using population, concept, context. Population was determined as in-service teachers in school-based settings typically preschool, primary, and secondary including relevant pre-service teachers. Concept included all study designs reporting on teacher FN related health and wellbeing with or without training and included an investigation of the evaluation measures used within these studies. Context included schools, universities, colleges, online platforms or teacher training provided by education departments and/or relevant external providers. Peer-reviewed literature published after the year 2000, in English language was included. Six health and education databases were searched including PsychInfo, Eric via ProQuest, Medline, CINAHL, Embase, and Scopus with the following keywords, teacher*, schoolteacher*, educator*, food*, diet*, nutri*, eat*, cook* used. Initial search results identified 15,131 studies, resulting in 10,737 studies after deduplication. The review was managed using Covidence systematic review software, with screening and data extraction completed by two independent researchers (TJ, BF), and screening conflicts managed by discussion between both reviewers. Data extraction processes were guided by the Preferred Reporting Items of Systematic reviews and Meta-Analyses extension for Scoping Reviews. Data analysis focused on synthesising schoolteacher FN related health and wellbeing studies and the tools used to measure FN related wellbeing factors within this population.

Results/findings: Analysis is currently underway.

Conclusions: Findings will be collated to provide a map of existing literature on teacher FN related health and wellbeing and how it is evaluated. This scoping review will provide a summary of evidence necessary to guide the development of a FN related wellbeing screening tool, for use in schoolteacher interventions and training.

OD2-42 Related factors to Spanish adolescents' active commuting to school

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Purpose: The prevalence of excess weight for the young population in Spain is 34.9%. Active commuting to school (i.ego to/from school by walking or cycling) is presented as an optimal option to increment physical activity levels and reduce obesity. The aim of the study was to determine the related factors to Spanish adolescents' active commuting to school.

Methods: This was a multi-center cross-sectional study. 301 secondary school students, who lived at 4500 meters or lower from their schools, from 4 Spanish cities entered the study. Schools were randomly selected. All participants filled in an "Ad-Hoc" validated questionnaire to measure their mode of commuting to schools, their lifestyle behaviour and their physical activity. The dependent variable was mode of commuting. Logistic regression models were fitted and the predictive power of the model was analyzed by plotting the corresponding ROC curve.

Results: 64.4 % (194) of students active commuted to school. Between factors related to active commuting to school, we found that adolescents who had high adherence to Mediterranean diet were more likely to be active commuters than adolescents with low adherence to Mediterranean diet (OR= 1,16; 95%CI=1.01-1.34). In turn, those who ate breakfast every day had low probability to active commute to school (OR=0.39; 95%CI=0.17-0.90). Related to gender, boys had higher probability to actively commute than girls did (OR=2.20; 95%CI=1.13-4.31). Those students who lived further away presented lower probability to actively commute to school for each hectometer of distance (OR=0.75; 95%CI=0.70-0.81). The area under curve of ROC was good: 0.892; 95%CI=0.858-0.927.

Conclusions: The results showed three main factors related to Spanish adolescent's active commute to school: adherence to Mediterranean diet, breakfast, gender and distance from home to school.

OD2-43 Reduced physical activities is related to prevalence of obesity in South African girls.

Dr. Emmanuel Nwosu[1], Dr. Anne-Siri Fismen[3], Dr. Arnfinn Helleve[3], Prof. Charles Hongoro[4], Dr. Ronel Sewpaul[4], Prof. Priscilla Reddy[4], Dr. Olufunke Alaba[2], Dr. Janetta Harbron[1]

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and nutrition

Introduction: By 2016, the proportion of overweight and obese adolescents were greater among girls (33.88%) compared to boys (8.91%) in South Africa (SA). The factors that place girls at greater risk of overweight and obesity in SA is unclear. Hence, the purpose of the study is to compare energy balance-related behaviours (EBRB – diet choices and physical activities (PA)) between boys and girls and investigate behaviours that place girls at greater risk for overweight and obesity.

Method: Study data are from SA Demographic and Health Surveys (SADHS; 2016 (N=1206)) and SA National Health and Nutrition Examination Survey (SANHANES; 2012 ((N=1081))) and National Youth Risk Behaviour Surveys (SA YRBS; 2002 (N=6915), 2008 (N=8243), 2011 (N=8296)) for survey participants in age range of 15 – 19 years old. Participants' measures extracted from the surveys were daily fruit, vegetable, and sugar-sweetened beverage (SSB) consumption and number of days per week that participants engaged in vigorous (VPA) and moderate physical activities (MPA).

Chi-square test (X^2) analyses were performed to assess significance of trend differences in proportion of daily fruit, vegetable and SSB consumption from 2002 to 2016 and independent sample t-test to assess mean differences in number of days per week of engagement in VPA and MPA, all between boys and girls. All significance is at $p<0.05$.

Result" We found no significant trend difference in proportion of boys and girls with daily consumed fruit, vegetable and SSB. However, the mean number of days per week that, boys engaged in PA were significantly higher than girls in 2002 (VPA: t-value=21.57, p=<0.001), 2008 (VPA: t-value=20.82, p=<0.001; MPA: t-value=3.31, p=0.001), 2011 (VPA: t-value=16.44, p=<0.001; MPA: t-value=2.62, p=0.01). Although boys engaged in greater mean days per week (mean ± SD = 3.13 ± 2.60 days) in MPA in 2002 than girls (mean ± SD = 3.11 ± 2.76 days), the difference was not significant.

Discussion: Boys and girls may have nearly similar diet choice-related behaviours, but boys may be engaging in physical activities more frequently than girls. Hence, physical inactivity maybe a contributing factor to higher prevalence of obesity among girls in South Africa.

OD2-44 Intervention effect on children's movement behaviour accumulation as a result of the Transform-Us! school- and home-based cluster randomised controlled trial

Dr. Simone J.J.M. Verswijveren[1], Associate Professor Nicola D. Ridgers[1], Prof. Josep A. Martín-Fernández[2], Prof. Sebastien Chastin[3], Prof. Ester Cerin[4], Prof. Mai J.M. Chinapaw[5], Dr. Lauren Arundell[1], Dr. Helen Brown[1], Prof. David W. Dunstan[6], Dr. Clare Hume[7], Mrs. Jacqueline Della Gatta[1], Prof. Jo Salmon[1]

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 6-12 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: To investigate changes in children's movement behaviour accumulation patterns, including sporadic and longer bouts of sedentary time and physical activity, as a result of the Transform-Us! school- and home-based intervention program.

Methods: Baseline and post-intervention (18 months) accelerometer data from the Transform-Us! 2x2 factorial design cluster randomised controlled trial was used (Melbourne, 2010-2012; analytical sample n=267; aged 8-9 years). Linear mixed models were fitted to examine effects of three different interventions (targeting increases in physical activity [PA-I], reductions in sedentary behaviour [SB-I], or both [PA+SB-I]) versus a usual practice (control) group on post-intervention time-use compositions with eight components, including sporadic time and longer bouts of sedentary time, and light-, moderate- and vigorous-intensity physical activity.

Results/findings: Linear mixed model parameters indicated that there was no significant intervention effect on post-intervention bout pattern time-use compositions (adjusted for baseline compositions). However, visual inspection of the change in compositions over time revealed that the SB-I group had the smallest proportional decrease in VPA bouts over time, compared to the overall compositional sample mean. The combined intervention group (PA+SB-I) was characterized by the largest proportional increase in time in longer MPA bouts. The usual practice group was characterized by the largest proportional increases over time in both types of sedentary patterns (i.e., sporadic time and time in longer bouts).

Conclusions: Both groups without a sedentary behaviour intervention component (PA-I and control) demonstrated a detrimental change in longer sedentary bouts, while the other two groups (SB-I and PA+SB-I) exhibited a beneficial change in longer sedentary bouts, compared to the overall sample compositional mean. In addition, the SB-I group was the only group with a beneficial change in vigorous-intensity physical activity over time. Albeit results were small and not significant, this may suggest that the "break up your sitting" message may be more impactful than the "move more" message. Future research, including larger sample sizes, should investigate if this type of messaging is indeed more effective in changing movement behaviours and whether these impact intervention effects on child health.

OD2-45 Sedentary behavior is associated with musculoskeletal pain in boys and girls: a cross-sectional epidemiological study

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Back pain has been observed with a high prevalence in adolescents. A possible risk factor for this pain type is sedentary behavior (SB). However, the relationship between back pain and sedentary behavior in pediatric populations is not well established. To analyze the relationship between sedentary behavior and neck and low back pain in adolescents.

Methods: The sample consisted of children and adolescents aged 10-16 years. SB was evaluated by adding the number of hours of use of screen equipment such as television, computer, video game and cell phone/tablet. To assess neck and low back pain, the Nordic questionnaire was used. The physical activity and socioeconomic status were measured using the questionnaire. Binary logistic regression in the unadjusted and adjusted model (physical activity, abdominal obesity and socioeconomic status) analyzed the relationship between musculoskeletal pain and SB.

Results: There was association of moderate SB [OR=1.80(95%CI=1.00-3.23)] and high SB [OR=1.91 (95%CI=1.02-3.53) with neck pain in girls and moderate SB [2.75 (1.31-5.78)] and high SB [OR=2.09 (95%CI0.94-4.65)-marginal association] with neck pain in boys. Moderate SB [OR=2.73 (95%CI=1.45-5.02) and high SB [OR=2.49 (95%CI=1.30-4.76) was associated with low back pain only girls.

Conclusion: High SB was associated with back pain, especially in girls. Health promotion actions aimed at reducing back pain in adolescents should encourage the reduction of SB in this population.

OD2-46 Evaluating a train-the-trainer model for scaling-up Healthy Conversation Skills training: a pre-post survey using the Theoretical Domains Framework.

Dr. Jenna Hollis[1,2,3,4,5], Dr. Kirsty Seward[4,6], Ms. Lucy Kocanda[2,3,4,5,7], Prof. Clare Collins[3,5,6], Ms. Belinda Tully[1,3], Ms. Mandy Hunter[8], Prof. Maralyn Foureur[9,10], Dr. Tracy Schumacher[3,4,5,7], Dr. Wendy Lawrence[11,12], Associate Professor Lesley MacDonald-Wicks[3,5,6]

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SIG - Primary Choice: N. Other
Age Category: All ages
Subject Category: All

Purpose: Changing people's behaviour by advice-giving and instruction, as typically used in traditional healthcare consultations, is usually ineffective. Optimising health professionals' communication skills is recommended in public health guidelines to support people to improve their health behaviours and reduce their chronic disease risk. Healthy Conversation Skills (HCS) training is an established method of upskilling health professionals in person-centred behaviour change communication skills. A Train-the-Trainer (TtT) model was adopted to scale-up delivery. Using the Theoretical Domains Framework (TDF), this study examined the impact of the HCS TtT course on Trainee Trainers barriers and enablers to delivering HCS training.

Methods: The TtT course consisted of a full day of training (5-11 trainees/session), building on two half-day sessions of HCS training. The training was reviewed for cultural safety and acceptability for Aboriginal staff and people at study conception by an Aboriginal review group. Pre- (T1) and post-training (T2) surveys collected data on demographics, and confidence and importance of delivering training (using a 10-point Likert scale, where 10 = highest). Changes in barriers and enablers to delivering HCS training were examined using 10 TDF domains. Data were summarised using descriptive statistics, and differences between pre- and post-training scores analysed using t-tests.

Results: Forty-six trainees participated (43 women; 10 Aboriginal), including 31 health professionals employed within the local health district and/or 14 University lecturers/researchers. Mean (SD) confidence (T1=6.1(2.1); T2=8.0(1.3), p<0.0001) and importance (T1=8.1(1.5); T2=8.8(1.0), p<0.0051) of delivering HCS training increased post-training. Scores for nine TDF domains significantly increased post-training: knowledge, skills, social and professional role/identity, beliefs about capabilities, intentions, goals, environmental context and

resources, social influences, and behavioural regulation. Post-training, knowledge, beliefs about consequences and intentions were no longer barriers to delivering HCS training.

Conclusions: The TtT model supports new Trainers by addressing barriers to delivering HCS training; vital for successful HCS training roll-out. The findings facilitate the refinement of the TtT course and ongoing training strategies. HCS training and the TtT model can be considered for inclusion in research interventions and healthcare capacity building strategies that seek to upskill health professionals to use person-centred approaches to health behaviour change.

OD2-48 Identifying international priority areas for physical fitness research and surveillance among children and youth: A twin-panel Delphi study

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SIG - Primary Choice: N. Other
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: Recently, there has been an increase in academic research on the physical fitness of children and youth. Most research is on non-representative and within country samples and there is poor harmonization of measurement, analysis, and reporting. Using a twin-panel Delphi study design, we aimed to identify the top international priority areas for physical fitness research and surveillance among children and youth over the next decade.

Methods: Two independent panels (panel 1, n = 28; panel 2, n = 18) comprising international experts in physical fitness research participated in this study by contributing to three rounds of a Delphi methodology. Round 1 asked participants to identify their top five priority areas, with common priorities combined into single priority themes. Round 2 asked participants to rate the level of importance for each priority theme on a 5-point Likert scale (1 = somewhat importance, 5 = extremely important). Means were used to rank the priority themes by level of importance, with lower standard deviations used as a tiebreaker. Round 3 asked participants to rate the level of importance for priority themes identified by the other panel. Spearman's rank correlation coefficient (r_s) was used to calculate the between panel agreement.

Results: During round 1, panel 1 submitted 104 responses that were combined into 36 unique priority themes, whereas panel 2 submitted 71 responses that were combined into 25 unique priority themes. Both panels identified eight common priority themes. Conducting longitudinal studies to assess changes in fitness and associations with health was the top priority identified by both panels. Round 3 indicated very strong agreement in the ranked priorities between panels (r_s = 0.76 and r_s = 0.77).

Conclusions: This study identified several important priority areas for research and surveillance on the physical fitness of children and youth over the next decade. These priorities could help inform the direction of future international research and surveillance projects in pediatric fitness.

OD2-49 Urban green space and mental well-being of Aotearoa New Zealand adolescents: a path analysis

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SIG - Primary Choice: N. Other
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and sleep

Background: Growing evidence shows the positive influence of neighbourhood green space on mental well-being among adults through multiple health behaviours, but similar studies are lacking for adolescents.

Methods: Data were drawn from the 2019 wave of the Youth2000 survey series in Aotearoa, New Zealand with secondary school students (aged 10-19 years) from the city of Tamaki Makaurau, Auckland. Emotional well-being was measured with the World Health Organization-5 Well-being Index, and depressive symptoms were assessed using the Reynolds Adolescent Depression Scale-short form. Neighbourhood green space was assessed using three different measures: percentage of green space, Normalised Difference Vegetation Index (NDVI) and the distance to nearest green space from place of residence. Exposure areas of these measures were calculated using Euclidean buffers of 100m, 300m, 800m and 1600m around participants' meshblock residential addresses." Three mediating (physical activity, social cohesion, sleep) and ten control variables (in adjusted models) were included in path analysis to test the direct and indirect relationships between green space and adolescent mental well-being.

Results: In unadjusted models, percentage of green space had a negative relationship with emotional well-being, and inconsistent effects of NDVI were detected in different buffers. Minor indirect effects of physical activity and sleep were also found. Depressive symptoms and emotional well-being were more strongly related to other individual and neighbourhood factors (e.g., neighbourhood deprivation). After adjusting for control variables, no significant associations of green space with adolescent depressive symptoms and emotional well-being were identified.

Conclusions: Urban neighbourhood green space does not appear to be a dominant factor contributing to adolescent mental well-being through physical activity, social cohesion and sleep. Appropriate individual and environmental control variables are needed to take into consideration in future studies that explore the green space-mental well-being relationships in adolescents.

OD2-50 The Process of Practice for Intelligent, Visual-Based baseball player development System-A Case Study of PJ Senior High School

Mr. huai-hsun Shin[4], Assistant Professor Hsin-Hun Ho[2], Prof. Shao-Hsi Chang[1], Mr. Yu-Hsiang Peng[1], **Associate Prof. Sheng-hsien Feng[3]**

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

The primary purpose was to investigate the process of practice for small-group portfolio assessment. Action research was employed on a class of 6th graders in PJ Senior High School, an 8-week visual-based player development program was conducted. This practice began with the finding of baseball skill problems, identification of information, and development of action strategies. Video and data from the system would be integrated into baseball training, while continuous reflection and revision were carried out throughout the process. The research findings were visual-based player development System could help students demonstrate their reflection competence. Coaches and teachers could also evaluate students' baseball skill performance from multiple perspectives based on Intelligent, Visual-Based evidence. In terms of cognition, students' understanding of the swing path、Pitch Tunneling、kinematic sequence, and tactics of Baseball games could be enhanced via reflection of the learning process. Skills were also improved. The assessment also helped to promote teamwork barriers. Students Insight into the game and the accuracy of the baseball game was increased among students. In brief, students, teachers, and coaches considered that the implementation of the visual-based player development system was helpful to students' baseball learning, and could enhance the interaction and communication among coaches, teachers, and teammates.

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ABSTRACT BOOK

OD2-51 Mediterranean Diet Adherence in Young Adults with Depression, Anxiety, and Stress

Miss Natalie Neville[1], Ms. Rachel Wattick[1], Dr. Melissa Olfert[1]
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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Young adults that attend college are in a formative stage of life in which lifelong eating habits and behaviors are established. The Mediterranean Diet is globally considered one of the healthiest diets and consists of fruits, vegetables, whole grains, fish, white meats, and olive oil. Diet quality in young adults with mental health problems such as depression, anxiety, and stress is an area of interest to researchers in order to find ways to relieve symptoms. The purpose of this study is to determine if there is a relationship between young adults' and Mediterranean Diet adherence and depression, anxiety, and stress symptoms.

Methods: A Qualtrics survey was distributed online to all enrolled students at an Appalachian university in Spring 2019. The survey included measures on Mediterranean Diet adherence using the Mediterranean Diet Adherence Screener (MEDAS), depression using the Patient Health Questionnaire-9 Item (PHQ-9), anxiety using the Generalized Anxiety Disorder-7 Item (GAD-7), and stress using Cohen's Perceived Stress Scale-10 Item (PSS-10). Descriptive statistics were computed to calculate frequencies of responses for all variables. Simple logistic regression was conducted to determine the impact of depression, anxiety, or stress on Mediterranean diet adherence. All data was analyzed using JMP Pro Version 16.0.

Results/Findings: The mean Mediterranean Diet Adherence score was 6.35 $\pm$ 2.31. The mean scores for depression, anxiety, and stress were 8.28 $\pm$ 6.32, 7.11 $\pm$ 5.72, and 18.12 $\pm$ 6.99, respectively. Most students (68.2%) had low Mediterranean diet adherence, while the rest (31.8%) had high Mediterranean diet adherence. Simple logistic regression showed that low Mediterranean diet adherence was significantly associated with a higher depression score ($p<.0001$), higher anxiety score ($p=.0077$), and higher stress score ($p<.0001$).

Conclusion: The results show that young adults with high levels of depression, anxiety, and stress were less likely to adhere to the Mediterranean Diet, while young adults with lower levels were more likely. Further, college students at an Appalachian university were generally less likely to adhere to the Mediterranean Diet. These findings can inform future interventions that aim to improve college student well-being.

OD2-52 Exploring Neighbourhood Environment Attributes for Active Transportation in Ghana

Miss Vida Korleki Nyawornota[1, 2], Dr. Fidelia Dake[1], Prof. Reginald Ocansey[2], Prof. Richmond Aryeetey[3], Dr. Paul Butakor[4], Mr. Nana Yaw Oppong Yeboah[5]

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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The study examined the assciation between the neighbourhood environment attributes and active transpot in Ghana. Active mode of transport -walking and cycling from place to place have been identified as a way of increasing participation in physical activity (PA). Neighbourhood environment (NE) attributes have been recognized as factors that influence active transport (AT) and help reduce the increasing rate of inactivity, overweight, obesity and associated non-communicable diseases (NCDs). However, research on NE influence on AT is scarce in Ghana. This study examined the association between NE attributes like proximity to destinations, access to destinations,street connectivity, safety from traffic and crime and residential density, and AT in Ghana.

Methods: The International Physical Activity Questionnaire (IPAQ) and the Neighbourhood Environment Walkability Scale (NEWS) -Africa instrument, were used in a cross-sectional study to gather data on NE attributes and AT (self reported walking and cycling minutes/day to move from place to place). Data from1073 youth and adults aged 17 years and above, selected from diverse communities (by socioeconomic status (SES), and residential density in the Upper East, Bone and Greater Accra regions of Ghana were included in the study.

Result: Active transportation levels were very low among the study sample. As much as 4 out of 5 respondents engaged in low levels of active transport. Also, majority of the respondents reported that their neighbourhood is walkability friendly because it takes less than 30minutes to get to the nearest destinations. About 63% of the participants also indicated that there are walk/foot paths in their neighbourhood. About 75% of respondents reporting that there are no bicycle lanes in their neighborhood. Multinomial logistic regression results indicated that proximity to destination (OR=.504, $p<0.001$), and residential density of very few residential buildings/dwellings within 2-5 minutes walk, (OR=5.878, $p<0.001$) were significantly associated with AT

Conclusion: Neighbourhood environments that are walkability friendly and of low residential density encourage active transportation. Additional studies on active transportation in Ghana is needed to inform policy on increasing physical activity through building walkability friendly neighbourhood environments.

D2S.2v.05 - Psychedelics and health behavior change

Virtual Session #3

May 20, 2022, 12:05 PM - 1:35 PM

Dr. Arlen Moller, Illinois Institute of Technology

A live, synchronous session presenting new research on the use of psychedelics to facilitate healthy diet and physical activity changes; along with a structured invitation for ISBNPA community brainstorming/feedback. This will include: (1) a review of extant population-level evidence linking psychedelic experiences with indicators of physical health (Otto Simonson), (2) individual-level data and mechanisms of action (Pedro Teixeira), and (3) Ongoing/planned research and related considerations (research methods, safety, and ethics; Arlen Moller).

O.2V.03 - Latest evidence in implementation and scalability

Virtual Session #1

May 20, 2022, 12:05 PM - 1:20 PM

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ABSTRACT BOOK

Barriers and Facilitators to Implementing Food Insecurity Initiatives on College Campuses

Dr. Rebecca Hagedorn-Hatfield[1], Dr. Lanae Hood[1], Dr. Rickelle Richards[2], Dr. Zubaida Qamar[3], Dr. Matthew Landry[4], Dr. Mateja Savoie Roskos[5], Dr. Jody Vogelzang[6], Mrs. Kendra OoNorasak[7], Dr. Georgianna Mann[8], Dr. Cara Cuite[9], Dr. Stephanie Machado[10], Dr. Emily Heying[11], Dr. Megan Patton-Lopez[12], Dr. Anastasia Snelling[13]

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SIG - Primary Choice: H. Policies and environments
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: College food insecurity (FI) has garnered attention as rates are reported to be higher than the United States national average. To help alleviate this issue, many higher education institutions have implemented campus-based FI initiatives. However, literature on these initiatives is lacking, and little is known about program operations, funding mechanisms, and evaluation. The purpose of this study was to describe campus-based initiatives and to investigate the barriers and facilitators to sustained implementation on campus.

Methods: Twelve nutrition and dietetic professionals from the Society of Nutrition Education and Behavior's College FI Subcommittee developed an online survey based on previous literature. A convenience sample of higher education professionals with experience regarding campus FI initiatives completed the 23-item survey via Qualtrics. The survey included questions about campus FI initiatives, including how they were funded, led, and evaluated, and if COVID-19 impacted implementation. Respondents were asked to describe what barriers they faced when implementing initiatives and what is needed for sustained implementation. Descriptive statistics were computed for quantitative data. Qualitative data were independently coded by two researchers, with any discrepancies resolved, and overarching themes were identified.

Results/Findings: Ninety-five percent of respondents (n=108) reported having at least one campus FI initiative. A campus food pantry was the most common initiative (98%), and 75.3% of campuses reported changes in implementation due to COVID-19. Respondents (69.7%) stated initiatives were evaluated for impact, but evaluation methods varied. Some institutions (38.9%) provided an allocated budget for initiatives, but funding mechanisms varied. FI initiatives were most often managed through Student Life Offices. Barriers to implementation were funding and marketing/student awareness. Campus culture (such as institutional support), resources and operations (such as funding), and data collection (such as needs assessment) were themes derived as facilitators to sustaining initiatives.

Conclusions: Campus-based FI initiatives are available, although the type, funding, and evaluation vary. The need for a campus culture that promotes sustainable funding and support is highlighted. Increased investment from administration and stakeholders is warranted. Awareness campaigns could be prioritized to increase student awareness of initiatives, especially as operations may continue to fluctuate due to COVID-19.

Reflexively Monitoring Healthy Food-Store Interventions: the SUPREME NUDGE Trial

Mr. Cédric Middel[1,3], Dr. Tjerk Jan Schuitmaker-Warnaar[1], Dr. Joreintje D. Mackenbach[2,3], Prof. Jacqueline E.W. Broerse[1]
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SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: Nutrition

Purpose: Healthy food-store interventions (HFIs) are a promising tool to reduce the societal burden of noncommunicable diseases through the stimulation of healthier diets. The alignment of these interventions within their context is vital for their sustainable implementation and potential for up-scaling. Monitoring and adapting HFI implementation by means of a reflexive monitoring in action (RMA) approach, may help identify and address cases of misalignment. We will discuss our findings and experiences with the application of RMA to monitor HFI implementation.

Method: The HFIs were implemented in six supermarkets, for 12 months maximum. These stores were visited at regular intervals (every 2 weeks up to every 2 months), to monitor the fidelity of the HFIs. Concurrently, interviews were held with store management and/or employees, to discuss the outcomes of the latest monitoring visit for their store, and reflect on the underlying causes for high or low fidelity. When causes were clear, solutions were formulated, and disseminated to the other stores. Additional (incidental) interviews were held with relevant actors from the central organisation, to (further) explore issues between store and central organisation, and organisation-level factors.

Results: We divided HFIs in three groups: Pricing strategies, signage, and product positioning & presentation. Another distinction was made between static (stayed the same throughout the study) or dynamic (changed at regular intervals) HFIs. Static HFI fidelity was overall higher than dynamic. This difference seemed linked to communication issues, store-staff and management attitudes, and shortage of staff/hours. Positioning & presentation fidelity suffered from commercial concerns and limitations in space. Signage fidelity suffered from damage/removal by customers and staff. Pricing strategies suffered from technological problems and communication issues. Discussion of fidelity issues between multiple stores was useful in understanding and resolving underlying causes, and enhancing implementation.

Conclusions: Our results illustrate a number of factors which can present threats to the sustainable implementation of HFIs in food-stores, and how these affect the fidelity of these interventions. We end with recommendations on HFI implementation and the implications of our findings for scaling up.

From pilot trial to state-wide scale-up: The development of an m-health lunchbox intervention, SWAP IT

Ms. Alison Brown[1,2,3,4], Dr. Rachel Sutherland[1,2,3,4], Ms. Lisa Janssen[1], Dr. Jannah Jones[1,2,3,4], Dr. Nicole Nathan[1,2,3,4], Ms. Renee Reynolds[1,2,3], Ms. Amelia Chooi[1], Ms. Clare Desmet[1,2], Ms. Nayerra Hudson[1,2,3], Mr. Daniel Groombridge[1], Ms. Vanessa Herrmann[1], Ms. Nicola Kerr[5], Ms. Nicole Kajons[6], Prof. Luke Wolfenden[1,2,3,4]

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SIG - Primary Choice: E. Implementation and scalability
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: In countries such as Australia and the UK, the majority of children bring a packed lunch to school each day. More than six million serves of discretionary foods are packed in Australian lunchboxes every year, which has impacts on health and educational outcomes. We report the development and effectiveness of a scalable m-health healthy lunchbox intervention (SWAP IT) that has been piloted, optimised and evaluated at a population level, prior to state-wide scale-up.

Methods: A five step program of work has been undertaken in the evaluation of the SWAP IT program including: 1) formative research to identify parental barriers and behaviour change techniques (BCT) that underpin the SWAP IT program to support parents to pack healthy lunchboxes; 2) a pilot randomised controlled trial (RCT) to evaluate acceptability, feasibility and potential efficacy; 3) intervention optimization prior to a fully powered trial; 4) hybrid effectiveness-implementation RCT and 5) assessment and commencement of state-wide program scale-up in New South Wales (NSW), Australia. Cultural and equity engagement was conducted at all steps of the SWAP IT program development.

Results: SWAP IT targets five common parental barriers to packing healthy lunchboxes: time, cost, convenience, child preference and knowledge. BCT's were incorporated into the intervention, delivered via an existing school-communication app. The pilot RCT (n=1200) found an increase in mean lunchbox energy from 'healthy' foods (79.21 kJ,p=0.04) and was acceptable to 95% of parents. Optimized lunchbox messages were then incorporated into the hybrid effectiveness- implementation trial (n=3022) conducted in 32 schools across NSW, Australia. The trial found a significant reduction in mean energy from discretionary foods (-117.26kJ, p=0.003). SWAP IT has been assessed for suitability for scale-up. A scale-up plan has been developed using the NSW Health Scale Up Guide, with implementation to commence in 2022.

Conclusion: This scalable m-health intervention has the potential for significant population-wide effects on the nutritional quality of school lunchboxes, and consequently impacting the weight status of primary school aged children and the associated healthcare costs.

Evaluation of the Implementation of a Mobile Market Model, the Veggie Van model, using the Consolidated Framework for Implementation Research (CFIR)

Dr. Christina Kasprzak[1], Mr. Andy Canizares[1], Dr. Anne Lally[1], Dr. Laurene Tumiel-Berhalter[1], Dr. Jill Tirabassi[1], Ms. Leah Vermont[1], Dr. Alice Ammerman[2], Dr. Lucia Leone[1]
[1]University at Buffalo, Buffalo, USA, [2]UNC Chapel Hill, Chapel Hill, USA

SIG - Primary Choice: E. Implementation and scalability
Age Category: All ages
Subject Category: Nutrition

Purpose: Mobile produce markets are a prevalent, favored and effective public health strategy for increasing access to and consumption of fresh fruits and vegetables in underserved and lower-income communities. The Veggie Van (VV), an evidence-based approach to running a mobile market, is currently being evaluated in a hybrid implementation-effectiveness study across multiple states in the United States. Understanding the implementation process will improve future dissemination and implementation of both the VV model and other community-based food access interventions and ensure that the model is effective when scaled.

Methods: We conducted a mixed methods evaluation of implementation effectiveness among VV study partners informed by the Consolidated Framework for Implementation Research (CFIR) and Proctor et al.'s taxonomy of implementation outcomes. Representatives from six study partner organizations participated in in-depth interviews to understand VV model implementation over the prior 6-9 months. A representative from each organization completed monthly process measures surveys to report on adoption and fidelity. Quantitative process measures data was used to categorize implementation effectiveness. Qualitative data was analyzed through thematic analysis using qualitative software and comprehensive memos were written to summarize each organization's data and were subjected to a CFIR construct rating process. Implementation effectiveness categories were compared to qualitative data on CFIR constructs to identify which constructs distinguish effectiveness between higher and lower implementers.

Results: The CFIR construct "tension for change," or the degree to which stakeholders welcome an intervention, was higher among low implementing organizations than high implementors. Constructs related to perceptions of VV model complexity l (complexity), model alignment with organizational mission (compatibility), networks with other implementers (cosmopolitanism, peer pressure), advantages of implementing the model (relative advantage), and planning and goal setting (planning, goals and feedback) were also related to the level of implementation of the VV model.

Conclusions: Identifying constructs that distinguish between high and low implementors can help determine organizational characteristics that can help or hinder program implementation and assist with selecting appropriate implementation partners. This research will also help pinpoint concerns or knowledge gaps prior

to implementation; it will also inform the refinement of the VV model and training and technical assistance for partners.

Physical Activity Promotion in Children Using a Novel Smartphone Game: A Pilot Randomized Controlled Trial

Mr. Sam Lapusniak[1], Associate Professor Sam Liu[1], Dr. Ryan Rhodes[1]
[1]University of Victoria, Victoria, Canada

SIG - Primary Choice: D. e- & mHealth
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Gamification is a promising approach to improve engagement with health apps by implementing game features. Prior evidence has shown that it can increase physical activity (PA) when the game design is appropriately tailored to users. The primary objective study was to evaluate children's satisfaction and acceptance of a self-determination theory-based novel smartphone game to promote PA. Secondary objectives included evaluating the game's effectiveness to increase steps, moderate-to-vigorous physical activity (MVPA), perceived autonomy, competence, and relatedness.

Methods: Children aged 8-14, not meeting the Canadian PA guidelines, were recruited to a 4-week pilot trial, and randomized to a control or intervention group. The intervention featured a smartphone game 'Draco' who is a virtual pet where users care for it by walking, exercising, completing challenges, and answering questions. The intervention group received access to play 'Draco' until trial completion. Satisfaction was measured using an adapted version of the intrinsic motivation inventory (IMI). Steps, and MVPA were collected using a Fitbit Inspire HR. Perceived autonomy, competence and relatedness were collected using the IMI. Baseline steps and MVPA were collected for 1 week. Exit interviews were completed by the intervention group to evaluate their experience and inform future design changes. Data was analysed in SPSS using a 2x2 repeated measures ANOVA and independent samples t-test. Effect sizes were expressed in partial η^2.

Results: 41 children were recruited (mean age: 10.56, SD 1.48, 51% male). Children reported they enjoyed 'Draco' with a mean score of 2.83 (SD 1.29) on a scale of 1-5. Exit interviews showed that children enjoyed the game concept, but more features were necessary to support continued engagement. The intervention group produced small effects on steps (ΔMean=897, SD=1657, η^2=0.04) and MVPA (ΔMean=5.3min, SD 19.29, η^2=0.03). No significant effect was found for perceived autonomy, competence, relatedness.

Conclusion: Children enjoyed playing 'Draco' and cited the video demonstrations of exercises as the most useful feature. Initial evidence for 'Draco' to improve PA rates was promising. The design implications from the results include customization options and including social-like features. Further recruitment is necessary to evaluate the efficacy of 'Draco' relative to control.

Efficacy of web-based personalised feedback on dietary patterns in young Australian adults: the Advice, Ideas and Motivation for My Eating (Aim4Me) randomised controlled trial

Dr. Jennifer Baldwin[1,2], Dr. Rebecca Haslam[1,2], Prof. Helen Truby[3], Prof. John Attia[1], Dr. Melinda Hutchesson[1,2], Prof. Tracy Burrows[1,2], Prof. Robin Callister[1], Prof. Leanne Hides[3], Prof. Billie Bonevski[7], Prof. Deborah Kerr[4], Associate Professor Sharon Kirkpatrick[5], Dr. Megan Rollo[4], Dr. Tracy McCaffrey[6], **Prof. Clare Collins[1,2]**

[1]*University of Newcastle, Newcastle, Australia,* [2]*Hunter Medical Research Institute, Newcastle, Australia,* [3]*University of Queensland, Brisbane, Australia,* [4]*Curtin University, Perth, Australia,* [5]*University of Waterloo, Waterloo, Canada,* [6]*Monash University, Melbourne, Australia,* [7]*Flinders University, Adelaide, Australia*

SIG - Primary Choice: D. e- & mHealth
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Web-based personalised dietary interventions could support young adults to eat healthily. The aim of the Advice, Ideas and Motivation for My Eating randomised controlled trial was to investigate the impact of three levels of personalised dietary feedback using web-based technologies on diet quality (Australian Recommended Food Score [ARFS]) in young adults. Secondary aims were to investigate participant retention, engagement, and satisfaction.

Methods: Participants (18-24 years) were recruited across Australia via web-based methods and randomised to one of three groups. Group 1 (control: brief diet quality feedback), Group 2 (comprehensive feedback on nutritional adequacy + Aim4Me website nutrition resources), or Group 3 (30-minute dietitian consultation + Group 2 elements). ARFS, ARFS subscales and percentage energy (%E) from nutrient-rich core foods were analysed at 3, 6 and 12 months using generalised linear mixed models. A per-protocol sensitivity analyses compared Group 1 vs Groups 2&3 combined at each timepoint. Engagement was measured using study website usage statistics and satisfaction using a process evaluation administered at each timepoint.

Results/findings: One thousand five participants (85% female, mean age 21.7±2.0 years) were randomised (Group 1 n=343; Group 2 n=325, Group 3 n=337), of whom 32 (3%), 88 (9%) and 141 (14%) completed the 3, 6, and 12-month surveys respectively. Only 52 participants in Group 3 (15%) completed the dietitian consultation. No significant group-by-time interactions were observed in the main or sensitivity analyses (p>0.05). At 3 months, Group 3 had higher %E core foods (mean [95% CI] difference between groups 12.8% [1.97, 23.56], p=0.021), and Group 2&3 combined had higher ARFS (mean difference 7.17 [0.06, 14.29] points, p=0.048) and %E core foods (11.34% [0.92, 21.8], p=0.033) versus Group 1. Across 13 website landing pages, the proportion of participants who visited pages ranged from 0.6% (Articles) to 75% (Set goals). Half (53% and 52% in Groups 2 and 3, respectively) of participants who completed the process evaluation were satisfied with the Aim4Me program overall.

Conclusions: Recruiting, engaging and retaining young adults in personalised web-based dietary interventions is challenging. Future research needs to consider methods to optimise web-based dietary interventions for young adults, including use of co-design principles.

O.2V.04 - Social influences on behavioral nutrition and physical activity in children and families

Virtual Session #2

May 20, 2022, 12:05 PM - 1:20 PM

The importance of social support in engaging and retaining girls in male dominated action sports. A qualitative study of young people's perspectives

Dr Melanie Sharman[1], Associate Professor Meredith Nash[1], Dr. Suzanne Waddingham[1], Ms. Anita Oakley[1], Ms. Helen Langenberg[2], **Associate Prof. Verity Cleland[1]**
[1]*University of Tasmania, Hobart, Australia,* [2]*Government of Tasmania, Hobart, Australia*

SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Young people's physical activity (PA) declines in adolescence, especially amongst girls. Action sports (e.g. mountain biking, skateboarding, surfing) are male dominated and under-explored as a pathway to improve girls' PA. Social support is positively correlated with PA but how social support is operationalized in action sports is unclear. This study aimed to explore and compare the social support needs and experiences of girls and boys in action sports.

Methods: Forty-two Australian girls (n=25) and boys (n=17) aged 12-18 years old (mean age 14 years) who were current, past or potential participants in mountain biking, skateboarding and/or surfing, were individually interviewed (telephone/skype) in 2018 or 2020. A socio-ecological framework guided the semi-structured discussion schedule. Audio-recordings were transcribed verbatim and data analysed thematically.

Results: Social support appeared highly influential in young people's desire or opportunity to engage in and continue with action sports. Parents, peers and siblings were the most common providers of social support with extended family (e.g. grandparents, aunts/uncles, cousins) and wider social networks (e.g. family friends, community members, coaches, teachers) also notable. Lack of family or peers as social support providers was a common reason for no or discontinued engagement in action sports. Participation (current, past or co-participation) were the strongest social support types followed by emotional (e.g. encouragement), instrumental (e.g. transport, equipment/funding) and informational (e.g. coaching tips) support. Gendered differences included: girls were inspired by their brother's participation in action sports, but boys were not inspired by sisters; boys and girls co-participated with parents but co-participating with dads and being inspired by dads was most common especially amongst girls; dads were more likely the main provider of transport if they co-participated with their child; dads most commonly provided initial coaching; boys were taught equipment maintenance by parents.

Conclusions: These data highlight the numerous social support providers and the variety of ways social support can influence action sport participation. Gendered differences in social support emphasise that intervention strategies should be tailored in pursuit of equal opportunity for all genders to participate in action sports and PA generally.

The acute effect of heart rate monitor projection on effort in a school exercise class

Ms. Rebecca Cunningham-Rose[1], Prof. Chris Lonsdale[2], Associate Professor Nick Garrett[1], **Associate Prof. Nigel Harris[1]**
[1]Auckland University of Technology, Auckland, New Zealand, [2]Australian Catholic University, Sydney, Australia

SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: High-intensity interval training (HIIT) is a form of vigorous physical activity requiring high effort. The purpose of this study was to examine how projecting heart rate monitor data on to a screen acutely affected exercise intensity during a HIIT session for young adolescents in a school setting.

Methods: Twenty students (12.3 ± 0.9 years, Male=8, Female=12) from one school volunteered to participate. Using a randomized cross-over design within a 4-week period, participants completed four sessions of HIIT with heart rate projection and four sessions of HIIT with no projection. Two teachers were provided with a professional learning session to then deliver the 8–10-minute HIIT sessions in class. Participants wore heart rate monitors (Polar H10™, Finland) for all sessions. Peak session heart rate, expressed as beats per minute (BPM), and % session time above 90% heart rate maximum were collected in all sessions. Focus group interviews were conducted to gain perceptions around the effects of the projection on motivation and effort levels. Heart rate data were analysed using a repeated measure mixed model analysis of variance with a compound symmetry covariance structure. Data are median (interquartile range).

Results: Peak heart rate during the projection condition [186.8 (2.15) BPM] was significantly greater (p=0.011) than non-projection condition [181.5 (2.16) BPM]. Percent of session time above 90% of maximum heart rate was significantly greater (p=0.002) for the projection condition [23.9 (5.2)%] than non-projection [14.4 (5.2)%]. Projection improved student motivation to reach the target, and ignited competition amongst peers to work harder. Teachers noted students appeared more motivated during the projection condition.

Conclusion: Projecting heart data onto a screen in a school class setting increases the acute exercise intensity of students during teacher delivered HIIT, therefore providing an effective way to enhance participation in high effort exercise and contribute to vigorous activity participation in schools.

The effects of child-directed vs. general audience soda advertisements on children's attitudes and beverage choices: Underlying psychological mechanisms and policy implications.

Dr. Fernanda Mediano[1], Dr. Francesca Dillman Carpentier[1], Dr. Jennifer Harris[2], Dr. Lindsey Smith Taillie[1], Dr. Allison J Lazard[1], Dr. Maria Leonora G Comello[1], Dr. Marcela Reyes[3]

[1]University of North Carolina at Chapel Hill, Chapel Hill, USA, [2]University of Connecticut, Connecticut, USA, [3]Universidad de Chile, Santiago, Chile

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: Countries are implementing restrictions on unhealthy food marketing to children, informed by evidence that "child-directed" marketing strategies (e.g., cartoons) elicit positive affect in children, which transfers to the ad and brand and impacts children's food choices. However, children are more exposed to general audience marketing featuring universal emotional appeals, like friendship and fun, which are attractive across ages. This study examined how sugar-sweetened-soda (SSS) ads with child- vs. non-child-directed appeals influence children's beverage choices through attitude change.

Methods: In an online randomized between-subjects experiment (N=546), children 11-12yo were randomly exposed to one of three SSS ads (child- or non-child-directed emotional ad or non-targeted product appeal) or no ad (control). Outcomes included the number of times children chose a soda (0-8) or bottled water (0-5) over another beverage across eight and five dichotomous choices, respectively. Children's attitudes toward the ad and product (I like it: 0 to I hate it:4) were tested as serial mediators predicting each outcome (soda, water). Linear regressions with bootstrapping were used to examine indirect effects. The study was conducted in Chile, given Chile´s comprehensive set of food marketing regulations, which includes restricting "child-directed" strategies promoting products high in calories, sugars, saturated fats, and sodium.

Results: Children's exposure to universal emotional appeals indirectly increased preferences for sodas vs. non-sodas (R^2 = .18, $F_{(4,411)}$ = 23.18, p < .001) and decreased preferences for bottled water over other beverages (R^2 = .13, $F_{(4,411)}$ = 15.23, p < .001) by first enhancing attitudes toward the ad, then product. Both ads with emotional appeals indirectly increased soda preferences (*Boot-B* = .35, *Boot-SE* = .11, *95%CI*: .16, .58), and decreased water preferences (*Boot-B* = -.17, *Boot-SE* = .06, *95%CI*: -.29, -.07), compared to the product-focused ad. No significant differences were found between child- and non-child-directed emotional appeal ads on preferences.

Conclusion: Restricting only child-directed strategies may be insufficient protection from food marketing influences, as universal emotional appeals, rather than child-directed strategies, drove the advertising effects

on children in this study. Further, soda ads using emotional appeals may increase soda preferences and also decrease preferences for healthier beverages, like water.

Experiences, perceptions, and barriers to physical activity parenting practices for Chinese early adolescents: a qualitative study

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Parents are important social agents to promote physical activity for their children. Current knowledge of physical activity parenting practices (PAPP) is predominantly generated from western cultures and for young children, its generalizability to other cultures and adolescents is questionable. This study aimed to qualitatively investigate experiences, perceptions, and barriers to PAPP for Chinese early adolescents.

Methods: Twenty-nine boy-parent dyads and 26 girl-parent dyads participated in 16 matched focus group interviews, and additional 70 boy-parent dyads and 53 girl-parent dyads completed 246 matched open-ended questionnaires. Participants were conveniently recruited from Grade 7 in three public middle schools. Oral and written responses were transcribed verbatim in simplified Chinese and were analyzed inductively with open coding techniques by two researchers using NVivo 12. Discrepancies were assessed using the between-coder comparison function and resolved jointly.

Results: We identified 18 PAPP and grouped them into 6 categories. They were related to 1) goal & control (setting expectations, pressuring, neglect, and restriction), 2) structure (scheduling, monitoring, supervision), 3) parental PA participation (co-participation, disengagement, positive and negative modeling), 4) communication (positive and negative), 5) support (tangible, peer, informational), and 6) discipline (reward, punishment). Participants expressed mixed perceptions towards the effects of these PAPP except for neglect, restriction, disengagement, positive and negative modeling, positive communication, and information support. They also identified parental, child, and environmental factors as barriers for parents to promote adolescent PA. These barriers are related to constrains of time, finance, safety, and facility accessibility, and the lack of PA knowledge, skill, and interests, as well as parenting issues including low parenting self-efficacy, having communication difficulties, unable to develop adolescent PA interests, and adolescent being rebellious and uncooperative.

Conclusions: Even though the variety of PAPP for Chinese early adolescents appears to be similar to PAPP for children from western countries, Chinese parents tend to adopt unfavorable PAPP that are saliant in a culture prone to authoritarian parenting. Besides focusing on PA attitudes, skills and physical environment, future studies need to address parenting challenges that become evident during adolescence.

Exploring relationships between activity fragmentation and motor competence in youth

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: The Active-to-Sedentary Transition Probability (ASTP) is a marker of fragmented physical activity (PA) that differentiates between people's physical capabilities by focusing on the number of transitions between active and inactive states. In older adults ASTP may have greater utility than traditional PA metrics (e.g., total PA, moderate-to-vigorous PA (MVPA)). Children and adolescents have superior physical functioning than older adults, but often differ in motor competence. We examined whether ASTP might provide insights into youth movement capabilities that are not captured by other metrics by analysing relationships between ASTP and motor competence.

Methods: Accelerometers were worn for 7-days by 264 youth (age 11.5 ± 1.4 years; 139 girls) and ASTP was calculated. The Dragon Challenge (DC) motor competence assessment was also completed. Motor competence levels were determined using DC scores (technique, outcome, time, and overall) and the DC Gold/Platinum (most competent), Silver, and Bronze Award (least competent) categories. Differences between ASTP tertiles and DC scores, and associations between ASTP tertiles and DC award categories were analysed with adjustment for sex, maturation, socio-economic status, and school type. Sensitivity analyses were conducted replacing ASTP with more established PA metrics (MVPA, average acceleration (AvAcc), and intensity gradient (IG)).

Results: Youth in the highest ASTP tertile had significantly lower DC outcome (p=.01) and overall scores (p=.03). For MVPA, AvAcc, and IG all DC scores were significantly higher among the more active, compared to less active youth (p=.04 to <.001). The lowest ASTP tertile youth were 64% less likely to be in the Bronze or Silver DC categories, than highest ASTP tertile peers (p=.02). In comparison, the odds of being in the Bronze DC category were 2.5 to 8 times greater for youth in the lowest MVPA, AvAcc, and IG tertiles than those in the highest tertiles (p<.001).

Conclusions: Higher ASTP values corresponded with lower DC motor competence scores. However, when MVPA, AvAcc, and IG were used the differences in motor competence were more consistent and positive associations with DC award categories were stronger. Overall, in youth, established PA metrics were better able to differentiate between levels of motor competence than ASTP.

O.2V.05 - Latest evidence on early care and education research
Virtual Session #1
May 20, 2022, 3:10 PM - 4:40 PM

Culinary Education within Nutrition Interventions for Childhood Overweight and Obesity Treatment: A Secondary Analysis of a Systematic Review of Randomised Controlled Trials

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SIG - Primary Choice: F. Early care and education
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: A systematic review of randomised controlled trials (RCTs) including a nutrition component in childhood overweight and obesity treatments provided evidence of a favourable effect on dietary outcomes. [1] However culinary education (CE) is an under-investigated component of these interventions. Therefore, a secondary analysiswas conducted to: i) identify the prevalence and characteristics of CE in these interventions, ii) evaluate the association between CE and participant outcomes including food and cooking skills, food-related behaviours, nutrition/culinary knowledge, and dietary outcomes, iii) investigate participant/interventionist experience with CE.

Methods: The review1 literature search strategy was updated in February 2021 to include 117 RCTs. To identify the prevalence of CE, full-text articles describing these RCTs were screened for keywords including food or meal preparation, cook*, culinary, food skills, substitution, alternative, demonstration, home economics, recipe*, chef. CE characteristics and outcomes were extracted by one reviewer and checked by another. Extracted data were analysed with descriptive statistics and reporting aligned with Synthesis Without Meta-analysis (SWiM) guidelines.

Results: Thirty-seven RCTs (32%) included CE delivered via information only (recipe provision and/or nutrition education; n=22 RCTs), hands-on cooking activities with/without nutrition education (n=9), or cooking demonstration with/without nutrition education (n=6). CE was delivered via more than one mode in some studies, including face-to-face (n=31), digitally (n=7), and written resources (n=7). CE characteristics such as specific content, dose, adherence, and participant/interventionist experience were poorly reported. No RCTs reported on food and cooking skills outcomes. One RCT reported on and showed improvement in food-related behaviours and nutrition knowledge in the arm receiving CE. In RCT arms where CE was provided, participants had a statistically significant reduction ($P<0.05$) in total energy intake in 5/21 RCTs, sugar-sweetened beverages in 4/14 RCTs, energy-dense-nutrient-poor foods in 5/18 RCTs and increases in nutrient-dense foods in 7/28 RCTs, compared with study arms not receiving CE.

Key Informant Interviews to Inform Nutrition and Physical Activity Recovery Efforts in Child Care Settings amid the COVID-19 Pandemic in the United States

Dr. Allison Magness Nitto[1], Dr. David Berrigan[2], Dr. Andrew Bremer[3], Ms. Leah Carpenter[1], Ms. Sarah Kersten[1], Dr. Amy Yaroch[1]

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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and nutrition

Purpose: The purpose of this study was to explore within the United States (U.S.): 1) how COVID-19 impacted nutrition and physical activity in childcare settings and how best to address these challenges moving forward; 2) adjustments in childcare that emerged during the pandemic as potential best practices worth continuing; and 3) future directions for accessing, implementing, and evaluating the child care COVID-19 government-related investments currently occurring in the U.S.

Methods: In June 2021, we conducted 17 qualitative interviews with U.S. government representatives (n=4), practitioners (n=7), and researchers (n=6). We used purposeful sampling to identify potential interviewees with experience and expertise with regard to childcare policies, practices, and research. Recruitment continued until we achieved thematic saturation. Virtual interviews lasted approximately 45 to 60 minutes, and were audio recorded, transcribed verbatim, and coded for themes and subthemes using thematic content analysis.

Results: Interviewees reported that childcare staff and children experienced increased stress and food insecurity and decreased physical activity and nutritional quality of foods consumed due to COVID-19. Interviewees suggested prioritizing the U.S. COVID-19 government response investments to: 1) improve structural inequities for child care staff by increasing staff salaries and strengthening workplace benefits; 2) reduce food insecurity of child care staff and participating children by continuing meal provision strategies (e.g., grab and go meals and on-site food pantries); and 3) investigate ways to improve nutrition and physical activity opportunities for children in child care, such as adding nature trails, school gardens, and food service equipment.

Conclusion: The study highlighted the nutrition, physical activity, and other impacts of COVID-19 on childcare and identified potential solutions for recovery. Future research could support these efforts to help ensure changes made are evidence-based, equitable, and sustainable and could evaluate the impact of these efforts on food insecurity and health and wellbeing of childcare staff and participating children.

Play Active Program for Early Childhood Education and Care: Lessons During a Pragmatic Trial

Associate Prof. Hayley Christian[1,2], Dr. Andrea Nathan[3], Ms. Emma Adams[3], Ms. Phoebe George[2,3], Ms. Elizabeth Wenden[2,3], Mr. Matthew McLaughlin[3], Prof. Stewart Trost[4], Prof. Jasper Schipperijn[5]
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SIG - Primary Choice: F. Early care and education
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Purpose: Early Childhood Education and Care (ECEC) services are an important setting for supporting physical activity (PA), yet many young children attending ECEC do not achieve the recommended three hours of PA/day. Play Active is an evidence-informed PA policy intervention combined with resources and training to enable ECEC services to successfully implement their policy. This presentation describes baseline results of the Play Active pragmatic trial and preliminary process evaluation outcomes of implementation reach.

Methods: In 2021, baseline data were collected from 79 ECEC services (565 educators) in Perth, Western Australia participating in a pragmatic trial to test the effectiveness of the Play Active program. Educator PA practices were collected using established items (EPAO, NAPSACC, PLAYCE) in an online survey. Services randomised to the intervention (n=40), selected 3-5 policy strategies to focus on during the 3-month trial implementation period. Directors reported mid-intervention progress. Descriptive analyses were undertaken.

Results/findings: At baseline, 70% of educators reported providing ≥180 minutes of PA, 83% provided ≥30 minutes of energetic play, and 60% provided infants with ≥30 minutes of tummy time/day. Overall, 25% of educators had not received PA-based professional development/training in the last two years. A quarter of intervention services selected 'take part in professional development programs to increase knowledge and skills around children's PA' as a policy implementation strategy. Mid-intervention half of the intervention services had at least one educator complete PA-based professional development. Over a quarter of intervention services had a change in Director during implementation. Extensive staff turnover and shortages were highlighted as ongoing barriers exacerbated by the unexpected impact of COVID-19 on the ECEC sector.

Conclusions: At baseline most educators reported meeting the Play Active policy PA recommendations. However, prior research indicates a large proportion of children are not sufficiently active at ECEC. Findings from the trial will elucidate the possible mismatch between educator-reported PA practices and children's PA. Importantly, the unexpected increased demand for childcare and staff shortages has negatively impacted the delivery of Play Active. In future, a 'learning health systems' approach may enable adjustment and retesting of implementation strategies which better respond to ongoing ECEC changes and needs.

Pre and Post diet quality changes during the COVID-19 pandemic among Early Care and Education providers by Food security Status; An exploratory study

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SIG - Primary Choice: F. Early care and education
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Early care and education (ECE) providers are a unique population with important influences on children's dietary habits and long-term health. However, ECE providers have higher rates of food insecurity, around triple the national average at 10.5%; and food insecurity is known to affect dietary behaviors and diet quality in adults. Our brief study's main objective is to explore how food insecurity affects diet quality and dietary behaviors among ECE providers during the COVID-19 pandemic.

Methods: We used baseline (pre-pandemic) and post-evaluation (early pandemic) survey data from a cluster-randomized controlled trial (January 2019-June 2020). We gathered self-reported information from 98 ECE providers employed at the Pennsylvania Head Start Association who did not receive the intervention for this study. We analyzed data on diet quality and self-reported frequency of nutrition intake. We used radar plots to illustrate the Alternative Healthy Eating Index (AHEI)-2010 scores. We fitted linear regression models for diet quality and ordinal logistic models for self-reported frequency of nutrition intake.

Results: Among the 98 participants, 29.6% were food insecure. The unadjusted ordinal regression models analysis showed that food insecure ECE providers were more likely to self-report an increase in frozen fruit and vegetable consumption (44.4% vs 13.0%; P = .001). Results from the unadjusted linear regression models, showed a pattern of lower AHEI-2010 mean score among ECE providers who were food insecure during early pandemic (mean difference for food-insecure vs food secure = -3.8; 95% CI, -8.3 to 0.6; P = .092).

Conclusion: We found some discrepancies in self-reported frequency of nutrition intake compared to the AHEI-2010 scores among food insecure ECE providers. More studies are needed to examine the effects of food insecurity on dietary behaviors of ECE providers and assess the pandemic's impact on ECE providers who are among frontline workers.

A cluster-randomized controlled trial to assess the impact of a nutrition intervention on dietary behaviors among early care and education providers: The Create Healthy Futures study

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SIG - Primary Choice: F. Early care and education
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: This study's primary objective was to examine the impact of a self-paced, web-based intervention, "Create Healthy Futures," on diet quality, dietary behaviors, and related psychosocial and environmental factors among ECE providers.

Methods: A cluster randomized controlled trial (CRCT) with baseline surveys administered from October 2019-January 2020, intervention implementation April-May 2020, and post-intervention from May 2020-August 2020, and the intersection of intervention implementation with the initial phase of the COVID-19 pandemic. Centered-based ECE programs under the Pennsylvania Head Start Association (n=12) were recruited and randomized to intervention (n=5) or comparison (n=7) groups. A total of 186 ECE providers completed the post-intervention surveys (retention rate: 86.1%). Outcome measures included providers' diet quality, meal pattern, and food intake, measured using the 127-item 2014 Block food frequency questionnaire. Nutrition knowledge index, dietary behaviors, and related psychological and environmental factors were also measured using previously validated measures. ECE providers' pre-to-post-intervention behavioral and psychosocial changes were examined using a mixed-effects linear regression analysis with a random intercept for individuals. We estimated the adjusted mean difference (aMD) within each of the Intervention and comparison groups at baseline and post-intervention from the mixed-effects models.

Results: At baseline, 31.5% of ECE providers were food insecure. Pre-to-post intervention demonstrated no significant within-or-between-group changes in the diet quality scores. ECE providers in the intervention group reported a significant decrease from baseline to post-intervention in the number of days eating out (adjusted-Mean-Difference=-0.8, CI:-1.6 to -0.1, P=.03). When asked about COVID-19 related concerns, ECE providers were primarily concerned about changes in employment status (50.8%), followed by financial stability (49.7%) and affordability of food (44.9%). Process evaluation showed that 89.9% of the intervention group completed 100% of the online module, and 82.9% attended 100% of wellness session groups.

Conclusion: Given the high prevalence of food insecurity coupled with additional concerns subsequent to the pandemic, future studies should employ strategies that improve access to healthy foods in addition to nutrition education to improve diet quality and health in the ECE provider population.

How do children and their caregivers who experience differing levels of deprivation in London, England experience obesity prevention interventions? Stakeholder influence in tailoring Go-Along Interview approaches

Dr. Sabine Parrish[1], Dr. Mark Spires[1], Dr. Daisy Bradbury[2], Prof. Carolyn Summerbell[3], Prof. Corinna Hawkes[1], Prof. Tessa Pollard[3]

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SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: England, and more specifically the Greater London Area, faces a severe problem of inequality in child obesity despite years of government action through targeted obesity prevention interventions. There is a range of plausible, multifaceted reasons why this may occur, including contextual considerations that may undermine the intended impact of these interventions. The Family Food Experience Study – London (FFES-L) explores how children and their caregivers experience existing obesity prevention interventions in their real-life contexts. We set out to design tailored Go-Along Interviews (GAI) to be used to understand how and where children are reached by obesity prevention measures.

Methods: To develop an effective and tailored GAI approach, input from local authorities was gained via a formal 'Stakeholder Steering Group' (SSG), as well as via a walk through a neighbourhood of interest. Community input on GAI design was solicited via a formal 'Caregiver Advisory Panel' (CGAP) both prior to and throughout data collection. We asked these groups to identify interventions of interest and for feedback on logic models created for each local intervention.

Results: Interventions to be studied were identified by the SSG and logic models for each intervention served as the basis for identifying areas of interest for the GAIs. Following feedback from the CGAP, an initial non-interview visit with each participating family to map potential walking routes and identify where interventions might reach children was added to the study design. Routes planned for GAIs included walks home from school and to shop for food, and were extended to include visits to home kitchens; joining families across multiple routes in their daily lives was designed to reveal intersecting contexts within wider food environments.

Conclusions: The design of the GAIs reflected the importance of tailoring existing methods for specific contexts and research questions and the possibilities for constructive influence by stakeholders. Stakeholder participation in this adaption process proved to be key in refining the GAI approach and making it as effective as possible in capturing the diverse experiences of Londoners. The resulting GAI approach is currently being piloted.

Conclusions: Only one-third of child and adolescent overweight and obesity treatment interventions reported including CE. To enable a better understanding of CE as a strategy for improving dietary outcomes in childhood overweight and obesity treatment, reporting and evaluation of CE in this context require greater attention.

[1] https://doi.org/10.1111/jhn.12831

Evaluation of a Kinect-based fundamental movement skills rating system for primary school-aged children

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: Traditional process-based approaches to measure fundamental movement skills, such as the Test of Gross Motor Development, is typically time-costly and may be subject to differences in trained assessors. To overcome these deficiencies in the assessment of these skills, we developed a system to capture and rate fundamental movement skill performances in real-time using infrared cameras (i.e., Microsoft Kinect). Specifically, motor skills were assessed based on criteria adapted from the Test of Gross Motor Development (versions 2 and 3). In this study, we examined the validity of scores derived from the system.

Methods: 1,174 students (52% male; age = 9.15 ± 1.63 years) from Grades 1 to 6 participated in this study. 1,888 performances of children, including seven ball skills, were rated by the system. The same performances were videotaped and assessed retrospectively by two well-trained assessors. Comparisons of scores were made at the skill level (i.e., combining all scored criteria within each skill). The percentages of agreement and kappa statistics were calculated, for each skill respectively, to evaluate the validity of scores derived from the system.

Results: Fundamental movement skills scored using the system have strong agreement with expert ratings. Percentage agreements and kappa coefficients ranged between 84% to 94%, and .661. to .859, respectively.

Conclusions: Results of the study suggested the developed system could generate valid scores of children's fundamental movement skills. The objective and real-time feedback generated could improve instruction and learning in physical education. Nonetheless, the system inherited some limitations of the depth sensors, such as limited sensing width and depth, and the inability to detect external objects (e.g., balls). These challenges may be overcome by applications of other advanced techniques, such as machine learning.

O.2V.06 - Focusing on parental influences on behavioral nutrition and physical activity

Virtual Session #2

May 20, 2022, 3:10 PM - 4:40 PM

Perception discrepancies of presence, influence, and barriers to physical activity parenting practices between Chinese parents and early adolescents

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IG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: We aimed to compare perceptions on the presence, effect and barriers to physical activity parenting practices (PAPP) between Chinese parents and adolescents and between adolescent boys and girls.

Methods: A convenient sample of 29 boy-parent dyads and 26 girl-parent dyads participated in 16 matched focus group interviews and 70 boy-parent dyads and 53 girl-parent dyads completed 246 matched open-ended questionnaires. Oral and written responses were transcribed verbatim in simplified Chinese and were analyzed inductively with open coding techniques by two researchers using NVivo 12. Coding discrepancies were checked and resolved prior to quantifying qualitative data. The number of participants by each PAPP code were counted using the crosstab query function. Comparisons of code frequencies between parent-adolescent and between boy-girl were performed using Chi-square tests or Fisher Exact tests.

Results: Among the 18 PAPP employed by parents, tangible support was more likely (52.7% vs. 10.9%, $p < 0.001$), whereas negative communication (34.5% vs. 9.1%, $p = 0.001$) and negative modeling (23.6% vs. 7.3%, $p = 0.001$) were less likely reported by parents than adolescents. Regarding the influence of PAPP, more adolescents than parents made negative comments on pressuring (10.7% vs. 3.4%, $p = 0.007$) and restriction (36.2% vs. 16.9%, $p < 0.001$) and positive comments on scheduling (13.6% vs. 2.8%, $p = 0.001$) and co-participation (51.4% vs. 28.8%, $p < 0.001$). Compared to boys, more girls favored co-participation (64.1% vs. 41.4%, $p = 0.003$) and complained about negative communication (19.2% vs. 5.1%, $p = 0.003$). In addition, parents were more likely to report environmental barriers to PAPP (15.3% vs. 4.0%, $p = 0.001$), such as lacking affordable facilities and unsafe neighborhood, while adolescents were more likely to report child barriers to PAPP, such as lacking PA interests (42.4% vs. 27.1%, $p = 0.003$) and being screen obsessive (24.9% vs. 14.7%, $p = 0.016$).

Conclusions: Perception discrepancies toward the presence, influence and barriers to PAPP needs to be addressed in PA promotion programs for Chinese early adolescents. Current findings generated from quantifying qualitative data also need to be validated in future studies.

Food preferences of adolescents and their association with parents' food preferences: data from the China Health and Nutrition Survey (CHNS)

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Food preference is an important factor that affects one's eating behavior and dietary intake. Parents' food preferences and food choices may influence their children and adolescents' food preferences. This study aims to describe adolescents' food preferences and to explore their association with their parents' food preferences.

Methods: The data was drawn from four waves of the China Health and Nutrition Survey (CHNS) conducted between 2006 and 2015. CHNS is a national nutrition survey started since 1989. Food preferences were assessed by five questions in the CHNS questionnaires. Participants were asked to indicate their degree of preferences to five food categories (fast food, salty snack food, fruits, vegetables, and soft/sugary drinks), using a 5-point Likert scale (from "dislike very much" to "like very much"). The higher the score is, the higher degree of preferences is. The time trends of adolescents' food preferences were described. Gender differences in food preferences were explored. Logistic regression was performed to determine the association of food preferences between adolescents and their parents.

Results: The food preferences of adolescents remained stable over the nine years, while their preferences for vegetables decreased in recent years. Adolescents' preferences for unhealthy foods (including fast food, salty snack food and soft/sugary drinks) were significantly higher than adults ($P<0.05$). Girls' preferences for healthy foods (including fruits and vegetables) were significantly higher than boys ($P<0.05$). Regardless of boys or girls, adolescents' food preferences for each food category were positively associated with their mothers' food preferences (OR ranged 1.74 -5.66); and their preferences for fruits, vegetables and soft/sugary drinks were associated with their fathers' food preferences (OR ranged 2.11-4.58). However, no significant association was observed between paternal and adolescents' (both boys and girls) total unhealthy food preference scores, or adolescent girls' fast food and salty snack food preferences.

Conclusions: Adolescents have a high degree of unhealthy food preferences. Mothers appear to play a more important role in affecting adolescents' unhealthy food preferences than fathers. Interventions on healthy dietary intake should target adolescents and their mothers.

Parents' perceptions of young children's physical activity, wellbeing and development in and around blue spaces across four coastal communities in Western Australia

Ms. Phoebe George[1,2], Associate Prof. Hayley Christian[1,2], Dr. Kevin Murray[2]
[1]Telethon Kids Institute, Perth, Australia, [2]The University of Western Australia, Perth, Australia

SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Natural outdoor environments such as oceans, rivers, lakes, and swamps (commonly referred to blue spaces) have been associated with positive health benefits such as increased physical activity, reduced stress, improved sleep and enhanced mental health and wellbeing. This study examined how families with young children (aged 2-10 years) access and use different types of blue spaces and what the different health and development benefits (and potential negative effects) were across four coastal communities in Western Australia.

Methods: Parents (n=27) of young children across four coastal communities in Western Australia were recruited to participate in interviews via purposive sampling. The communities varied in geographic location, socioeconomic status and had a range of blue spaces within them. A generic qualitative design was utilised and the study was grounded in the pragmatism paradigm. Interviews were transcribed (n=23) or written accounts were taken (n=4) and anonymised. Data was imported into Nvivo software for thematic analysis.

Results/findings: The interviews lasted between 11 and 42 minutes and the participant's age ranged between 45 and 27 years. Themes related to perceived increased child physical activity levels were 1) animals in and around aquatic environments, 2) environmentally friendly behaviours, 3) quality family time and play, 4) water safety and resilience and 5) displacement of both child and adult screentime. Barriers and facilitators around the use and importance of the quality of the space was identified as key mitigating factors to families' time in and around blue spaces.

Conclusions: The beaches, swamps, rivers and lakes were key settings in which parents reported increased levels of child and adult physical activity. The themes showed a broad range of how children and families used and benefited from particularly the beach as a setting for physical activity, as well as improved sleep, child behaviour, mental health, emotional regulation and confidence. Interventions could focus on improving accessibility and built environment features around blue spaces to make them more family friendly. To date, this appears to be one of the first studies to investigate how young Australian children and their families use and interact with blue spaces and the related physical activity benefits.

Parental education level and running performance in children. The Health Oriented Pedagogical Project (HOPP)

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical Activity

Purpose: Parental socioeconomic status (SES) has been found to influence offspring's health. Better economy, better education and more knowledge about factors that enhance health are among the reasons to explain this health gap. This study aimed to relate parental SES, defined as education level, to the performance of their offspring in a shuttle run test.

Methods: HOPP is a longitudinal project, following pupils from 1st to 6th grade. When they finish 6th grade, they leave the project. Participants were recruited from nine elementary schools in South-East Norway. The pupils were tested for running performance once a year with a 10 min intervall shutle run test, the Andersen Test. The distance covered during the test was the performace criterium. Parental education level was recorded at baseline.

Results/findings: The running performance is presented at two time points, the first with children from age 6 to 12, the last when children were 9 to 12 years old. The children from parents with university-level education were always best on the running test. At age 9 to 12, children who's parents had intermediate level (high school) education performed significantly better than those who's parents had primary/secondary school level.

Conclusions: The impact of parental education level was visible on running performance in children. In Norway with its egalitarian society with minor economic differences between groups in society, the education level may be used as a proxy for SES. Financial problems may thus be of less importance, and social norms may be more critical. People with higher education have been shown to be more physically active and smoke less than people with lesser education. Therefore, children of parents with a higher education level are socialised into an environment where physical activity is positively regarded and practised more. The fact that the lowest education group was significantly lower than the intermediate group as age increased highlights the importance of social norms.

Effects of universal school-based parental support for children's healthy diet and physical activity – the Healthy School Start Plus cluster randomised controlled trial

Dr. Åsa Norman[1,2], Ms. Mahnoush Etminan Malek[1], Associate Professor Gisela Nyberg[1,3], Dr. Emma Patterson[1,4], Prof. Liselotte Schäfer Elinder[1,5]

[1]Karolinska Institutet, Stockholm, Sweden, [2]Stockholm University, Stockholm, Sweden, [3]The Swedish School of Sport and Health Sciences, Stockholm, Sweden, [4]Swedish Food Agency, Uppsala, Sweden, [5]Centre for Epidemiology and Community Medicine, Stockholm, Sweden

SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Physical activity and nutrition

Background: Promotion of healthy behaviours at an early age is key to prevent children's unhealthy weight development, and parents are important targets in such health promoting interventions. The Healthy School Start is a school-based intervention that aims to promote healthy dietary habits and physical activity in the home environment and to prevent obesity in children starting school, through parental support. This study evaluated the effectiveness of the third iteration of the intervention: A Healthy School Start Plus, on children's dietary, physical activity, and sedentary behaviours, and body composition.

Methods: The Healthy School Start Plus was assessed in a cluster-randomised controlled trial in 17 schools (intervention=8, control=9) in disadvantaged areas in regions in and around Stockholm, Sweden, involving 353 families. Intake of indicator foods (healthy and unhealthy foods, and sweetened beverages) was measured using a novel photography-based method, physical activity and sedentary time were measured by accelerometry, and body weight and height were measured. BMI standard deviation score was calculated, and weight status based on international cut-off values. Data were acquired at baseline and post-intervention (8 months), and linear regression analyses was used to explore differences between groups on outcomes post-intervention, through three models. Fidelity to intervention was monitored throughout the intervention period.

Results: Favourable intervention effects were found regarding consumption of sweetened beverages (p = 0.02), healthy foods (p = 0.04) and moderate to vigorous physical activity during weekdays overall (p = 0.03) and during non-school time on weekdays (p = 0.03). An unfavourable subgroup effect was found regarding sedentary time for children in families with low education (p=0.05).

Conclusions: The third iteration of the Healthy School Start intervention had beneficial effects on children's MVPA and dietary behaviours, particularly on sweetened beverages. As it ran in disadvantaged areas, this suggested that it can contribute to reducing social inequalities in health. The results align with the previous two iterations of the Healthy School Start intervention and indicate that the intervention is a useful tool for health promotion and potentially for the prevention of unhealthy weight in young children.

S.2V.07 - Co-designing lifestyle behaviour research with young adults: Opportunities and challenges

Virtual Session #1

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
This symposium will provide an overview of co-designing lifestyle behaviour research (nutrition, physical activity, sedentary behaviour and sleep) with young adults (aged 16-35 years). We will focus on the vital role co-design plays in the conduct of impactful research with this group and the challenges faced in the co-design process.

Rationale:
Young adulthood is synonymous for poor eating habits, physical inactivity, sedentary behaviours and poor sleep hygiene. Research to understand behavioural determinants during this transitional life stage and efficacious interventions to improve behaviours often suffer from poor engagement, and very few have engaged young adults in research processes. Co-design, or meaningful engagement with end-users (e.g. consumers, stakeholders) in research design, is a potential solution to overcome poor engagement.

Objectives:
1. To describe current approaches to co-design of lifestyle behaviour research with young adults.
2. To critically discuss the benefits and challenges of co-design of lifestyle behaviour research with young adults using current research examples.
3. To identify knowledge gaps and new areas for research using co-design methodologies for lifestyle behaviour research for young adults.

Summary:
This symposium will provide an overview of co-design research in young adulthood to improve lifestyle behaviours. Each of the three presentations will provide a unique contribution and will link together to explore how to navigate the challenges and opportunities for co-design in this group.

Format:
• Chair: Dr Katherine Livingstone will introduce the young adult target group, and co-design research principles (10 mins).
• Presentation 1: Dr Melinda Hutchesson will describe the co-design of a longitudinal cohort study of young adult university students to track changes in health behaviours and mental health (15 mins).
• Presentation 2: Dr Stephanie Partridge and Rebecca Raeside will describe the co-design of a text message intervention to improve physical and mental health outcomes among 13 to 24 year olds (15 mins).
• Presentation 3: Dr Rajshri Roy will describe a scoping review of the use of co-design methods with Maori and Pasifika youth to improve or adapt digital health interventions (15 mins).
• Discussant: Dr Katherine Livingstone will summarise the key messages and facilitate discussion with the audience and presenters. This will include recommendations for co-design of research with young adults and 'lessons learnt' (20 mins).

Interaction:
The Chair/Discussant will introduce the symposium, manage questions from the audience and enhance the symposium by providing a summary of key message and inviting the audience to share experiences.

Co-design of a longitudinal study to understand changes in health behaviours and mental health among young adult university students

Dr. Melinda Hutchesson[1], Dr. Megan Whatnall[1], Prof. Mitch Duncan[1], Dr. Lee Ashton[1], Dr. Amanda Patterson[1], Prof. Frances Kay-Lambkin[1], Prof. Tracy Burrows[1]
[1]*University of Newcastle, Callaghan, Australia*

SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: All

Purpose: There is limited understanding of how young adults' health behaviours (e.g. eating habits, physical activity, sleep, sedentary behaviour) change during their university enrolment, and how these changes influence mental health and academic achievement. This study aimed to establish a research protocol for a longitudinal cohort study to understand changes in health behaviours, academic achievement and mental health throughout university enrolment, using co-design principles

Methods: A five phase integrated knowledge translation (IKT) methodology was utilised to co-design the protocol for a longitudinal cohort study to commence at the University of Newcastle (UON), Australia, in 2022. Phase 1 involved the multi-disciplinary research team developing a proposed research protocol based on their research expertise, and a systematic review of existing cohort studies with consistent aims. Phase 2 involved consultation with key knowledge users to gain feedback on the proposed protocol, achieved through online survey of current undergraduate students' aged 17-25 years, and online interviews with 10 knowledge users within the UON. Phase 3 involved the research team reviewing the Phase 2 findings, and refining the protocol based on the feedback provided in the survey and interviews. Phase 4 involved a focus group with the knowledge users from Phase 2. Participants were provided a summary of the Phase 2 findings and the updated proposed protocol. Feedback on the updated proposal was captured via a series of open questions. Phase 5 involved the research team reviewing the findings of Phase 4, and finalising the research protocol based on the feedback provided.

Results: The five phase IKT methodology commenced in September 2021, and is due to be completed in December 2021. The results of the IKT methodology will be presented, along with the final cohort study protocol, and its effectiveness (e.g. recruitment rates for the study in 2022).

Conclusion: Co-design of research with knowledge users is an integral step in ensuring successful engagement of young adults in longitudinal research (e.g. effective recruitment, retention, data collection). Co-design of this cohort study will ensure the new knowledge captured by the study can be used to inform relevant health and wellbeing policies and practices in the university setting.

Co-design of health4me: a healthy lifestyle text message program for adolescents

Ms. Rebecca Raeside[1], Prof. Julie Redfern[1,2], **Dr. Stephanie Partridge[1,3]**, Other HEALTH4ME Team[1,2,3]

[1]*Engagement and Co-design Research Hub, School of Health Sciences, University of Sydney, Sydney, Australia*, [2]*The George Institute for Global Health, University of New South Wales, Sydney, Australia*, [3]*Prevention Research Collaboration, School of Public Health, University of Sydney, Sydney, Australia*

SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: All

Purpose: Modern society is hindering adolescents from engaging in positive lifestyle behaviours, putting young people at increased risk of developing chronic diseases. As part of the solution, adolescents need to be supported to optimize their health, including having access to digital health services. Text message programs in adults have been found to be effective for improving lifestyle behaviours, but effectiveness in adolescents is unknown. Co-design of to digital health interventions is essential to ensure they are relevant and engaging. We aim to co-design a text message program to improve physical and mental health outcomes in adolescents (13-24-years).

Methods: An iterative, mixed methods process will be utilized guided by Youth-led Participatory Action Research (YPAR). An established youth advisory group (YAG, n=16) will lead the process of co-design for text message categories and content, including both text and media-based messages (e.g., images and videos) with support and guidance from the research team. An existing text message bank (107 messages) from the TEXTBITES RCT with adolescents above a healthy weight will also be reviewed and expanded to ensure messages are specific to adolescent issues and relevant to vulnerable groups e.g., rural and remote communities, low SES and culturally and linguistically diverse backgrounds. Each message will be rated by three adolescents and three experts (public health researchers, behaviour change experts) via virtual survey to assess ease of understanding, usefulness, and appropriateness on a 5-point Likert scale from strongly agree to strongly disagree (total score/15). Free text will also be available to suggest message improvements. Messages that score below 11/15 will be edited or deleted. Final messages will be tested with Flesch-Kincaid tool to assess readability. A separate evaluation study will be conducted to understand the effects of participation in the YAG, namely, leadership skills and participatory competence, among others.

Results: Following co-design, a digital health program will be available for effectiveness testing. Message content will be relevant and engaging to adolescents.

Conclusion: Co-design of mHealth programs is potentially necessary to enhance engagement and effectiveness of interventions. Co-designed text messages will be tested as part of a digital health RCT with 330 adolescents (MRFF Funded).

A scoping review of the use of co-design methods with Māori and Pasifika youth to improve or adapt digital health interventions

Dr. Rajshri Roy[1], **Miss Jessica Malloy[1]**, Dr. Joya Kemper[2], Dr. 'Ilaisaane Fifita and the Daily Health Coach team[2]
[1]*Department of Nutrition and Dietetics, University of Auckland, New Zealand, Auckland, New Zealand,* [2]*Department of Marketing, University of Auckland, New Zealand, Auckland, New Zealand*

SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: All

Purpose: Obesity rates for Māori and Pasifika people in New Zealand continue to rise. However, interventions designed for the general population tend to be less effective for Māori communities and may contribute to increased health inequities. Maori and Pasifika research methodologies and the varying cultural models of health encourage to use co-design methodologies to engage individuals and whānau (families) in digital health intervention design and improvement so it is culturally relevant and address many factors that affect health. This scoping review aims to identify research that used co-design methods through the development of relevant knowledge and meaningful engagement and relationship building with Māori and Pasifika young adults (18-24 years) in digital health interventions, and to identify methodological considerations for working with this population.

Methods: In November 2021, we are currently searching five electronic databases (CINAHL, PsycINFO, EMBASE, MEDLINE, Web of Science) to identify papers published in which Māori and Pasifika young adults were engaged in the co-design of a digital health intervention or program. Searches were limited to peer-reviewed articles published in English in the last 25 years (1996–2021). The search is currently underway. Using a scoping review methodology, the authors will be charting the data using extraction fields and using qualitative synthesis methods to identify themes. Data will be grouped into themes relevant to the research question.

Results: This presentation will outline the findings of this scoping review which will enable us to explore the utility of co-design methodology with Māori and Pasifika young adults and to guide future research into how best to design and improve digital health interventions for this population group.
Conclusions: There are some methodological considerations for researchers using co-design methodology when engaging Māori and Pasifika young adults in a digital health intervention design or quality improvement research.

S.2V.08 - New rapid assessment tools to measure obesity-related behaviours in 0 – 5-year-olds

Virtual Session #2

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
This symposium will report on the development of novel rapid assessment tools to measure obesity related behaviours (dietary intake, physical activity, screen time, and sleep) in infants, toddlers, and preschool-aged children.

Rationale:
Poor diet, excessive screen time, inadequate sleep and insufficient physical activity are key obesity-related behaviours, even among infants and young children. The ability to monitor population trends, evaluate scaled-up intervention programs and make informed policy and practice decisions, depends on the availability of suitable assessment tools. However, validated and 'fit-for-purpose' tools for use with infants, toddlers and preschool-aged children that are feasible for use in policy and practice settings limits are lacking. Existing tools and device-based methods are cost- and time-intensive for users and are frequently mis-used, giving rise to poor data quality and interpretation. Valid and reliable rapid assessment tools are therefore urgently needed to address these barriers and enhance research, particularly in policy and practice settings.

Objectives:
Inform health researchers and practitioners about the new tools.
Summarize the rigorous multistage process used to develop the new tools.
Report the psychometric properties of the new assessment tools for dietary intake and movement behaviours.
Discuss next steps for the deployment in policy-relevant research and practice settings.

Summary:
The symposium will begin by discussing why short tools are needed and the rigorous multi-stage process employed to create the new tools, including cognitive interviewing studies. The results of the validation studies for the diet and movement behaviour assessment tools will then be presented. The discussant will

summarise the program of research and facilitate a discussion about potential deployment issues and use case scenarios.

Format:
- Chair: Introduction and overview of the multi-stage development process (Stewart Trost) – 10 minutes
- Oral 1: Insights from cognitive interviewing in the development of rapid assessment tools that measure obesity-related behaviours in children aged 0-5 years.(Rebecca Byrne 15 minutes)
- Oral 2: Validity and reliability of the Infant, Toddler and Pre-schooler Dietary Questionnaire to measure obesity-related dietary intake (Rebecca Golley) 15 minutes
- Oral 3: Validity and reliability of the Movement Behaviour Questionnaire for babies (MBQ-B) and young children (MBQ-C). (Stewart Trost) 15 minutes
- Discussant: Summary (Rachael Taylor) – 5 minutes
- Panel Questions and Guided Discussion (Rachael Taylor) – 15 minutes

Interaction:
We will use Whova or Twitter to distribute a link to the tools, along with questions requiring attendees to reflect on the use of the tools in their own research and/or practice.

Insights from cognitive interviewing in the development of rapid assessment tools that measure obesity-related behaviours in children aged 0-5 years.

Dr. Rebecca Byrne[1], Dr. Dorota Zarnowiecki[2], Dr. Caroline Terranova[1], Dr. Li Kheng Chai[4], Dr. Lucinda Bell[2], Dr. Denise Brookes[1], Prof. Rebecca Golley[2], Prof. Stewart Trost[3]

[1]*Queensland University of Technology, Brisbane, Australia,* [2]*Flinders University, Adelaide, Australia,* [3]*The University of Queensland, Brisbane, Australia,* [4]*Health and Well Being Queensland, Brisbane, Australia*

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Preschoolers 2-5 yrs
Subject Category: All

Purpose: Cognitive interviewing was utilised to understand the recall processes used by parents when reporting their young child's dietary intake and movement behaviours. This study aimed to inform the development of a suite of brief tools which assess behaviours of infants, toddlers, and pre-schoolers.

Methods: A systematic review and expert consensus informed the selection of items within the EPOCH-Dietary Questionnaire (EPOCH-DQ) and Movement Behaviour Questionnaire (MBQ). Semi-structured interviews—combining think-aloud and retrospective probing approaches to evaluate comprehension, estimation, and response processes—were conducted, while parents completed the EPOCH-DQ (N=21) or MBQ (N=20). Interview transcripts were analysed to identify relevant themes.

Results: Participants recalled their usual family routines and rules when estimating duration/frequency of behaviours. When recalling core food intake, parents considered their typical weekly schedule of activities, particularly main meals consumed at home. For unhealthy foods, participants contemplated disruptions to usual routine, especially provision of food outside the home or by other caregivers such as grandparents, and intake at snack times.

To estimate duration of active play, parents referred to the child's daily routine considering wake and bedtimes, daytime naps or eating occasions. There was a need for numeracy skills to support accurate reporting e.g., calculating the difference between bedtime and waketime to estimate sleep duration, or multiplying the duration of a favourite television show by number of episodes watched per day to determine a value for screen time. In estimating dietary intake, participants developed a response by converting how food was served to grams/centimetres.

Participants often misunderstood which foods/activities to include when estimating a response to an item. They were influenced by the specific examples provided and were often unable to interpret these as exemplars only. One instance was when recalling duration of vigorous play. Decomposing the general item into more specific questions with examples of both active and vigorous play was well-received by participants.

Conclusions: Findings informed item wording, judicious use of examples and recall prompts in the questionnaire versions taken forward to validation studies. Cognitive interviewing has enhanced our confidence that items taken forward to the validation studies are correctly interpreted and understood by participants.

Validity and reliability of the Young-Children Dietary Questionnaire to measure obesity-related dietary behaviours

Dr. Dorota Zarnowiecki,[1] Dr. Rebecca Byrne[2], Dr. Lucinda Bell[1], Dr. Alexandra Mason[1], Prof. Rachael Taylor[3], Prof. Stewart Trost[4], **Prof. Rebecca Golley[1]**
[1]*Flinders University, Adelaide, Australia, [2]Queensland University of Technology, Brisbane, Australia, [3]University of Otago, Otago, New Zealand, [4]The University of Queensland, Brisbane, Australia*

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: Quick and robust measurement of lifestyle behaviours in young children is needed for monitoring population trends and evaluating obesity prevention programs in early life. The study aim was to assess the validity and reliability of a new rapid assessment tool to measure obesity-related dietary behaviours in young children.

Method: The 10-15 item Young Children Dietary Questionnaire (Y-CDQ) was developed with versions suitable for 6-12mo (15-items) and 12-60mo (10-items) children. The Y-CDQ is caregiver reported and takes between 5-10min to complete. Dietary behaviours include vegetable variety and intake, type of bread, type of milk, frequency of fruit juice, sweetened drinks, chocolate, crisps/savoury snacks, ice cream, hot fried potato, pizza, processed meats and sweet biscuits/cakes/muffins. The infant version has additional infant feeding items. Sub-scores were constructed for vegetables, sweetened drinks and discretionary (unhealthy) food domains. Concurrent validity was evaluated using the INFANT FFQ as the reference tool. Construct validity and test-retest reliability were also evaluated.

Results: Caregivers reported on intake of 209 children aged 12-60 months. Caregivers were diverse with respect of age, weight status, number of children, use of childcare services and indicators of socio-economic position. Concurrent validity values (Spearman's rho) ranged from 0.47 (pizza) to 0.89 (sweetened drinks), all items and sub-scores $p<0.05$. Sub-scores correlated with energy and nutrient intake in the expected direction. Test-retest values (ICC, 95% CI) ranged from 0.61 (pizza) to 0.96 for (fruit juice, fruit drinks, sweetened drinks).

Conclusion: The Y-CDQ shows acceptable validity for assessing obesity-related behaviours in children under five-years of age. The evaluation of questions at the individual item and sub-score level provide flexibility to use some or all of the questions. Future research is needed to replicate results across cultural populations and to evaluate sensitivity to detect change.

Psychometric properties of the Movement Behaviour Questionnaire for Babies (MBQ-B) and Young Children (MBQ-C)

Prof. Stewart Trost[1], Dr. Caroline Terranova[2], Dr. Denise Brookes[2], Dr. Li Kheng Chai[3], Prof. Rachael Taylor[4], Dr. Rebecca Byrne[2]
[1]The University of Queensland, Brisbane, Australia, [2]Queensland University of Technology, Brisbane, Australia, [3]Health and Well Being Queensland, Brisbane, Australia, [4]University of Otago, Otago, New Zealand

SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The development of validated "fit-for-purpose" rapid assessment tools to measure 24-hour movement behaviours in children 0 - 5 is a research priority. This study evaluated the test-retest reliability and concurrent validity of the open- and closed-ended versions of the Movement Behaviour Questionnaire for babies (MBQ-B) and young children (MBQ-C).

Methods: 300 parent-child dyads completed the 10-day protocol (MBQ-B: N=85; MBQ-C: N=215). To evaluate validity, children wore an accelerometer on the non-dominant wrist or 7 days and parents completed 2 x 24-hour activity diaries recording screen time and sleep on two separate days. For babies (i.e., not yet walking), parents completed 2 x 24-hour activity diaries recording tummy time, active play, restrained time, screen time, and sleep on days 2 and 5 of the 7-day monitoring period. To assess test-retest reliability, parents were randomised to complete either the open- or closed-ended versions of the MBQ on day 7 and on day 10. Test-retest intraclass correlation coefficients (ICC's) were calculated using generalized linear mixed models and validity was assessed via Spearman correlations.

Results: Test-retest reliability for the MBQ-B was good to excellent with ICC's ranging from 0.80 – 0.94 and 0.71 – 0.93 for the open- and closed-ended versions, respectively. For both versions, significant positive correlations were observed between 24-hour diary and MBQ-B reported tummy time, active play, restrained time, screen time, and sleep (rho = 0.39 – 0.87). Test-retest reliability for the MBQ-C was moderate to excellent with ICC's ranging from 0.68 – 0.98 and 0.44 – 0.97 for the open- and closed-ended versions, respectively. For both the open- and closed-ended versions, significant positive correlations were observed between 24-hour diary and MBQ-C reported screen time and sleep (rho = 0.44 – 0.86); and between MBQ-C reported and device-measured time in total activity and energetic play (rho = 0.27 – 0.42).

Conclusions: The MBQ-B and MBQ-C are valid and reliable rapid assessment tools for assessing 24-hour movement behaviours in infants, toddlers, and pre-schoolers. Both the open- and closed-ended versions of the MBQ are suitable for research conducted for policy and practice purposes, including the evaluation of scaled-up early obesity prevention programs.

S.2V.17 - Community based system dynamics supports communities to better health

Virtual Session #3

May 20, 2022, 4:55 PM - 6:10 PM

Purpose:
This symposia will provide an opportunity to hear from world leaders in co-designing, implementing and evaluating community based systems interventions.

Rationale:
The environments in which people live, work and play have shifted over the past 50 years and had a profound impact on food availability, sleep quality and opportunities for physical activity. Whole of community systems interventions have piqued global interest because of their potential to empower communities to modify environments to optimise health. In particular, community-based system dynamics (CBSD) offers a set of tools and theories that allows for facilitated conversations that empower communities to act on a series of interconnected, local drivers of a problem from their perspective.

Objective:
To stimulate debate on the application of community based system dynamics in real world system change.

Summary:
Discussants (University of Auckland and Washington University in St. Louis) will set the scene and introduce examples of the latest group model building methods in use with communities around the world. This will be followed by three stimulating presentations from communities in Australia, the U.S. and the Netherlands.

Format:
Our first presentation, from Deakin University, will present the results of a four-year stepped-wedge cluster randomised control trial among ten communities in South-west Victoria which utilised CBSD to improve the

health of primary school children. This presentation will also report on how the evidence from this trial has been incorporated into our current four-year cluster randomised control trial.

Our second presentation, the LIKE programme, is a collaboration between academia, municipality and local health services in Amsterdam (Netherlands). LIKE is a system dynamics and participatory action research programme that promotes healthy living in 10-14 year old adolescents. In LIKE, system dynamics and evaluation theory are combined with the experience of designing and evaluating LIKE to develop an adaptive systems evaluation that can guide future public health programmes in complex adaptive systems.

Our third presentation from the Implementation Science Center for Cancer Control at Washington University in St. Louis will present a case study of applying CBSD to explore the implementation of community gardens in a town in Missouri, USA. The project is exploring the possibility of a longer-term initiative to improve healthy lifestyles to prevent cancer. The case study will explore how the process assisted community-based stakeholders in aligning their goals and ideas of how community gardens operate.

The discussants will drawn critical cross-cutting themes with the presenters and the audience.

Using Community Based System Dynamics to Understand Different Visions and Goals of Implementing Community Gardens in Rural Missouri

Ms. Sarah Pritchard[1], Associate Professor Stephanie Mazzucca[1], Mr. Simon Cozzens[1]
[1]*Washington University, St Louis, USA*

SIG - Primary Choice: E. Implementation and scalability
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Implementation of health promotion efforts often involves cross sector collaborations where each member of the collaborative has unique perspectives on how implementation should be approached. This highlights the need for a systems approach that can help stakeholders better understand contextual variation among organizations and develop a shared vision of the complex system affecting the successful implementation of health promotion efforts. Community based system dynamics (CBSD) is a promising method for whole of community approaches to health promotion. CBSD is a participatory, systems science method for involving communities in understanding and changing the feedback structures giving rise to the dynamic problems they are facing (Hovmand, 2016). In CBSD, community stakeholders work together to develop system dynamics models that are used to identify places to intervene to create the change they wish to see in their communities. This collaborative process helps stakeholders not only understand the endogenous causes of behavior, but can also help solve coordination problems so group can coalesce upon a shared understanding of the system.

This project used CBSD to develop implementation strategies for a network of community gardens in rural Missouri. The area has a longstanding neighbor-run community garden, as well as a collection of gardens run by local organizations; however, many of the gardens operate independently of each other and there has been a diversity of opinion about policies, priorities, mission, and purpose of the gardens. We partnered with the local Wellness Council, who wished to develop a shared vision for the future of community gardening in the area and come to consensus on how the gardens could work together with the Wellness Council to ensure successful implementation. Council members and garden stakeholders participated in a series of CBSD workshops to develop a qualitative model of the system impacting the success of community gardening in their area. Participants then used the model to identify places to intervene, brainstorm action ideas, and begin developing a collaborative plan to ensure the successful implementation of local community gardens.

Reflections on the four-Year Outcomes and next steps from a Cluster Randomized Whole of Systems Trial of Prevention for Childhood Obesity

Dr. Claudia Strugnell[1], Prof. Steven Allender[1], Mr. Andrew Brown[1], Prof. Colin Bell[1], Mr. Nic Crooks[1], Dr. Kristy A Bolton[1], Mr. Andrew Brown[1], Dr. Kayla de la Haye[3], Dr. Lynne Millar[4], Prof. Marj Moodie[1], Prof. Boyd Swinburn[2], Prof. Liliana Orellana[1], Dr. Joshua Hayward[1], **Dr. Jillian Whelan[1]**

[1]Deakin University, Geelong, Australia, [2]University of Auckland, Auckland, New Zealand, [3]University of Southern California, Los Angeles, USA, [4]Curtin University, Perth, Australia

SIG - Primary Choice: K. Participatory Research in Health Promotion
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Systems science methodologies have been used in attempts to address the complex and dynamic causes of childhood obesity with varied results. This abstract presents the four-year outcomes of the Whole of Systems Trial of Prevention Strategies for Childhood Obesity (WHO STOPS Childhood Obesity) for behavioral, health-related quality of life (HRQoL), and BMI outcomes. It also describes how these findings have informed the Reflexive Evidence & Systems interventions to Prevention Obesity and Non-communicable Disease (RESPOND) trial. RESPOND represents a significant advance on previous approaches by operationalising a clear systems methodology and building skills and knowledge in the design and implementation of this approach among community stakeholders.

Both WHOSTOPS and RESPOND are cluster randomised trials of 10 communities randomly allocated to start intervention at either step 1 or step 2 in different areas of Victoria, Australia. Both interventions comprise four stages: catalyse and set up, monitoring, community engagement, and implementation. WHOSTOPS data were collected from participating primary schools in April to June of 2015 (73% school participation rate), 2017 (69%), and 2019 (63%). Student participation rates were 80% in 2015 (1,792/2,516 invited), 81% in 2017 (2,411/2,963), and 79% in 2019 (2,177/2,720). Repeat cross-sectional analyses of measured height and weight (grades two, four, and six [aged approximately 7 to 12 years]), self-reported behavior, and HRQoL (grades four and six) were conducted. RESPOND will be evaluated through a similar method. RESPOND enhanced WHOSTOPS through the inclusion of community training in community based system dynamics to transfer leadership of the system approach into the skillset of community stakeholders.

Within WHOSTOPS there was an intervention by time interaction in BMI z scores ($P = 0.031$) and obesity/overweight prevalence ($P = 0.006$). BMI z score and overweight/obesity prevalence decreased between 2015 and 2017 and increased between 2017 and 2019 in intervention communities. The intervention significantly reduced takeaway food consumption ($P = 0.034$) and improved physical ($P = 0.019$), psychosocial ($P = 0.026$), and global ($P = 0.012$) HRQoL. Water consumption increased among girls ($P = 0.033$) in the intervention communities, as did energy-dense, nutrient-poor snack consumption among boys ($P = 0.006$). RESPOND will continue until 2023.

The ENCOMPASS framework: A practical guide for the evaluation of a System Dynamics and Participatory Action Research programme

Ms. Angie Luna Pinzon[1], Prof. Wilma Waterlander[1], Prof. Karen Stronks[1]
[1]*Amsterdam UMC, Amsterdam, Netherlands*

SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Physical activity and nutrition

Purpose: Systems thinking embraces the complexity of public health problems such as childhood overweight and obesity. It helps identifying and understanding the underlying factors that drive childhood overweight and obesity by looking at the whole picture. Once this understanding is obtained, an action programme can be developed and implemented that will target these underlying factors so that the system can be transformed to the desired state. While the application of systems thinking in public health research has advanced, there is still relatively little guidance on how to evaluate public health programmes in complex systems. This study therefore aimed to develop an evaluation framework that can be used to evaluate public health programmes in complex adaptive systems.

Methods: The Lifestyle Innovations based on youth Knowledge and Experience (LIKE) programme was used as a case study. LIKE focuses in the transition from child to adolescence (age 10-14) and is conducted in three lower socioeconomic neighbourhoods in the city of Amsterdam, The Netherlands. In LIKE, we work with adolescents, families, societal stakeholder, researchers and local government in order to develop, implement and evaluate actions that help transform the system into one where healthy behaviour is stimulated.

We combined our experience in designing and evaluating the LIKE programme with exiting evaluation guidelines and evaluation theory to arrive at the Evaluation of Programmes in Complex Adaptive Systems (ENCOMPASS) framework. This framework provides a practical guide on how to evaluate programmes in complex adaptive systems.

Results: The ENCOMPASS framework contains five iterative steps: (1) adopting a complex systems perspective on the overall evaluation design; (2) defining the system boundaries; (3) understanding the pre-existing system to inform systems change; (4) monitoring dynamic programme output at different system levels; and (5) measuring programme outcome and impact in terms of systems change.

Conclusions: We hope our framework and its application in the LIKE programme can inspire future public health programmes in developing and evaluating programmes in complex adaptive systems.

O.3V.07 - High level constraints in behavioral nutrition and physical activity

Virtual Session #1

May 21, 2022, 8:30 AM - 9:45 AM

Consumers, retailers and policy makers' perspectives on policy options in retail settings to improve diet- a qualitative systematic review

Mrs. Preeti Dhuria[1], Ms. Millie Barrett[1], Dr. Wendy Lawrence[1], Dr. Emma Roe[3], Prof. Janis Baird[1,2], Dr Christina Vogel[1,2]
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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: There is ample evidence linking unhealthy diets to obesity and ill-health. The UK government is bringing in landmark legislation to restrict promotion and prominent placement of unhealthy foods in retail settings to reduce the prevalence of obesity. In some countries, policies to support healthy eating have not been perceived as effective and has led to policy withdrawal. This study synthesised evidence for the views of consumers, retailers and policy makers on previous policies to improve diet by conducting a systematic qualitative literature review to help inform future policy implementation.

Methods: Five scientific electronic databases were searched for qualitative studies published from 1996 to January 2021. Studies were included if they focused on policies to improve food retail environments and were conducted with adults over 18 years in high income countries. Quality appraisal applied the Critical Appraisal Skills Programme (CASP) tool. Two researchers completed screening of full-text papers, data extraction and analysis. Thematic synthesis of included studies was conducted in NVIVO following Thomas and Harden's approach.

Results: Twenty-one studies, mostly from the USA and Australia, met the inclusion criteria. Thematic analysis identified nine themes. The cross-cutting themes identified across all stakeholder groups were the need for i) clear policy scope and definitions, ii) establishing stakeholder support, and iii) avoiding negative financial impact. Government policies to support healthier choices were perceived positively by consumers. Retailers raised concerns about financial impacts and practical implementation considerations but were receptive to changing consumer trends. Policy makers highlighted that both political will and opportunity were essential for policy initiation. Potential factors undermining policy effectiveness were consumer shift to other unhealthy behaviours, industry tactics, and enforcement challenges.

Conclusions: Findings from this review can help inform evaluation of the upcoming UK legislation. Ongoing examination of the contextual factors that influence policy acceptability, facilitate implementation and adoption could help this novel policy achieve its intended effects and avoid unintended consequences.

Neighbourhood Support for Active Living: Implications for Overweight and Obesity Among a Sample of Ghanaian Adults

Dr. Fidelia Dake[1], Ms. Vida Nyawornota[1]
[1]University of Ghana, Accra, Ghana

SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Background: Overweight and obesity have been observed to be increasing in many developing countries including those in Africa and although there is a growing body of research on the drivers of obesity in Africa, research on the influence of the food and physical activity environments is still grey.

Objective: We examined the association between neighbourhood factors such as housing type and aesthetics and overweight and obesity among a sample of Ghanaians.

Methodology: This study analysed primary data collected under the NEWS-AFRICA project. Stratified cluster sampling was employed in selecting a total of 1,075 respondents from communities with neighbourhoods of varied socioeconomic status and residential density from three regions in Ghana. The NEWS-AFRICA and the IPAQ Long Form instruments were used to collect data on the neighbourhood environment and physical activity among respondents. Overweight and obesity were measured using the standard WHO BMI cut-off points. The final analytical sample includes 1,022 respondents after excluding respondents who were underweight and those with missing cases.

Findings: About half of the sample were of normal weight while 31.4% were overweight and 17.2% were obese. In terms of neighbourhood characteristics, about a quarter (25.4%) of the respondents indicated that the type of housing in their neighbourhood were few residential buildings within a 2-5 minute walk. Also, about a third (31.4%) of the respondents strongly disagreed that their neighbourhood had beautiful natural sights/views. The results of a multinomial logistic regression indicate that in the absence of other factors, respondents who live in neighbourhoods where dwellings are further apart were less likely to be overweight (OR=0.624, p<0.05) or obese (OR=0.277, p<0.001) and after controlling for factors such as age, sex and use of motorised transportation, respondents who live in neighbourhoods where the dwellings are further apart were still less likely to be obese (OR=0.321, p<0.001).

Conclusion: These findings suggest that the design of neighbourhoods and dwelling units has potential implications for overweight and obesity. Addressing the challenge of overweight and obesity in Ghana will therefore require a broader multi-sectoral approach rather than a narrow focus on factors related to nutrition and or physical activity only

Association between online grocery delivery service use and food and drink purchase behaviour: a cross-sectional analysis of UK purchase data

Dr. Amy Yau[1], Dr. Cherry Law[1], Dr. Laura Cornelsen[1], Dr. Jean Adams[2], Dr. Emma J Boyland[3], Dr. Thomas Burgoine[2], Prof. Frank de Vocht[4], Prof. Martin White[2], Prof. Steven Cummins[1]
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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Online grocery delivery services (OGDS) are an increasingly popular way to purchase groceries. The impact of OGDS on population diet and inequalities in purchasing is under-studied. This study examined how the use of OGDS varies by sociodemographic characteristics and is associated with grocery purchases.

Methods: Item-level take-home food and drink purchase data (n=3,233,920) from households (n=1911) in London and the North of England were available from the 2019 UK Kantar Fast Moving Consumer Goods Panel. Purchases were categorised as online or in-store. We used logistic regression to estimate the likelihood of above median OGDS use by sociodemographic characteristics. We then used Poisson regression to estimate (i) differences in overall energy and nutrients purchased by households that had above and below median OGDS use and (ii) the proportion of energy purchased from 35 food groups online vs in-store among households that used both shopping methods (n=665).

Findings: Of households that used OGDS, median use was five occasions in 2019. Households were more likely to have above median use if the household was in London vs North of England (OR 1.29, 95% CI 1.01 to 1.65) or had a higher annual household income (OR 1.56, 95% CI 1.02 to 2.38 for ≥£50,000 vs <£20,000). Households with above median OGDS use purchased 1,460.8 kcal (95% CI 1,447.7 to 1,473.8) more energy per person per week compared to households with below median use. Households that used a combination of in-store and online shopping methods purchased a larger proportion of energy from vegetables (1.0%, 95% CI 0.2 to 1.8), healthy non-milk-based drinks (1.6%, 95% CI 0.7 to 2.4) and alcohol (1.2%, 95% CI 0.4 to 2.1), and a smaller proportion of energy from less healthy food groups such as puddings and biscuits (-3.3%, 95% CI -4.1 to -2.5), and chocolate and confectionery (-1.5%, 95% CI -2.2 to -0.7) in their online purchases compared to in-store purchases.

Conclusions: OGDS use is greater among higher-income households. Although online shopping baskets were healthier, households that had above median OGDS use also purchased greater amounts of energy overall. This may lead to increases in over-consumption or waste.

Changes in household food and drink purchases following restrictions on the advertisement of high fat, salt and sugar products across the Transport for London network: A controlled interrupted time series analysis

Dr. Amy Yau[1], Dr. Nicolas Berger[1, 2], Dr. Cherry Law[1], Dr. Laura Cornelsen[1], Mr. Robert Greener[1], Dr. Jean Adams[3], Dr. Emma J Boyland[4], Dr. Thomas Burgoine[3], Prof. Frank de Vocht[5], Prof. Matt Egan[1], Dr. Vanessa Er[1], Prof. Amelia A Lake[6, 7], Prof. Karen Lock[1], Dr. Oliver Mytton[3], Prof. Mark Petticrew[1], Dr. Claire Thompson[8], Prof. Martin White[3], Prof. Steven Cummins[1]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose Restricting advertising of products with high fat, salt and sugar (HFSS) content has been recommended as a tool to tackle obesity, but the impact on purchases is unknown. This study is one of the first to evaluate the impact of an outdoor advertising policy on food and drink purchases. Our study aimed to estimate changes in household purchases of energy and nutrients from HFSS products associated with the introduction of HFSS advertising restrictions across the London (UK) transport network in February 2019.

Methods: Over 5 million take-home food and drink purchases were recorded by 1,970 households (London [intervention] n=977; North of England [control] n=993) randomly selected from the Kantar Fast Moving Consumer Goods panel. Using a controlled interrupted time series design, we estimated average weekly household purchases of energy and nutrients from HFSS products in the post-intervention period (44 weeks) compared to a counterfactual constructed from the control and pre-intervention (36 weeks) series.

Findings: Energy purchased from HFSS products was -6.7% (-1,001.0 kcal, 95% CI -1,546.0 to -456.0) lower among intervention households compared to the counterfactual. Relative reductions in purchases of fat (-57.9 g, -93.7 to -22.1), saturated fat (-26.4 g, -40.4 to -12.4) and sugar (-80.7 g, -120.1 to -41.4) from HFSS products were also observed. Energy from chocolate and confectionery purchases was -19.4% (-317.9 kcal, -435.8 to -200.0) lower than the counterfactual, with corresponding relative reductions in fat (-13.1 g, -18.8 to -7.5), saturated fat (-8.7 g, -11.7 to -5.7), sugar (-41.4 g, -55.4 to -27.4) and salt (-0.2 g, -0.2 to -0.1) purchased from chocolate and confectionery. Relative reductions are in the context of secular increases in HFSS purchases in both the intervention and control areas, so the policy attenuated growth of HFSS purchases rather than reducing purchases in absolute terms.

Conclusions: Our study provides evidence on the association between outdoor HFSS advertising restrictions and food and drink purchases. Our findings provide support for policies that restrict HFSS advertising as a tool to reduce purchases of HFSS products as a way of improving population diet and preventing obesity.

A new front-of-pack environmental label triggers more environmentally friendly choices: a randomized controlled trial in a virtual reality supermarket

Miss Laura Arrazat[1], Dr. Stéphanie Chambaron[1], Prof. Gaëlle Arvisenet[1], Mrs. Isabelle Goisbault[2], Mr. Jean-Christophe Charrier[2], Dr. Sophie Nicklaus[1], Dr. Lucile Marty[1]
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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Providing information about the environmental impact of food products at the point of choice could overcome consumers' underestimation of the environmental impact of food. It could alter consumers' food choices and decrease the environmental impact of their diets. We aimed to test the effect of a new traffic-light front-of-pack environmental label on food choices in a virtual reality supermarket and to examine whether this label provided consumers with new information regarding the environmental impact of food products.

Methods: In a randomized controlled trial, 132 participants (N=67 in the environmental label condition and N=65 in the no label condition) performed food choice tasks in a virtual reality supermarket. They were asked to choose three raw food products to compose a home-cooked meal (task 1) and one ready-meal food product (task 2) for an everyday meal (scenario 1) and for an environmentally friendly meal (scenario 2). The environmental label (ranging from A: green/lowest impact, to E: red/highest impact) was based on the Environmental Footprint (EF) single score calculation across food categories. Mixed models were used to test the effect of the label on meals EF single score.

Results: In the everyday meal scenario, the environmental impact of meals was lower in the environmental label condition than in the no label condition (-0,17 ± 0,07 mPt/kg, p = 0,012) indicating an effect of this label on food choices. In the environmentally-friendly meal scenario, the same effect was found (-0,19 ± 0,07 mPt/kg, p = 0,005) indicating that the label provided new information. A complementary analysis by meal type indicated that less meat-based meals and more vegetarian meals were chosen in the environmental label condition. Nutritional quality, energy cost, liking and familiarity of the meals were the same with or without the label.

Conclusions: We demonstrated the effectiveness of a new traffic-light front-of-pack environmental label in reducing the environmental impact of food choices through food categories substitutions. Adding this label on food products in real supermarkets could lead to an increase in the collective awareness of the environmental impact of diets and contribute to drive more environmental-friendly food choices at a population level.

How a sugar-sweetened beverages tax may impact the budgets, dietary intake, and health of lower and higher socioeconomic groups differently. A qualitative study of stakeholder views in the Netherlands.

Ms. Sanne Djojosoeparto[1], Ms. Michelle Eykelenboom[2], Dr. Maartje Poelman[3], Assistant Prof. Maartje Van Stralen[2], Associate Professor Carry Renders[2], Associate Professor Margreet Olthof[2], Prof. Ingrid Steenhuis[2], Associate Prof. Carlijn Kamphuis[4]

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: A sugar-sweetened beverages (SSB) tax may contribute to a reduction of socioeconomic health inequalities. However, the Dutch government decided to not (yet) introduce an SSB tax, although the government has acknowledged its potential to be pro-equity. Understanding how various stakeholder groups perceive the potential effects of an SSB tax on different socioeconomic groups may provide useful insights into equity-related considerations in the debate whether or not to implement an SSB tax. This study aimed to gain insight into the perceptions of stakeholder groups in the Netherlands on (1) the effects of an SSB tax on the budgets of lower and higher socioeconomic groups and (2) the impact of an SSB tax on socioeconomic inequalities in dietary intake and health.

Methods: Semi-structured interviews were conducted in 2019 with 27 participants from various stakeholder groups in the Netherlands (i.e. health and consumer organizations, health professional associations, trade associations, academia, advisory bodies, ministries and parliamentary parties). Interview transcripts were analyzed using a thematic content approach. Interview fragments that were coded with either '*health inequalities*' or '*budgetary inequalities*' were further analyzed.

Results: Participants from all stakeholder groups indicated that an SSB tax would have a larger impact on the budgets of lower socioeconomic groups. Participants from nearly all stakeholder groups (except trade associations) mentioned that an SSB tax could have greater health benefits among lower socioeconomic groups as these often have a higher SSB consumption and are more likely to be overweight or obese. Some participants mentioned that an SSB tax may have no or adverse health effects among lower socioeconomic groups (e.g. compensation of lower SSB consumption with other unhealthy behaviours). Some participants emphasised that an SSB tax should only be introduced when accompanied by other interventions (e.g. promotion of healthy alternatives), to make it easier for lower socioeconomic groups to lower their SSB consumption in response to an SSB tax, and to prevent adverse health effects.

Conclusions: Participants believed an SSB tax could contribute to a reduction in socioeconomic inequalities in dietary intake and health. However, additional interventions facilitating the reduction of SSB consumption in lower socioeconomic groups were recommended.

O.3V.08 - Trends and latest findings in disease prevention and management

Virtual Session #2

May 21, 2022, 8:30 AM - 9:45 AM

The 2018 World Cancer Research Fund/American Institute for Cancer Research Score and cancer risk: a longitudinal analysis in the NIH-AARP Diet and Health Study

Dr. Ariella Korn[1], Dr. Jill Reedy[2], Dr. Nigel Brockton[3], Ms. Lisa Kahle[4], Dr. Panagiota Mitrou[5], Dr. Marissa Shams-White[2]

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: The World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) updated their Cancer Prevention Recommendations in 2018 focused on weight, physical activity, and diet. We examined cancer risk according to adherence to the Recommendations, among older U.S. adults, using the standardized 2018 WCRF/AICR Score.

Methods: Participants included 250,106 adults in the U.S. National Institutes of Health (NIH)-AARP Diet and Health Study followed between 1995-2011 (mean 13.2 person-years follow-up). The 2018 WCRF/AICR Score (range: 0-7 points) was calculated from self-reported measures of weight, physical activity, and diet—including plant-based foods, ultra-processed foods, red/processed meat, sugar-sweetened drinks, and alcohol. Outcomes included 17 cancers reviewed in the 2018 WCRF/AICR Third Expert Report (WCRF/AICR cancers) with strong evidence of causal links to weight, physical activity, and diet (cases: male n=17,998; female n=15,799) and top three U.S. cancers in males (total n=8,019; lung n=2,648; prostate n=2,252; colorectal n=3,119) and females (total n=11,067; lung n=1,798; post-menopausal breast n=7,576; colorectal n=1,693). Cox proportional hazard ratios (HRs) were estimated for associations between the Score and cancer risk. Models were adjusted for covariates and stratified by sex and smoking status.

Results: Males and females had a mean Score of 3.2 (SD=0.9) and 3.5 (SD=1.0) points, respectively. Each one-point Score increase was associated with a 6-10% reduced risk of WCRF/AICR cancers and a 6-11% reduced risk of the top three U.S. cancers, except for male current smokers' risk for the top three U.S. cancers (HR=0.96; 95% CI: 0.90-1.03). Higher Scores were associated with decreased lung cancer risk only among male former smokers (HR=0.85; 95% CI: 0.80-0.89) and female current smokers (HR=0.92; 95% CI: 0.85-0.99). Additionally, higher Scores were associated with a 7-10% decreased breast cancer risk, regardless of smoking status, and a 9-16% decreased colorectal cancer risk among male and female never and former smokers. Scores were not significantly associated with prostate cancer risk across smoking strata.

Conclusions: Greater adherence to the 2018 WCRF/AICR Cancer Prevention Recommendations was associated with reduced cancer risk. Findings emphasize the importance of considering the combined contributions of multiple lifestyle factors for cancer prevention among older adults.

Trends in risk factors and management strategies used by people with type 2 diabetes in New South Wales, Australia

Ms. Leonie Cranney[1], Dr. Bronwyn Mcgill[1], Dr. Philip Clare[1], Prof. Adrian Bauman[1]
[1]PANORG, PRC, Sydney School of Public Health, Sydney, Australia

SIG - Primary Choice: M. Disease prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical activity and nutrition

Purpose: Type 2 diabetes (T2D) is increasing among mid-older Australians in New South Wales (NSW), Australia. Adopting healthy lifestyle behaviours is important for T2D self-management and can lower risks of further health complications. Monitoring lifestyle risk factors including overweight or obesity, healthy diet and physical activity, alcohol consumption, smoking and psychological distress remains important. This study compared these risk factors in NSW adults with T2D to those without diabetes and examined adoption of three diabetes lifestyle self-management strategies in those with T2D.

Methods: The analyses used data from the NSW Adult Population Health Survey, an annual stratified random sample survey of NSW residents interviewed by telephone. Trends in prevalence of T2D risk factors in mid-older adults (aged 40+) with T2D were compared to age/sex matched NSW adults from 2004-2019. Diabetes lifestyle self-management strategies included: following a special diet, trying to lose weight; and exercising most days. Analyses were conducted on survey data (n=142,168), using predicted probabilities from generalised linear models, weighted to population estimates.

Results/findings: Throughout the 16-year study period overweight or obesity prevalence remained significantly higher amongst those with T2D [83.1% (80.9%-85.2%) to 81.7% (79.6%-83.7%)] compared to those without diabetes [61.0% (59.4%-62.6%) to 61.2% (59.5%-62.8%)]. However, only 8.9% of those with T2D were trying to lose weight. There were significant declines in the proportions of those with T2D reporting: sufficient fruit consumption [63.9% (60.8%-66.8%) to 50.1% (47.2%-53.0%)]; moderate vegetable consumption (3 serves) [49.0% (45.7%-52.3%) to 37.7% (34.9%-40.5%)]; sufficient physical activity [40.0% (36.9%-43.3%) to 34.0% (31.4%-36.8%)]; following a special diet [73.6% (68.4%-78.1%) to 55.9% (50.2%-61.5%)] and exercising most days [33.5% (28.2%-39.1%) to 22.2% (18.3%-26.6%)].

Conclusions: This study highlights potential gaps in T2D secondary prevention and suggests targeted diabetes education and behaviour change is needed to address lifestyle risk. Our findings warrant increased attention on healthy weight management, optimal nutrition, and sufficient physical activity amongst adults with T2D in NSW. Reasons fewer people with T2D adopt these lifestyle management strategies should be explored, to inform prevention practice. Establishing systems to deliver services to those most in need is an important next step in diabetes prevention efforts.

Understanding the relationship between diet/nutrition and mental health among immigrants from a holistic bio-psycho-socio-cultural lens

Mrs. Sarah Elshahat[1], Dr. Tina Moffat[1], Ms. Malak Aiad[1], Ms. Lein Charkatli[1], Ms. Emily Gomes-Szoke[1], Mr. Samiuddin Danish Mohammed[1]
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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: The rapidly growing field of nutritional psychiatry suggests that diet/nutrition plays a substantial role in shaping individuals' mental health and psychological well-being. This can be of particular interest for immigrants/refugees whose dietary acquisition and mental health can be affected by different psychosocial, cultural, and ecological factors, such as language barriers, cultural norms and nutritious food accessibility issues. Despite the complex relationship between food/diet and mental health among immigrants, most scholarship in this area uses a biomedical perspective. This systematic scoping review employs a holistic bio-psycho-socio-cultural lens to effectively examine how different dietary/nutrition variables impact immigrants' mental health.

Methods: Five electronic databases (Embase, PubMed, PsycINFO, Medline, and Anthropology Plus) were systematically searched, in keeping with PRISMA guidelines, to locate relevant studies from Western countries. All age/gender groups and study designs were eligible. No limitations were made on immigrants' countries of origin.

Results: Fifty-eight studies were included for evidence synthesis. Fruit/vegetable, whole grains, unsaturated fats and vitamin D-rich foods were significantly and negatively related to depression, psychological distress and anxiety symptoms via different pathways. These include improved sleep quality, enhanced self-esteem and increased physical activity. Highly processed foods and sugar-dense beverages were significantly and positively associated with symptoms of anxiety, psychological distress and depression through various mechanisms, including exhaustion, worry about contracting diet-related non-communicable diseases and feelings of guilt. Food insecurity and related hunger were significantly associated with increased symptoms of anxiety and depression amongst immigrants. Reported pathways included homesickness, social exclusion, family conflicts, feelings of shame/stigma and helplessness due to not affording nutritious foods that meet one's cultural dietary requirements.

Conclusions: Mixed-method and longitudinal research that uses holistic bio-psycho-socio-cultural framework is needed to effectively understand the complicated relationship between nutrition/diet and immigrants' mental health. This will help inform culturally sensitive and evidence-informed dietary programs and food policies to improve immigrants' nutritional status and mental health outcomes.

Correlates of walking for transport in older adults: a cross-sectional study

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity
Purpose: Identifying barriers related to transport walking in older age may help encourage travel related activity and promote healthy ageing. This study aims to explore the demographic, socio-economic, and behavioural factors associated with transport related walking in community-dwelling Australian older adults.

Methods: This cross-sectional analysis utilises data from the ASPirin for PReventing Events [ASPREE] and ASPREE Longitudinal Study of Older Persons [ALSOP]. Frequency of transport-related walking and its potentially related factors were self-reported (exception: body mass index derived from objectively measured height and weight), and their association was assessed by multinomial logistic regression.

Results: Of 11,705 participants (mean age=75.1 years, 53.2% women), 324 (2.8%) reported never transport walking [NW], 2,547 (21.7%) engaged in transport walking rarely or once a week [R/OW], 3,664 (31.3%) participants walked for transport more than once a week [MW] and 5,170 (44.2%) walked for transport everyday [ED].

Compared to participants that NW for transport, the odds (OR (95% CI)) of transport walking R/OW, MW and ED were lower among participants of older age (R/OW: 0.53 (0.39-0.72)), (MW:0.45 (0.33-0.62)), (ED: 0.41 (0.30-0.55)), living alone (R/OW: 0.85 (0.65-1.10)), (MW: 0.80 (0.62-1.04)), (ED: 0.68 (0.53-0.88)), being female (R/OW: 0.85 (0.65-1.11)), (MW: 0.71 (0.55-0.92)), (ED: 0.49 (0.38-0.64)), being a never or former alcohol consumer (R/OW: 0.78(0.58-1.04)), (MW:0.67 (0.50-0.90)), (ED: 0.68 (0.51-0.91)), and people classified as living with obesity (R/OW: 0.68(0.50-0.94)), (MW: 0.39 (0.29-0.53)), (ED: 0.26 (0.19-0.36)). In contrast, odds of transport walking were higher among people living outside major cities (R/OW: 1.67 (1.31-2.11)), (MW: 1.77 (1.40-2.23), (ED: 1.49 (1.18-1.88), having more than 12 years of education (R/OW: 1.60 (1.26-2.05)), (MW: 1.68 (1.32-2.14)), (ED: 1.73 (1.36-2.19)), earning between $50,000-99,000 annually (R/OW: 1.37 (0.92-2.05)), (MW: 1.70 (1.15-2.52)), (ED: 1.77 (1.20-2.61)), living in areas of least disadvantage (R/OW: 2.47(1.67-3.64)), (MW: 3.21 (2.19-4.72)), (EW: 2.56 (1.75-3.75)), and being a former or never smoker (R/OW: 1.51 (0.85-2.66)), (MW: 2.41 (1.36-4.26)), (ED: 2.39 (1.37-4.18)).

Conclusions: When designing interventions to increase transport walking in older adults, special consideration is to be given to females, those living alone, with obesity, of lower income or education, current smokers or those living in socio-economically disadvantaged areas.

Parent Perspectives on a Pediatric Produce Prescription Program

Dr. Sara Folta[1], Mr. Leo Trevino[2], Ms. Zhongyu Li[1], Mr. Kurt Hager[1], Dr. Fang Fang Zhang[1]
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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Growing evidence indicates that health care systems can help address poor nutrition and food insecurity. Produce prescription programs, in which health care providers give guidance on and economic incentives for fruits and vegetables, are among the more promising interventions. The purpose of this qualitative study was to obtain parent perspectives on a pediatric produce prescription program in terms of overall logistics and use of the produce.

Methods: In May-June 2021, we conducted individual and small group interviews with 23 parents who participated in a produce prescription program through a community health center serving predominantly low-income families in Texas, U.S. Eligible parents had a child aged 1-5 years. Parents were provided with a gift card that reloaded $60 monthly for six months and was restricted to produce purchases at a major national grocery retailer. Parents also received nutrition education via videos. Interviews were recorded and transcribed verbatim. We analyzed the data using a deductive qualitative content analysis approach.

Results: All 23 participants were female. Their mean age was 37.5 years and 83% identified as Hispanic/Latino. Participants described the gift card as easy to use and the amount as satisfactory. Most would have preferred inclusion of more stores in the program. They described using the program to purchase: 1) a greater quantity of usual produce, 2) more expensive produce than usual, and/or 3) new produce varieties to try. Most said that children ate the produce as snacks; some incorporated more vegetables into dinners. Participants appreciated that the funds were specifically for produce, which allowed for more risk-taking with new varieties. Most said that this resulted in children finding new fruits and vegetables that they enjoy, but for some, pickiness remained an obstacle.

Conclusion: This produce prescription program presented no major logistical challenges to parents, although future programs may consider inclusion of multiple grocery outlets. The program eased food-related financial strain and allowed parents to expand the amount and type of produce purchased. Some parents may require more strategies to incorporate produce or more intensive nutrition counseling to overcome persistent pickiness and gain full benefit from the program.

Effects of a community-based weight loss programme on physical activity levels for overweight adults with pre-diabetes

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Purpose: This study aimed to examine the efficacy of a 12-month community-based diabetes prevention program on physical activity (PA) levels among overweight Chinese adults with pre-diabetes.

Methods: Adults with pre-diabetes were randomly assigned to receive group-based lifestyle intervention (intervention) or SMS (control) group. Participants in the intervention group attended six group-based sessions (including two 1-hour workshops delivered by a physical trainer) and two individual face-to-face diet counselling sessions during the first 6 months, followed by monthly telephone support during the subsequent 6 months. The control group received text messages containing general health information. Level of PA were assessed by using a Chinese version International Physical Activity Questionnaire at baseline, 6 and 12 months. The MET-minutes scores and total weekly minutes spent in vigorous PA, moderate PA and walking were calculated. The MET-minutes scores were calculated and used to categorize participants' level of activity into "inactive", "minimally active" and "health-enhancing physical activity" (HEPA) levels.

Results: A total of 199 adults (mean age=54 years, BMI= 27.7kg/m^2, minimal active or inactive=75.9%) joined the study. After 12 month intervention, the proportion of participants categorized as minimal active or inactive reduced to 53.6% and 61.4% in the intervention and control groups, respectively, without significant group difference (P=0.512). The intervention group showed a significant increase in the self-reported mean vigorous and moderate PA minutes/week [baseline (mean±SD) 129±244 minutes, 12 month 207±261minutes] compared to the control group (baseline 106±242 minutes, 12 month 110±164 minutes, P=0.030). In addition, there were significant improvements in the frequency of participation in moderate PA in the intervention group (from 1.51±2.02 to 2.27±1.86 days/week) compared to the control group (from 1.08±1.86 to 1.13±1.87 days/week, P=0.0121).

Conclusions: The group-based lifestyle intervention conducted in community setting can help adults with pre-diabetes increase their participation in both vigorous- intensity exercises and moderate-intensity-exercises.

Virtual posters OD3

May 21, 2022, 10:50 AM - 12:05 PM

OD3-01 The effect of physical activity on daily cognitive functioning in older adults: a pilot study

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical Activity

Introduction: As the number of older people rises, so does the amount of people living with cognitive decline. As a consequence, research on healthy cognitive aging is needed. A physically active lifestyle is known to contribute to the maintenance of optimal cognitive functioning and delay the onset of cognitive decline. However, research has shown that cognitive functioning can vary over short periods of time and that these variations appear to be larger in older adults. Moreover, it is suggested that larger variations are linked with cognitive decline. Whether physical activity (PA) influences these fluctuations is not yet clear. Furthermore, performance on cognitive tests in the lab differs from performance in older adults' habitual environment. This study aims to examine (1) the feasibility of ambulant cognitive testing on a daily basis and (2) the influence of PA on older adults' daily fluctuations in cognition.

Methods: Sixty older adults (65 years or older) will be recruited. For a period of two weeks, the participants will wear an accelerometer to track their step count (as a measure for PA) and complete several cognitive tests every evening on a tablet (spatial dot memory test, Stroop test and Corsi block-tapping test). After the observational period, the effect of PA on the participants' cognitive functioning will be analyzed using general(ized) linear mixed models (R version 4.2.1). Additionally, the participants will be invited to share their experiences with the cognitive tests via semi-structured interviews. This data will be analyzed with a deductive thematic analysis (NVivo 12).

Results: Data collection is ongoing and is planned to be completed in June 2022.

 Discussion: This study will assess the feasibility of ambulant cognitive testing on a daily basis and will increase our understanding of the influence of PA on older adults' daily fluctuations in cognition.

OD3-02 Associations between change in physical activity and sedentary time and subsequent health-related quality of life in older English adults: Results from the EPIC-Norfolk cohort study

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SIG - Primary Choice: A. Ageing
Age Category: Older adults 65+ yrs
Subject Category: Physical activity and sedentary behavior

Background: Better understanding of the prospective associations between physical activity and sedentary behaviours and quality-of-life is required to inform the commissioning of activity interventions to foster healthier ageing.

Methods: We assessed physical behaviours (total physical activity, moderate-to-vigorous physical activity (MVPA), light physical activity, total sedentary time and prolonged sedentary bout time) for 7 days using hip-worn accelerometers at baseline (2006-2011) and follow-up (2012-2016) and health-related quality-of-life (QoL) using EQ-5D questionnaires at follow-up in 1433 participants (≥60 years) of the EPIC (European Prospective Investigation into Cancer)-Norfolk study. The EQ-5D summary score was used, with 0 as the worst to 1 as best perceived quality-of-life. We evaluated the prospective associations of baseline physical behaviours with follow-up QoL, and of changes in behaviours with follow-up QoL using multi-level regression.

Results: On average, MVPA decreased by 4.0 mins/day/year (SD 8.3) for men and 4.0 mins/day/year for women (SD 12.0) between baseline and follow-up (Table 2). Total sedentary time increased by an average 5.5 mins/day/yr (SD 16.0) for men and 6.4 mins/day/yr (SD 15.0) for women between baseline and follow-up.

Mean (SD) follow-up time was 5.8 (1.8) years. Higher baseline MVPA and lower sedentary time was associated with higher subsequent QoL (e.g. 1 hour/day greater baseline MVPA was associated with 0.02 higher EQ-5D score, 95% CI 0.06, 0.36). Physical activity decreased over the follow-up period (4.0 min/day/year for MVPA) and sedentary time increased (men 5.5 mins/day/year, women 6.4 mins/day/year). More pronounced declines in activity were associated with worse Hr-QoL (0.005 (95% CI 0.003, 0.008) lower EQ-5D per min/day/yr decrease in MVPA). Increases in sedentary behaviours were also associated with poorer QoL (0.002 lower EQ-5D, 95% CI -0.003, -0.0007) per hour/day/yr increase in total sedentary time).

Conclusions Promotion of physical activity and limiting sedentary time among older adults may improve quality-of-life, and therefore this relationship ought to be included in future cost effectiveness analyses so that greater commissioning of activity interventions can be considered.

OD3-03 Exercise Professional Qualifications, Competence and Level of Experience: Relationship with Job Pressure in the Fitness Sector

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Background: To provide quality exercise opportunities, the Fitness sector should rely on qualified, competent professionals who are both knowledgeable about exercise prescription and exercise motivation. Several factors may affect how these are executed, such as the professional's own motivation and perceived job pressures. Drawing from self-determination theory, this study aimed to analyze the associations between motivation, perceived job pressures, and sociodemographic variables among Fitness professionals.

Method: Using a cross-sectional design, data were collected from 366 exercise professionals (172 women) with an average work experience of 7.7 years (SD = 5.8 years). Questionnaires assessing Perceived Job Pressure (pressures from "above" (organizational), "below" (from the clients) and "within" (internal)) and Basic Psychological Needs Satisfaction (BPNS) were completed online. For data analysis, descriptive (i.e., mean; standard deviation) and inferential (i.e., t-student; ANOVA; correlations; regressions) techniques were applied.

Results: Men have higher total BPNS (t= 2.81, p=.005, d=0.30). There is no association between professional qualifications, job pressure, and BPNS. More years of experience were associated with lower perceived pressure (r= -.140, p=.013), and more competence satisfaction (r= -.122, p=.013). Organizational job pressures were negatively associated with BPNS (r's range from -.250 to -.342, and p's from .001 to .000). Client-related (r= .134, p=.001) and internal-related (r=.348, p=.001) job pressures were positively associated with total BPNS.

Conclusions: These findings have theoretical implications, providing evidence that organizational job is linked with lower scores of BPNS. Fitness professionals and their managers must be aware of the negative impact of organizational job pressure and its negative association to job satisfaction. Developing teams with younger and experienced professionals, with adequate recognition and compensation, would be an inclusive strategy that conveys security and trust in the future of the Fitness sector.

Keywords: fitness instructor motivation; self-determination theory; job pressures; exercise professional identity.

OD3-04 Changing movement behavior for improving mental health among office workers: A qualitative study on acceptability, feasibility and fidelity of two RCT interventions

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Background: Behavior change research suggests that interventions addressing not only the individual, but also the environmental and organizational level might be more effective than those addressing only one. However, few RCTs have tried to change movement behavior among office workers with the aim of improving mental health outcomes, using multi-component interventions that address several levels. Above that, researchers seldomly assess acceptability, feasibility and fidelity of such complex interventions, even though they are considered important moderators of study outcomes.

Purpose: This study aims at determining aspects of intervention acceptability, feasibility and fidelity of two multi-component cluster RCT interventions among office workers (N=263). Specifically, we want to answer:

1. How did participants experience specific intervention components as facilitating or hindering a movement behavior change?

2. Which factors in the work and non-work context did participants experience as facilitating or hindering a movement behavior change?

3. Were intervention components implemented and perceived as intended?

Methods The interventions addressed the individual level (counseling sessions based on cognitive behavior therapy and motivational interviewing), the environmental level (e.g. walking meetings or lunch walks organized by team leaders) and the organizational level (participation during work time, employers encouraging participation). One intervention focused on reducing sedentary behavior, the other on increasing physical activity, compared to a wait-list control group. After completion of the 6-month intervention period, audio-recorded interviews and focus group discussions were performed with participants, health coaches delivering the counseling sessions, team leaders and Human Resource staff). Verbatim transcribed data will be analyzed using thematic analysis (Braun&Clarke 2006). An initial codebook based on a-priori themes of interest will be created. Two researchers will apply it to a subset of transcripts, in an inductive fashion whilst

allowing for new themes to emerge. Once agreement on a final version of the codebook will be achieved, remaining transcripts will be analyzed accordingly.

Implications: We expect that the results of this study may help to understand and interpret the results of the quantitative effectiveness evaluations. This study may generate valuable knowledge that can inform future similar studies or workplace health promotion efforts and make their conduct more efficient.

OD3-05 Effectiveness of two randomized and controlled multi-component interventions on 24-h movement behavior and mental health outcomes among office workers

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Background: To date it is unknown whether movement behavior change interventions among office workers are effective for improving mental health. Therefore, we designed a multi-component cluster RCT among office workers (N=263). One intervention group focused on reducing sedentary behavior (SED), the other on increasing moderate to vigorous physical activity (MVPA) compared to a wait-list control group. Based on ecological models of health behavior, intervention components addressed the individual (counseling using cognitive behavioral therapy (CBT) and motivational interviewing (MI)), the environmental (group activities such as lunch walks), and the organizational level (companies promoting the interventions internally). Primary outcomes were changes in accelerometer-measured and self-reported SED and MVPA, secondary outcomes were depression and anxiety symptoms, burnout, stress and mental well-being, assessed via validated, web-based questionnaires. Previous analyses using a compositional data analysis (CoDA) approach did not find intervention effects on 24-h movement behavior, i.e., SED, light intensity, moderate or vigorous physical activity.

Purpose: This study aims at investigating intervention effects on mental health, i.e., depression and anxiety symptoms, burnout, stress and mental well-being. Secondary aims are to describe those participants that achieved a significant change in accelerometer- and device-measured SED and MVPA in comparison to those that did not, and to investigate whether changes in movement behavior were associated with changes in mental well-being.

Methods: Linear mixed model analysis will be performed to analyze effects on mental health, according to the published study protocol.

Performing exploratory analyses, quartiles of participants, based on changes in MVPA and SED, will be described on demographic characteristics and compared across quartiles. Change change analyses will investigate whether changes in SED or MVPA are associated with changes in mental well-being. CoDA will be applied, taking the co-dependence of 24-h movement behaviors into account.

Implications: High sedentariness and sick-leave due to mental illness are challenges associated with office work. This RCT is the first among office workers that applies a multi-component approach to address several levels of health behavior, and that includes CBT and MI techniques. Results may inform occupational health and researcher efforts aiming at addressing the burden of sedentariness and its related consequences on mental health.

OD3-06 Adherence to Digital Self-Monitoring of Diet as a Mediator of Motivation and Weight Loss: Does the Quality of Motivation Matter?

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Middle aged adults 45-64
Subject Category: Nutrition

Purpose: While mHealth interventions grounded by the Self-Determination Theory have shown to be effective in promoting health behaviors, no studies to date have differentiated the impact of motivation quality (autonomous motivation, controlled motivation, amotivation) on weight loss nor the mediating role of digital self-monitoring (SM) in this relationship. This study examined the predictive role of motivation quality on weight loss and determined if this effect was mediated by adherence to digital diet SM among overweight/obese adults.

Methods: We analyzed data from 29 (52.8 ± 11.7 years, 62% female) participants who completed the first 3 months of a mHealth-enhanced lifestyle intervention. Adherence to digital diet self-monitoring (SM) was defined as the number of days with any Fitbit food log input. Motivation for diet was measured using an established questionnaire. Multiple regression and hierarchical regression analyses, adjusted for age and sex, were conducted to examine factors associated with weight loss. Mediation analysis was conducted using the Baron and Kenny method.

Results: The correlation between weight loss and diet SM, autonomous, controlled, and amotivation were 0.38 (p = 0.003), 0.18 (p = 0.360), 0.11 (p = 0.570), -0.35 (p = 0.065), respectively. Hierarchical regression analyses provided evidence that amotivation might be a unique predictor of diet SM and weight loss, leading to a significant increase in the explained variation in diet SM (ΔR^2 = 16%, F(1, 23) = 8.61, p = 0.007) and weight loss (ΔR^2 = 11.0, F(1, 23) = 3.60, p = 0.07) above autonomous and controlled motivation alone. Mediation analysis revealed a trending association between amotivation and weight loss (R^2 = 0.12, p = 0.06). A significant association of diet SM adherence and weight loss (R^2 =0.29, p < 0.01) was also noted; however, after controlling for diet SM, the effect of amotivation on weight loss diminished (p = 0.5). Therefore, adherence to diet SM potentially mediated the effect of baseline amotivation on weight loss.

Conclusion: Our findings suggest that amotivation may be the most important predictor of short-term weight loss among the three types of motivation. Reversing amotivation could improve weight loss by enhancing SM adherence.

OD3-07 Precision health in behaviour change interventions: a scoping review

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: All

Purpose: Modifiable lifestyle behaviours such as physical activity and diet are causally linked to the development of non-communicable diseases (NCDs). Precision health seeks to reduce NCDs by optimising population-wide behavioural interventions through personalisation based on an individual's biomedical, behavioural, social, and environmental risk profile. Conceptualised a decade ago, the extent of progress toward this vision of personally relevant interventions is unclear. This scoping review aimed to map the state of precision health behaviour change intervention research.

Methods: This review included studies from a broader review. Six databases were searched for studies published between January 2010 and June 2020, using the terms 'precision health' or synonyms, and including an intervention targeting modifiable health behaviour(s) that was evaluated experimentally. All stages of article screening and data extraction were conducted in independent duplicate. Study quality was assessed, and details regarding study and participant characteristics, intervention and personalisation features, and outcome measures were extracted.

Results: Thirty-one studies were included, 12 being RCTs (39%), and 17 with weak study design (55%). Most interventions targeted physical activity (27/31, 87%) and/or diet (24/31, 77%), with 74% (23/31) targeting two to four health behaviours. Interventions were personalised via human interaction in 55% (17/31) or digitally in 35% (11/31). Data used for personalising interventions was largely self-reported, by survey or diary (14/31, 45%), or digitally (14/31, 45%). Data was mostly behavioural or lifestyle (20/31, 65%) or physiologic, biochemical or clinical (15/31, 48%). No studies utilised genetic/genomic data for personalisation. Less than half the studies (14/31, 45%) reported outcomes relating to all health behaviours targeted.

Conclusions: This review demonstrated that precision health behaviour change interventions remain dependent on human-led, low-tech personalisation. Additional work is needed to facilitate more automated and objective means of collecting and interpreting user data. Furthermore, to realise the vision of precision health, behaviour change interventions must look beyond past or current physical activity and dietary behaviour, to consider the genetic profile of individuals, along with their social and environmental context.

More rigorous and efficient study designs, reporting outcomes related directly to the behavioural targets, would enhance our understanding of the relationship between personalisation and intervention effectiveness.

OD3-08 Walking outdoors and picking up litter to prevent plastic pollution: Who engages in this pro-environmental physical activity behaviour? The Litter Walker Survey

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SIG - Primary Choice: B. Motivation and behavior change
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Background: In many countries, an increasing number of adults and families pick up litter when walking outdoors to prevent plastic pollution. However, the sociodemographic characteristics of people who engage in this pro-environmental physical activity behaviour are currently unknown.

Purpose: This study investigated adults and families who pick up litter when walking outdoors in terms of 1) sociodemographic characteristics, 2) being a regular litter walker and 3) outdoor areas where they pick up litter.

Methods: This was a cross-sectional study using an anonymous online survey conducted in 2021/2022 at Central Queensland University, Rockhampton, Australia. Targeted participants were Australian adults aged 18+ years who pick up litter when walking outdoors. Sociodemographic characteristics assessed included age, sex, education, employment status, relationship status, parental status, ethnicity, urbanisation and household income. Picking up litter when walking outdoors was assessed using a single item: 'Do you regularly pick up litter when walking outdoors (or running/jogging, hiking, playing outdoors with children)?'. Responses were grouped into regularly (i.e., at least once a week), sometimes (i.e., 1-2 times per month) and never. Further, participants were asked 'In which outdoor areas do you usually pick up litter when walking outdoors?'. Responses included their street, local neighbourhood, footpaths, parks, playgrounds and beaches. Descriptive data analyses were conducted.

Results: In total, 548 participants (mean age: 51 years, 86% female) completed the survey. Of these, 81% were regular litter walkers, 87% had a high education (13+ years), 65% were employed, 94% were Caucasian, 77% were in a relationship, 35% had children aged 0-17 years, 50% lived in a major city, and 31% had a high household income. Outdoor areas where participants usually picked up litter when walking outdoors included their street (53%), the local neighbourhood (72%), footpaths (52%), parks (55%), playgrounds (30%) and beaches (57%).

Conclusions: Findings suggest that litter walkers are mostly middle-aged women who are highly educated, employed, Caucasian and in a relationship. This warrants further investigation of whether picking up litter could motivate inactive adults and families to walk outdoors for the purpose of environmental action.

OD3-09 Mixed-methods exploration of how cancer survivors use smartphone and wearable devices to support physical activity management: A GetAMoveOn Study

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Wearable activity trackers (e.g. Fitbits) help people become aware of and increase their activity levels, especially short-term. Their efficacy in adapting to and helping maintain long-term activity habits is less evident. Our aim was to learn how people with a cancer diagnosis use and feel about commercial wearable trackers and how their use might lead to long term changes in behaviour.

Methods: Mixed methods in three phases: 1) a 6-week study with a convenience sample of mixed cancer survivors from cancer support groups who wore a Fitbit and completed twice daily ecological momentary assessments (EMAs) via smartphone. EMAs asked about Fitbit use and acceptability, mood, anxiety, energy, pain, and confidence to be active; 2) follow-up semi-structured interviews exploring the Fitbit use and acceptability; and 3) two workshops to identify future intervention ideas. Interviews were thematically analysed and coded; multilevel modelling analyses are planned for quantitative data.

Results: We recruited 27 participants, 23 completed follow-up interviews, and 11 participated in workshops. Participants were 39-82 years old and 89% female. Nine cancer groups and stages I-IV were represented. Twenty-five participants provided EMA data (average completion rate 78%, range 32-98%). Key findings so far indicate the Fitbit was very acceptable, particularly in increasing the awareness of activity levels. Interviews revealed the device had important and relevant features and functions, though some components were "frustrating at times" or "not for them". Participants also identified opportunities for cues to action. Twice daily EMAs were well tolerated. Some felt they fostered a "sense of connection [with researchers]" and "allowed reflection". Workshops highlighted useful ideas for future research, including adaptive learning based on previous activity levels (i.e. the day after a 30,000 step day is likely to be less active) and mood (i.e. "some days you just don't want to deal with it buzzing at you").

Conclusions: Using Fitbits and EMA surveys were acceptable among a small sample of people with a cancer diagnosis. Future studies should explore using these technologies to empower self-management among people with a cancer diagnosis, integrate activity prescription within standard cancer care, and increase adaptability and personalisation.

OD3-10 Embedding multi-modal cancer rehabilitation within clinical care pathways: the Active Together service design and evaluation

Dr. Anna Myers[1], Mr. Liam Humphreys[1], Dr. Michael Thelwell[1], Miss Gabriella Frith[1], Dr. Katie Pickering[1], Miss Gail Phillips[1], Mrs. Carol Keen[2], Prof. Robert Copeland[1]
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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Approximately three million people in the UK are currently living with or beyond cancer and this is set to rise to four million by 2030. People undergoing treatment for cancer, particularly those who do not possess sufficient physiological resilience to tolerate treatment may experience adverse effects. This paper describes the design and planned evaluation of the Active Together Cancer Rehabilitation Service, which is an evidence-based multi-modal support pathway for patients with cancer before, during and after their treatment

Methods: The design of both the service and the evaluation have been informed by the latest guidance from the Medical Research Council on complex interventions. Patients with lung, upper gastrointestinal (GI) or colorectal cancer in Sheffield, UK, will be referred to the Advanced Wellbeing Research Centre (AWRC) for innovative multi-modal rehabilitation (including prehabilitation) provided by a multidisciplinary team of clinicians and exercise professionals. Clinical outcomes will be captured at key timepoints throughout the patient journey to assess the impact of the rehabilitation service on physical, behavioural and psychological health as well as hospital-related metrics.

Results/findings: Results from the process and outcome evaluation will provide insight in to how and why the treatments and support provided during the Active Together service work, which elements contribute to its effectiveness, as well as explain why certain elements do not work. Data will be used to refine the design of the rehabilitation service and to test the impact of the physical activity, nutrition and psychological support on patient's health-related quality of life, cancer recurrence and survival and the wider economic impact across the care system.

Conclusions: The evidence to support the role of multi-modal rehabilitation for patients at all stages of their cancer treatment journey is growing. The translation of that evidence into practice is less advanced and there is a need for services to be embedded within existing treatment pathways in parallel with robust process and outcome evaluation. The results of this evaluation will provide valuable insight and learnings about how to implement such services as well as an understanding of the impact on important patient outcomes and the broader economic landscape.

OD3-11 The Impact of Prehabilitation Interventions on Affective and Functional Outcomes for Young to Midlife Adult Cancer Patients: A Systematic Review

Ms. Aideen Scriney[1], Ms. Amy Russell[1], Dr. Lorraine Boran[1], Dr. Lisa Loughney[2], Prof. Pamela Gallagher[1]
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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical activity and nutrition

Purpose: Cancer remains one of the most enduring health crises of the modern world. Prehabilitation is a relatively new treatment approach aimed at preparing individuals for the stresses associated with surgery or treatment. These can include exercise, psychological and nutrition-based interventions. This systematic review aimed to assess the efficacy of prehabilitation on affective and functional outcomes for young to midlife adult cancer patients (18-55 years) from the point of diagnosis to recovery. Outcomes of interest included prehabilitation programme composition (exercise, psychological, nutrition), duration, mode of delivery and outcome measures used to determine impact of prehabilitation on affective (anxiety, depression, stress and health related quality of life) and functional outcomes (cardiorespiratory fitness and strength).

Methods: The following databases were searched using PRISMA guidelines with controlled and free text vocabulary; PsychINFO, CINAHL, MEDLINE, EMBASE and PubMed. Fourteen texts were eligible for full-text inclusion. Inclusion and exclusion criteria were applied relating to participant age group as well as prehabilitation and intervention type. Eligible texts were also assessed for risk of bias using a quality appraisal tool.

Results/Findings: Results included 907 prehabilitation participants and a large representation of female participants (81% average). The most common cancer type was breast. The most prevalent prehabilitation intervention category was psychological (n=9) followed by exercise (n=4) and nutrition (n=1). All interventions were unimodal. Larger heterogeneity was evident across interventions. Evidence was found for the efficacy of psychological prehabilitation for anxiety reduction. Prehabilitation did not have significant effects on the affective constructs of Health-related Quality of Life (HrQoL). Findings indicated that the therapeutic validity of exercise prehabilitation for functional outcomes was high. Considerable variation was observed between prehabilitation programmes in terms of supervision, frequency, intensity and duration for all prehabilitation types.

Conclusion: There was insufficient evidence to support the efficacy of psychological prehabilitation on stress, distress or depression, however some research did yield clinically significant findings such as the impacts of exercise prehabilitation on functional capacity. Implications for future research are highlighted and then discussed amongst this novel age group.

OD3-12 The PREPARE for Cancer Surgery Project: Exploring Prehabilitative Exercise before Surgery for Young to Midlife Adults with Cancer

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SIG - Primary Choice: C. Cancer prevention and management
Age Category: Middle aged adults 45-64
Subject Category: Physical Activity

Purpose: Prehabilitation is an intervention that aims to prepare patients for treatment through promoting healthy behaviour in order to maximise resilience and long-term health. Exercise prehabilitation represents an emerging effective intervention to prepare cancer patients for both surgery and associated treatments. To date, little research has focused on young to midlife adult cancer patients (Y/MLA, 18-55 years) prehabilitation, despite possible benefits for functional capacity, health related quality of life (HrQoL) and fatigue. The present feasibility trial explores the impacts of prehabilitation among this group as research is limited.

Methods: Five patients with an average age of 44.5 years (three males and two females) took part. Two were undergoing chemotherapy and three were preparing for surgery. The exercise prehabiliation started from the point of diagnosis and was part of the ExWell Medical exercise intervention programme. Primary outcome was HrQoL measured by the FACT-G and EORTC-QLQ30 questionnaires. Exploratory outcomes included cancer related fatigue measured by the FACT-IF, functional capacity, measured by the 6 minute walking test (6MWT) and 30 second stand to sit test. Psychological and physical assessments are recorded at baseline and pre-surgery follow-up. User satisfaction and adherence was recorded at follow-up.

Results/Findings: Adherence (75 %) and satisfaction (100 %) were both high. Non-parametric within group analysis revealed a non-significant median difference in pre-post scores across all outcomes. Outcomes were also considered clinically by treatment type, revealing clinically significant trends in 6MWT and emotional wellbeing overall, as well as overall HrQoL for chemotherapy patients. Feasibility follow-up demonstrated that prehabilitation for young to midlife adults undergoing cancer treatment was a positive and highly satisfactory experience. However, differences were noted between experiences for those undergoing chemotherapy versus surgery in terms of HrQoL, and a large increase in functional capacity walking distance for all participants irrespective of treatment.

Conclusions: To our knowledge, this study is the first to assess the feasibility of a hybrid exercise prehabilitation programme amongst young to midlife adult cancer patients. These patients require increased attention and care to address individual prehabilitation needs, and if met, could benefit greatly from the development of treatment path focused prehabilitation interventions.

OD3-13 Examining the usability of a web-based tailored physical activity intervention for those living with and beyond lung cancer (ExerciseGuide UK)

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Literature highlights those living with and beyond lung cancer (LWBLC) do not meet the recommended physical activity guidelines. This study aimed to examine the usability of a novel web-based and computer-tailored physical activity intervention for those LWBLC in collaboration with a patient and public involvement (PPI) group.

Methods: Using a Concurrent Think Aloud technique, seven individuals LWBLC participated in interviews via Zoom. Tasks given were pre-established for standardisation. The relevance of tasks were conferred with a PPI group based on the level of task or information importance. A Systems Usability Score (SUS) was completed post-interview. Thematic analysis was conducted in Microsoft Word with positive and negative comments summarised in a tabular format, detailing proposed and agreed adaptations. Negative findings were presented to the PPI group to discuss proposed changes. Final changes were accepted by researchers and the PPI group.

Results/Findings: Five themes were identified during analysis of the negative comments across the seven tasks, 1) Functionality (n=6), 2) Understanding/Clarity (n=10), 3) Visual (n=5), 4) More Information Required (n=12), and 5) Preferential (n=5). Twenty-four items were discussed with the PPI group. The rate of agreement of proposed revisions with the PPI group was 46%. An 'excellent' or 'good' SUS was given by five participants. Five of the seven participants reported they would feel confident using the website and doing the prescribed activities, with six of the seven stating they would imagine that most people would learn to use the website very quickly. Six of the seven participants reported they would not need to learn a lot of things before they would get going with the website and activities.

Conclusion: Involving the target population in developing and adapting a digital tool designed to increase activity levels may enhance usability and appropriate content. Those LWBLC demonstrated they were able to use the prototype website successfully. PPI members did not agree with 54% of the proposed changes, however, all disagreements were resolved during the final workshop. This study has informed the final

adaptions of the platform for a study examining the feasibility, acceptability, and effectiveness of the website for those LWBLC.

OD3-14 Availability, content and quality of commercially available smartphone applications for the self-management of low back pain: a systematic assessment.

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: To evaluate the availability, content, and quality of commercially available, self-contained smartphone applications for the self-management of low back pain in adults.

Method: The protocol for the systematic assessment was prospectively registered (Open Science Framework: DOI: 10.17605/OSF.IO/D3UQX). Commercially available smartphone applications for self-management of low back pain on the Google Play and Apple App stores (Oceania), were systematically identified and assessed by two independent reviewers. Applications were included if they provided information about the nature of low back pain and customised management activities aligned with the NICE guideline for low back pain. Application quality, behaviour change capacity and self-management support were assessed with the Mobile App Rating Scale, App Behaviour Change Scale and Self-management Support Checklist.

Results: 951 applications were identified, 25 were eligible. The average quality of included apps was acceptable and ranged from 3.0 to 4.9 (mean MARS score of 3.9 out of a maximum possible 5). The self-management support and behaviour change potential of included apps were variable (3 to 14; 2 to 8 respectively) and appeared low (mean SMS-14 score was 3.4/14; mean ABACUS score was 5.4/21). The apps showed no significant correlation between app consumer ratings and MARS score. App quality was significantly correlated with app price ($p=0.049$) but not consumer ratings, however, the overall model was not significant and these findings were based on a small number of studies.

Conclusion: Smartphone apps for the self-management of low back pain have questionable potential for self-management and behaviour change but are of average to good quality. Low quality information and advice is provided for low back pain, highlighting a clear need for stricter regulation of application content and consumer education. Few apps were designed to specifically incorporate self-management support and behaviour change potential and further development in these areas of app design would be of benefit.

OD3-15 Effectiveness of smartphone applications for the self-management of low back pain in adults: a systematic review.

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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: To synthesise the evidence of effectiveness of smartphone applications for the self-management of low back pain in adults and to explore participant adherence with smartphone apps for the self-management of LBP.

Method: The protocol of the systematic review of randomised controlled trials was prospectively registered (PROSPERO: CRD42020184486) and followed PRISMA guidelines. Four e-databases were searched (2008-). Randomised controlled trials published in English investigating smartphone applications for the self-management of low back pain in adults (including ≥ 1 NICE clinical guideline component and functioning without health professional input) were included. The Clinical Appraisal Skills Program (CASP) checklist for RCTs and the TIDier checklist were used to assess risk of bias and completeness of reporting in included studies. Primary outcomes were pain, function and quality of life.

Results: The electronic database search yielded 1815 citations and six studies were included (n= 2100 participants). All comparator groups incorporated some form of management (n=3 physiotherapy, n=2 GPs, n=1 not specified). Two studies reported no between group differences in quality of life. One study reported a significant reduction in disability (function) in the intervention group compared with control. Three studies reported a significant decrease in pain intensity in the intervention group compared with control. One study reported no significant difference between groups in pain self-efficacy. One study reported no correlation between adherence (app use) and change in pain intensity and one study reported that app use mediated the effect of teleconsultations on pain improvements.

Conclusion: This review provided inconclusive evidence that smartphone applications for the self-management of LBP are more effective, short term, for pain and disability than usual care or minimal interventions. It is uncertain if these results are sustained long term. Due to the heterogeneity of the research it makes it difficult to determine what apps work best and with whom. Wider use of smartphone apps for the self-management of LBP and its effectiveness is still unclear and further research is needed.

OD3-16 Active Video Games Improve Physical Activity and Physical Fitness Among Children: A Meta-Analysis

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SIG - Primary Choice: D. e- & mHealth
Age Category: Children 0-18 yrs
Subject Category: Physical Activity

Purpose: We investigated the effect of active video game (AVG) interventions among children with a focus on physical activity (PA) behavior and physical fitness (PF) parameters.

Methods: We included original investigations primarily using AVG interventions in children that improved PA and PF longitudinally and had at least one control condition (do-nothing or conventional treatment) with ≥10 participants/condition. The search [PubMed, EBSCO (PsycInfo, Sport Discus, MEDLINE), Web of Science, and Google Scholar] resulted in 53 publications in English between 2008 and 2020, 50 reported sufficient data for inclusion in the meta-analysis. We computed the standardized mean difference (Hedges' g) using the random-effects model, and performed quantitative analyses on data derived from the end-of-intervention measure among all groups. The type of control group and PF parameters were included as categorical moderators. The main effects were calculated for each group and altogether ($p \leq 0.05$).

Findings: The mean sample size was n=81 (Experimental=33; Control n=44), and the mean proportion of participants identifying as men was 44. The most common platforms used were the Wii (38%), Kinect for Xbox (21%), and Playstation with Eyetoy (13%). The analysis for PA outcomes moderated by the type of control group showed a significant effect favoring interventions vs. do-nothing (g=0.488; 95%CI=0.248 to 0.727; p<0.001) or conventional treatment (g=0.900; 95%CI=0.062 to 1.737; p=0.035). The overall effect is also significant in favor of the intervention (g=0.301; 95%CI=0.130 to 0.473; p<0.001). The analysis for PF outcomes moderated by the type of outcome showed a significant effect favoring the intervention for mobility/aerobic capacity (g=0.698; 95%CI=0.470 to 0.926; p<0.001), balance (g=0.692; 95%CI=0.405 to 0.980; p<0.001), body composition (g=0.370; 95%CI=0.164 to 0.576; p<0.001), flexibility (g=0.563; 95%CI=0.152 to 0.974; p=0.007), muscle strength/power (g=0.713; 95%CI=0.246 to 1.179; p=0.003), motor ability (g=0.615; 95%CI=0.245 to 0.985; p=0.001), and other components combined (g=0.603; 95%CI=0.211 to 0.995; p=0.003). The overall PF effect is also significant in favor of the intervention (g=0.575; 95%CI=0.462 to 0.687; p<0.001).

Conclusions: AVGs offer great potential for enhancing PA behavior and PF among children. We have also detected significant variabilities in AVG design, study protocol, and measurement. Efforts are needed for improving future AVG design and research.

OD3-17 A Meta-Analysis of Active Video Game Interventions Targeting Balance

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SIG - Primary Choice: D. e- & mHealth
Age Category: All ages
Subject Category: Physical Activity

Purpose: Active video games (AVGs) are video games that require mobility of the body to play. AVGs have potential to improve functional fitness parameters. Balance is an essential element of functional fitness that builds strength and prevents risk of falls. However, the effect of AVGs tend to focus on healthy older adults. We performed a meta-analysis on the effect of AVG interventions on balance parameters among populations of different developmental stages and health conditions.

Methods: We included original AVG intervention articles that assessed balance outcomes published by December 31, 2020 from 6 international English academic databases: Pubmed, PsychInfo, Sport Discus, Medline, Web of Science, and Google Scholar. Studies included at least one control group (do-nothing or conventional treatment) with ≥10 participants/condition and examined chronic effects. A total of 104 studies (out of 132) with sufficient data were included. We computed the standardized mean difference (Hedges' g) using the random-effects model and performed quantitative analyses on the data derived from post-intervention measures. The type of control group and the clinical condition were categorical moderators. The main effects were calculated for each category and altogether ($p \leq 0.05$).

Findings: The total sample size with included studies is 6211 (53% women). The average age was 56.2 years (SD=22; range=3-98). The most common comparison condition was conventional treatment (54%), followed by do-nothing (33%), or both (7%). The analysis moderated by the type of control group showed a significant effect favoring interventions vs. do-nothing (g=0.640; 95%CI=0.480 to 0.800; p<0.001) or conventional treatment (g=0.398; 95%CI=0.318 to 0.477; p<0.001). The overall effect favors the interventions (g=0.445; 95%CI=0.374 to 0.517; p<0.001).

As for the clinical condition, we found significant effects favoring interventions for participants with Parkinson's disease (g=0.414; 95%CI=0.222 to 0.607; p<0.001), stroke (g=0.455; 95%CI=0.303 to 0.608; p<0.001), other clinical conditions (g=0.542; 95%CI=0.410 to 0.674; p<0.001), and those without any clinical condition (g=0.452; 95%CI=0.313 to 0.591; p<0.001). The overall effect also favors the interventions (g=0.476; 95%CI=0.401 to 0.551; p<0.001).

Conclusions: AVGs have a beneficial effect on balance outcomes, especially when compared to a do-nothing control. All populations could benefit from AVG interventions, including those with Parkinson's disease and stroke survivors.

OD3-18 Preconception sleep quality moderates the association between preconception hair cortisol levels and mental health in pregnant women

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SIG - Primary Choice: G. Children and families
Age Category: Adults 19+ yrs
Subject Category: Sleep

Purpose: Variation in cortisol levels may impact functioning amongst perinatally depressed women. However, not all perinatally depressed women exhibit similar cortisol patterns. Understanding factors influencing the link between perinatal depression and cortisol is important for treatment of varied individuals. Poor sleep quality may elevate cortisol levels and affect perinatal mental health through altered HPA axis functioning. Yet it is relatively unknown if variation in preconception sleep quality moderates the relation between perinatal mental health and preconception cortisol levels. This study aims to examine whether self-reported preconception sleep quality moderates the association between preconception hair cortisol levels and mental health from preconception to pregnancy trimesters.

Methods: Women who were enrolled in a prospective study, completed the Pittsburgh Sleep Quality Index (PSQI), the Edinburgh Postnatal Depression Scale (EPDS), and the State-Trait Anxiety Inventory (STAI) questionnaires during preconception (T0) and at each pregnancy trimesters (T1,T2,and T3). We analyzed 267 of these women who conceived and had fully completed measures at preconception for hair cortisol, sleep quality and either EPDS or STAI-state. Delta EPDS and delta STAI-state scores were derived (i.e.,T1-T0,T2-T0,T3-T0 of EPDS and STAI-state scores) to understand how sleep moderates the association between hair cortisol and change in symptoms of mental health problems from preconception to different trimester periods. Johnson-Neyman technique identified the regions of PSQI scores when the moderation analyses were significant.

Results: Poor sleep quality at preconception positively correlated with depressive and state-anxiety symptoms at preconception and at each trimester periods, except for depressive symptom at second trimester. Preconception hair cortisol positively correlated with depressive symptom at second trimester. Preconception sleep quality significantly moderated the association between hair cortisol and T3-T0 EPDS score (PSQI≥7) after adjustment for highest education level, ethnicity, parity, preconception BMI, GDM, preeclampsia and/or hypertension, preconception alcohol and tobacco use. Elevated preconception hair cortisol was associated with greater change in depressive symptoms from preconception to third trimester among women with poor preconception sleep quality.

Conclusions: Preconception sleep quality moderates the association between preconception hair cortisol and prenatal depressive symptoms. Improving preconception sleep quality can potentially mitigate the association between preconception hair cortisol and depressive symptoms during pregnancy.

OD3-19 Piloting the virtual PLAYshop program: A parent-focused physical literacy intervention for early childhood

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Purpose: To explore the feasibility and potential outcomes of a virtually-delivered version of a theory-based, parent-focused physical literacy intervention for early childhood (The PLAYshop program).

Methods: A non-randomized pilot study was conducted in 34 preschool-aged children (3-5 years) and their parents from Edmonton and Victoria, Canada. The PLAYshop program, informed by the Capability, Opportunity, Motivation, Behavior (COM-B) model, included: 1) a 75-minute virtual synchronous workshop with interactive activities and educational messages embedded with physical literacy concepts, 2) resources/basic equipment, and 3) two post-workshop booster emails (3-week and 6-week follow-up). Five fundamental movement skills (FMS; overhand throw, underhand throw, horizontal jump, hop, one leg balance) from the Test of Gross Motor Development (TGMD) and the field-based fitness testing in preschool children (PREFIT) tools were measured virtually at baseline and 2-month follow-up. Parental experiences and perspectives of the virtual PLAYshop program was measured with an online questionnaire after the workshop. Parental capability, motivation, and opportunity to support preschool-aged children's physical literacy development was measured with an online questionnaire at baseline, after the workshop, and 2-month follow-up. Intraclass Correlation Coefficients (ICC), paired t-tests, and repeated measures ANOVAs were conducted.

Results: Of the 30 families that completed the study, most found the PLAYshop program very/extremely useful (83%) and were satisfied/extremely satisfied with its content (93%) and delivery (93%). All FMS were completed by 31 and 29 children at baseline and follow-up, respectively. Inter-rater reliability of FMS in 20% of the sample was a ICC ≥0.90, with the exception of the horizontal jump (ICC=0.79). A significant increase, represented by a medium effect size, in the hop skill score was observed between baseline and 2-month follow-up (Mean difference= 1.03; SD=1.9; p=0.007; d=0.54; n=29). Small effect sizes were observed for all other FMS changes. Significant increases in parental capability (i.e., knowledge), motivation (i.e., confidence), and opportunity (i.e., perceived availability of resources), represented by large effect sizes, were observed overtime (p<0.001; η2=0.37-0.53). The intervention effects found between baseline and post-workshop were maintained at 2-month follow-up.

Conclusion: Findings support the feasibility and potential positive outcomes of the virtual PLAYshop program. A larger randomized controlled efficacy trial will be conducted.

OD3-20 Snacking habits of rural preschool children in Yogyakarta, Indonesia

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SIG - Primary Choice: G. Children and families
Age Category: Preschoolers 2-5 yrs
Subject Category: Nutrition

Purpose: To explore the snacking habits of preschoolers who live in rural areas and to identify health promotion opportunities in a setting with limited resource.

Methods: Qualitative study design was used with the application of grounded theory approach. Focused group discussion, in-depth interviews and field observation were conducted in two rural areas in the Special Region of Yogyakarta from October to December 2021. Mothers of preschoolers (n=33), community health workers/ CHWs (n=37) and health workers (n=4) were selected as participants. Interview transcripts and photographs from the field were analysed. Data triangulation was performed by comparing statements from three groups of participants.

Results: Snacking habits of pre-school children are highly dependent on the availability of food around the village, the creativity of mothers or grandmothers in processing food materials and the willingness of the parents/ caregiver to manage child's eating pattern. In contrast to urban areas, children in rural areas have opportunity to be still active outside the house even during the pandemic (hilly areas with low population density and plenty of trees). They have regular schedule for meal times, however it can be interfered easily by snacking. Children love eating snacks with added ingredients such as cheese, beef sausages, sugar and sauces. They are less interested in snacks made from local food (cassava, sweet potatoes, corn). Children can easily ask for and obtain snacks that are sold from house to house. Related to health promotion, parents are supportive to the idea of having child feeding practices training, especially on how to manage snacking habits by considering the cost effectiveness. The community health workers require further support in term of nutrition education materials that can be used to describe healthy snacking habits to the mothers and grandmothers. The health workers have identified some activities as possible channels to deliver the nutrition education programs (mainly through the integrated service post).

Conclusion: Snacking habits among rural preschool children require special attention, especially in low resource settings. Parents or caregivers need further support and training to manage child's eating practices. The training should involve the CHWs and local health staffs.

OD3-21 24-hour movement behaviour profiles among children and adolescents with different subjective levels of physical fitness

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SIG - Primary Choice: G. Children and families
Age Category: Adolescents 13-18 yrs
Subject Category: Physical activity and sleep

Purpose: We aimed to determine 24-hour movement behaviour profiles for children and adolescents with different subjective levels of physical fitness.

Methods: Cross-sectional data were collected in 2018–2019 on 668 children and adolescents (57% girls) aged 8–18 years from elementary and secondary schools in 6 cities from the Czech Republic. Movement behaviours, expressed as physical activity (PA), sedentary behaviour (SB), and sleep, were measured using wGT3X-BT and GT9X Link ActiGraph accelerometers worn on the non-dominant wrist for 24 hours over 7 consecutive days. Physical fitness was self-reported as below average, average, or above average relative to their peers of same sex and age. Descriptive and advanced statistics (including ANOVA and *t*-test) were computed.

Results: Children and adolescents with above average subjective fitness spent more time in moderate-to-vigorous PA (MVPA; 55 ± 25 min/day), less time in SB (666 ± 89 min/day), and more time sleeping (491 ± 55 min/day) than children and adolescents with average fitness (47 ± 23 min/day, 677 ± 94 min/day, 487 ± 56 min/day, respectively) or below average fitness (37 ± 17 min/day, 726 ± 72 min/day, 462 ± 44 min/day, respectively). On the other hand, no significant difference was found in time spent in light PA (LPA) among participants with above average (231 ± 45 min/day), average (232 ± 49 min/day), and below average (217 ± 45 min/day) fitness. Time spent in MVPA ($p < 0.001$; $\eta^2 = 0.04$), SB ($p = 0.002$; $\eta^2 = 0.02$), and sleep ($p = 0.021$; $\eta^2 = 0.01$) differed significantly by subjective fitness level, with the largest differences between those with above average and below average fitness ($p < 0.001$ for all movement behaviours; $d = 0.76$ for MVPA, 0.70 for SB, and 0.54 for sleep). No statistical difference between subject fitness groups was found for LPA ($p = 0.236$).

Conclusions: We found favorable 24-hour movement behaviour profiles for Czech children and adolescents with high subjective fitness compared to their peers with average or low fitness. This study supports the current research showing that 24-hour movement behaviours significantly differ according to the fitness levels of children and adolescents.

OD3-22 Baby's First Bites: Results of a randomized controlled trial aimed at promoting vegetable consumption and self-regulation of energy intake in infancy through vegetable-exposure and sensitive feeding interventions

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SIG - Primary Choice: G. Children and families
Age Category: Infants 0-2 yrs
Subject Category: Nutrition

Purpose: Parenting interventions during the first years of life on *what* and/or *how* to feed infants during complementary feeding can promote healthy eating habits. An intervention promoting repeated exposure to a variety of vegetables (repeated vegetable exposure (RVE); *what*) and an intervention promoting responding sensitively to child signals during mealtime (video-feedback intervention to promote positive parenting–feeding infants (VIPP-FI); *how*) were compared, separately and combined (COMBI), with an attention control condition (AC). Primary outcomes were vegetable consumption and self-regulation of energy intake; secondary outcomes were child anthropometrics and maternal feeding practices (sensitive feeding, pressure to eat).

Methods: Our 4-arm randomized controlled trial included 246 first-time Dutch mothers and their infants. Interventions started when infants were 4–6 months old and ended at age 16 months. The present study evaluated effects at 18 (t18) and 24 (t24) months of age. Vegetable acceptance was assessed using three 24-h dietary recalls, self-regulation of energy intake by an eating-in-the-absence-of-hunger experiment and mother-report, and maternal feeding behavior by observation and mother-report.

Results/findings: Linear mixed model and ANOVA analyses revealed no follow-up group differences regarding child vegetable intake or self-regulatory behavior. The proportion of children with overweight was significantly lower in the COMBI group, compared with the VIPP-FI group at t18 (2% compared with 16%), and with the AC group at t24 (7% compared with 20%), although this finding needs to be interpreted cautiously due to the small number of infants with overweight and nonsignificant effects on the continuous BMI *z*-score measure (*P* values: 0.29–0.82). Finally, more sensitive feeding behavior and less pressure to eat was found in the VIPP-FI and COMBI groups, compared with the RVE and AC groups, mostly at t18 (significant effect sizes: *d* = 0.23–0.64).

Conclusions: Interventions were not effective in increasing vegetable intake or self-regulation of energy intake. Future research might usefully focus on risk groups such as families who already experience problems around feeding.

OD3-23 How Does the Use of Home-Delivered Meal Boxes Affect Families' Meal Habits? A Qualitative Study

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SIG - Primary Choice: G. Children and families
Age Category: Children 6-12 yrs
Subject Category: Nutrition

Purpose: In recent years convenience foods, among others, home-delivered meal boxes, have gained popularity. However, so far, research on the impact of meal boxes on families' meal habits (e.g., preparing healthy meals, improving cooking skills, etc.) is limited. Hence, this study aims to investigate the perceived impact of meal boxes among families with children in primary school (i.e., age 6-12) and families with children in secondary school (i.e., age 13-18).

Methods: A focus group study was conducted among Belgian parents with children in two different age categories. Based on a literature review of family meals and meal planning, a semi-structured interview guide was developed. The audio-recorded interviews were transcribed, and a thematic analysis (i.e. a combination of inductive and deductive reasoning) of the transcripts was conducted.

Preliminary Findings: Four focus groups (n=19; mean age=44 ±5.42; 68% mothers) were conducted, including two among parents with children aged 6- to 12-year-old (n=9), and two among parents with children aged 13- to 18-year-old (n=10). Results showed that most parents appreciated the opportunity meal boxes gave to eat more varied and try vegetarian dishes, as well as enhance their cooking skills and inspiration. Even though parents agreed that cooking with meal boxes generally saved time in meal planning and buying, some parents found it more time-consuming due to having to follow a recipe. Also the sustainability of the boxes was questioned; Many parents ended up with less food waste, but found the plastic packaging problematic. Finally we found that parents with adolescents reported more positive effects of the meal boxes compared to parents with primary school-aged children, such as regularly cooking vegetarian meals and having children help preparing the meals.

Conclusions: This qualitative study adds to the literature of the impact of home-delivered meal boxes on families' meal habits. Mostly positive effects were found, such as learning to cook new dishes and eating more varied, as well as adolescents' involvement in meal planning and preparation. Meal boxes might therefore be a promising, innovative intervention to promote healthy and sustainable family meals, especially among families with adolescents.

OD3-24 A Systematic Review of Early Preventive Parenting Interventions: Long-Term Effects and Implications for Obesity Prevention

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SIG - Primary Choice: G. Children and families
Age Category: Children 0-18 yrs
Subject Category: All

Purpose: Preventive parenting programs, which focus on promoting effective parenting practices and positive parent-child relationships, have demonstrated robust, positive impacts on parenting and child behavior. Recently, there has been increased interest in using preventive parenting interventions to target obesity prevention during infancy and early childhood. While some early preventive parenting interventions aimed at obesity prevention have demonstrated short-term success, there is limited evidence of longer-term impacts on excess weight gain. This study aimed to systematically review preventive parenting programs for parents of children ages 0-5 years, which examined long-term impacts on parenting but were not designed to target obesity. Information gained from this review may help to bolster the long-term impacts of preventive parenting interventions targeting healthy physical growth.

Methods: Published studies were eligible for inclusion if they evaluated impacts of a preventive parenting intervention on a parenting outcome, the primary outcome was not child weight/growth, children were ages 0-5 years, the study was a randomized controlled trial, and had a minimum of 1-year follow-up post-intervention.

Results: Out of 1,288 articles identified in the search, 12 met inclusion criteria. The 12 studies included 7 unique parenting programs, 3 of which were implemented with parents of infants ages 0-<2 years, and 4 of which with parents of children ages 2 and older. Nine out of 12 studies (75% of studies; 71% of programs) demonstrated a positive impact on at least one parenting outcome ≥1 year post-intervention. Follow-up ranged from 1 to 13 years (M = 4.2). The majority of studies with sustained impacts on parenting at long-term follow-up were implemented in a group setting when the children were >2 years. Interventions with long-term impacts tended to be brief interventions (M = 11.5 sessions; Range: 6 – 23 sessions) and did not include booster sessions after intervention completion.

Conclusions: Drawing upon decades of evidence-based research on preventive parenting interventions, results of this review suggest that group-based programs for parents of toddlers may be a promising approach to

achieving longer-term impacts of preventive parenting interventions on early obesity risk, in addition to the programs currently being implemented during infancy.

OD3-25 Progress and pitfalls with implementing physical activity policy in Saudi Arabia

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Physical Activity

Purpose: Vision2030 is a cross-sector national strategy for the Kingdom of Saudi Arabia aimed at wide-ranging social and economic improvements. The current study represented an analysis of sections of the policy relating to the promotion of physical activity across the Saudi population.

Methods: The Comprehensive Analysis of Policy on Physical Activity framework was used to guide the audit and assessment of the relevant parts of the policy. Following a descriptive overview of the key objectives, the assessment involved two phases. First, published materials such as newspapers, official government websites, and official government and news Twitter accounts were appraised in order to evaluate the progress in achieving the policy objectives. Second, nine semi-structured interviews were conducted with a policymaker, a policy implementer and seven independent academics regarding their views of Saudi physical activity policy. All interviews were conducted in Arabic and recorded, then translated and transcribed. Thematic analysis was used to synthesise the data and generate key themes.

Findings: Four relevant policy objectives were identified from the Quality of Life Program through the audit. The analysis indicated that these were developed in accordance with scientific research and there was evidence of partial achievement of some goals. These included positive changes in physical activity culture, enabling women's sports and levelling up the physical activity rate among Saudis. However, there are several obstacles that may limit the possibility of achieving all desired objectives of the policy. Key obstacles include the short time periods specified to achieve some targets, a lack of certain facilities and the ineffective collaborative relationship between the executive authorities.

Conclusion: Some important progress has been made in implementing physical activity policy and increasing participation levels across the population. Nonetheless, key barriers have been identified that may hinder full achievement of the intended outcomes within the target time-frame.

OD3-26 Disparities in Pantry Access and Typical and COVID-related Food Insecurity: A Spatial Analysis

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Background: The emergency food system,including food pantries, provides a safety net for families experiencing foodinsecurity. Evidence on clustered food insecurity is needed to inform the development and evaluation of well-tailored local food access interventions, programs, and policies. Using a spatial analysis approach, this study assessedclustered food insecurity before and during the COVID-19 pandemic in relation to food pantry access within the federally-designated North Hartford Promise Zone (NHPZ)and 3 comparison sites.

Methods: Survey data on both typical food insecurityand COVID-related food insecuritywas obtainedfrom 193 residents in 6 underserved neighborhoods (including the 3 NHPZ sites) using food security questions fromCOVID-19 National Survey by Hunger Free America. The cross streets close to participants' homesand addresses of food pantrieswithin the neighborhoodswere geocoded and overlaid in ArcGIS 10.5. Spatial clusters (hot spots) of food insecurity(both typical and COVID-related) were compared to food pantry locations using the ArcGIS hot spot analysis tool.

Results: Results showed that (typical) food insecurity appears to cluster or be highly concentrated in areas with limited access to food pantries. There were reduced hotspots of food insecurity during COVID-19.

Conclusion: Relative to pre-pandemic food insecurity, study findings suggest that there were fewer hotspots ofCOVID-related food insecurity. This may be partly due toheightened responses from food pantries and increased support for families in the wake of the pandemic from all levels, including state and federal resources. Future work to maintain reductions ingeographically-linked food insecurity disparities amid COVID-19 is warranted.

OD3-27 The evolution of food recipes in popular media: Does it associate with household purchases?

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: People perceive media as their main source of food information. It is, however, unclear what popular food media promote, how this evolved and whether this also manifests in people's food purchases. The aim of this study is to analyze i) the nutritional content of the best-selling cookbooks in Flanders over a 10-year period, and ii) the association between the nutritional content with households' food purchases.

Methods: Using data from the Belgian non-profit organization boek.be, 20 main dishes from each of the five best-selling cookbooks/year in the period 2008-2018 were selected. Using the US (USDA) and Belgian (NUBEL) Food Composition Databases, the nutritional content of each recipe relative to 2000kcal was calculated. Using generalized linear and generalized additive mixed models, this study analyzed whether the macronutrient content and the usage of different food groups in recipes changed over time. Furthermore, using data from the professional marketing agency GfK, the correlation between the food purchases among 4300-6200 Flemish households each year was compared to the food group usage in cookbooks.

Results: Regarding macronutrients over time, the selected recipes contain less total fat and saturated fat (all p's<0.05), while containing more fibre, carbohydrates and sugars (all p's <0.01). Protein content did not change (p=0.78). Looking at specific food groups a trend towards less animal-based products seems to manifest as the usage of dairy and meat decreased, while the usage of vegetables and meat alternatives like legumes, cheese and fish increased (all p's <0.05). Compared to the household purchases, the usage of cheese, grain, nuts and seeds in cookbooks correlates positively with the sales of these food groups while correlating negatively with butter, meat and dairy purchases (all p's<0.05).

Conclusions: This study showed how popular cookbooks moved towards less meat and more plant-based diets. This move towards more plant-based diets - together with a decrease in the fat and saturated fat content, and an increase in carbohydrates and fibre content - shows cookbooks became more aligned with dietary guidelines over time. Finally, these changes in cookbooks also associate with changes in household food purchases underlining a potential association between media and diet.

OD3-28 The implementation of stunting alleviation programs: lessons from the convergence efforts in the rural areas of Yogyakarta, Indonesia

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SIG - Primary Choice: H. Policies and environments
Age Category: All ages
Subject Category: Nutrition

Purpose: To describe the collaboration, division of roles and challenges for the optimization of stunting alleviation activities in rural areas

Methods: This study was a part of an implementation research with participatory approach conducted in the Special Region of Yogyakarta, Indonesia in 2021. Data were gathered through focus group discussions and in-depth interviews. The participants included district health officers, district village officers, heads of public health centers, planning officers at district and village level, and community development officers. Data triangulation and analysis were conducted following grounded theory approach.

Results: The convergence of stunting alleviation programs requires technical guidelines designed for each level of the government system. In 2021 there was a transfer of authority for coordinating stunting programs from the health sector to the population and family planning office. Initially, the District Health Office (DHO) was in charge of the programs, but recently they have shared primary responsibility with the family planning agency at the district level. District planning and development office coordinates cross-sector programs and facilitates the division of roles for each district office. There are regular meetings held to promote and maintain open communication, facilitate program coordination for all stakeholders, and resolve technical issues. The central government has provided guidelines for convergence efforts, but not all district agencies are able to translate the national guidelines into detailed activities. Moreover, each district office adheres to specific regulation from each ministry at central level, which are sometimes not aligned with health regulations. Similar technical challenges were encountered at the public health center and village levels.

Conclusion: It is necessary to develop practical guidelines and technical assistance for each district office that participates in the stunting alleviation program. These important supports need to be able to bridge the gap between institutions in terms of regulations and technical issues in the field.

OD3-29 Exploring Physical Activity and Perceived Barriers to Physical Activity among Individuals at Risk of Food Insecurity

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: A formative evaluation was conducted to guide interventions during COVID-19 within two federal nutrition education programs, the Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program – Education (SNAP-Ed), whose goals are to promote food security, healthy eating, and physical activity. The goal of this study was to explore exercise and potential barriers to physical activity among individuals at risk for food insecurity, based on income, to determine how to mutually support program objectives.

Methods: An online survey was administered in November-December 2020 to adults with low income, recruited from existing Qualtrics panels. The survey included questions on: socio-demographic characteristics; food security (USDA ERS food security module); the number of days in the past week that the individual exercised at least 30 minutes (CDC BRFSS); and barriers to physical activity adapted for lower literacy audiences with likert-type scale (1 for very unlikely and 4 very likely)(CDC Barriers to Being Active). Descriptive statistics were computed for all responses and one-way ANOVA to determine if significant differences existed between reported number of days of exercise by food security status.

Results/findings: A total of 973 individuals completed the survey. Over one-quarter (27.6%) reported no exercise in the previous week. The mean number of days reported was 2.36 (+/- 2.10 SD). ANOVA did not detect differences between number of days of exercise by food security status ($p<0.05$), although a higher mean number of days of exercise was observed for respondents with high food security. Respondents reported the highest agreement with the following physical activity barriers: "My day is so busy" (2.84); "I am too tired to get any exercise" (2.83); and "Physical activity takes too much time away from other commitments" (2.30). Almost three-quarters (220, 72.6%) of respondents who responded "very likely" to "My day is so busy" were considered food insecure.

Conclusion: The results provide insight into promoting exercise and physical activity among individuals with low income, regardless of food security status. The results can help inform appropriate messages and interventions to support physical activity among individuals with low income.

OD3-30 Factors Influencing the Adoption of Physical Activity Interventions by Para-Professional Nutrition Educators

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: The Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program Education (SNAP-Ed) are two federal U.S. nutrition education programs which have historically emphasized nutrition outcomes. More recently physical activity promotion has also been added as a federal focus. The goal of this study was to explore factors influencing the adoption of physical activity interventions for adults by EFNEP and SNAP-Ed para-professional educators.

Methods: An online survey was created and administered specifically for this study by an integrated research-extension team. The survey included questions on socio-demographic characteristics and ratings for all potential adoption factors based on likert-type scale (with 1 being strongly disagree and 5 strongly agree). Descriptive statistics were computed for all responses and exploratory factor analysis was used to explore underlying factors and clusters most associated with willingness to implement physical activity programming.

Results/findings: A total of 28 of 37 (75.7%) educators completed the survey. The highest rated factors including the need to focus on more pressing topics (mean score 4.07) and preferences for teaching nutrition (4.04). There were conflicting results toward incorporating more physical activity. Educators reported relatively high interest in offering more physical activity (3.93), yet less agreement with being hired to teach physical activity (3.14), not having the qualifications to teach any physical activity programs (3.21), and not wanting to demonstrate physical activities (3.11). Motivators for offering physical activity interventions was visibility and exposure for their efforts (3.93) and interest from the community (3.89). Five sub-scales were identified from the factor analysis: lack of comfort level; personal interest and safety; client and community appeal; nutrition as a programming priority; and other

Conclusion: The results provide insight into potential barriers and motivators for the adoption of physical activity programs within nutrition education programs and can be used to inform administrator-level decisions and staff trainings. Additional research is warranted to examine other factors influencing the adoption and implementation of physical activity interventions within EFNEP and SNAP-Ed.

OD3-31 Examining participation in a university pilot fresh produce distribution program among postsecondary students

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Poor adherence to dietary recommendations combined with high prevalence of food insecurity among postsecondary students present a growing public health concern. Fresh produce distribution programs (FPDP) are an emerging strategy to promote food security but are not well understood. The purpose of this study was to characterize participation in a university pilot campus-based FPDP housed in a farmers market setting, and examine the relationships between demographic factors, risk of food insecurity, and dermal carotenoid status of FPDP participants.

Methods: cross-sectional survey was administered weekly at a university campus-based FPDP between September-October 2021. A convenience sample of FPDP participants completed questionnaires and a dermal carotenoid scan. Questionnaires assessed demographic characteristics, risk of food security, and use of campus-based health or social resources (*n=816*). Dermal carotenoids were measured using reflectance spectroscopy using the Veggie Meter, with a maximum score of 800 (*n=478*). Descriptive statistics were used to characterize the sample. Linear regression analyses (adjusted for the week of data collection, and campus-based resource utilization) were used to examine associations between demographic characteristics, food security status, and dermal carotenoid levels.

Results/findings: The study sample included 81% women, 96% postsecondary students, and 9% Hispanic participants. Forty percent of participants lived on campus, and 69% were first-time visitors of the FPDP. Thirty-nine percent of respondents reported risk of food insecurity. However, use of health, social, and financial resources among participants was low, with 5% using a campus-based food pantry, 18% using campus-based counseling services, and 12% enrolled in federal tuition assistance for low-income students. Mean dermal carotenoid levels were lower among first-time visitors (296±87.9; *n=320*) in comparison with return visitors (329±96.2; *n=158*). Risk of food insecurity was associated with a 53-point lower dermal carotenoid level among return visitors of the FPDP (b=-53.5; 95% CI -88.5,-18.6; p<.05), and Hispanic students had significantly higher dermal carotenoid levels compared to non-Hispanic students (b= 82.9; 95% CI 6.0,159.8; p<.05).

Conclusions: These results highlight the reach of a university campus-based fresh produce distribution program. Preliminary pilot findings underscore the need for further research into how these programs mitigate food insecurity and improve diet quality among postsecondary students.

OD3-32 Limited media use at meals is associated with more mindful eating, regularly eating meals with household members, and less frequent fast food consumption among emerging adults

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Sedentary behavior and nutrition

Purpose: Watching television while eating is an established risk factor for high consumption of energy-dense foods, but little is known about the potential influence of using other electronic devices while eating or mealtime media use among emerging adult populations. This study aimed to describe how often different forms of media are used during meals and how media use is related to the eating behaviors of emerging adults.

Methods: Population-based study (Eating and Activity over Time) of 1568 young people who completed surveys as adolescents in 2009-2010 (mean age=14.5 years) and follow-up surveys in 2017-2018 (mean age=22.0 years). Participants were recruited from urban schools in Minnesota, USA. At follow-up, participants reported on media use at meals (watching television/movies; talking on the phone or texting; using a computer/laptop/tablet; listening to music with headphones) and several markers of eating behavior. Associations between media use during meals and each eating behavior were examined in separate regression models that included gender, ethnicity/race, parental socioeconomic status, educational attainment, employment, student status, food insecurity, and living situation as covariates.

Results: The past year prevalence of sometimes or always using media while eating meals was 50.7% for television/movies, 45.2% for phones, 25.7% for computers/laptops/tablets, and 16.3% for listening to music. More than two thirds of the emerging adult participants reported that they usually or always used one or more form of media while eating meals. Models showed that more limited use of media during meals (never/rarely or sometimes) was related to engaging in behaviors that have been linked to better dietary quality, including mindful eating, intuitive eating, eating meals with other household members, and limiting fast food consumption (all $P \leq 0.01$). For example, emerging adults who never or only sometimes used media at meals had a lower prevalence (36.7%) of consuming fast food on three of more occasions per week as compared to the prevalence among those who usually or always used media at meals (58.3%).

Conclusions: Multiple forms of media are commonly used during meals and interventions that encourage limited use may be important to evaluate with regards to the potential for improving eating behavior in early adulthood.

OD3-33 The association between academic schedule and physical activity in university students: A comparison between Maastricht University and KU Leuven

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SIG - Primary Choice: J. Young Adults
Age Category: Young adults 19-24 yrs
Subject Category: Physical activity and sedentary behavior

Background: University students sit a lot. Academic schedules may affect their physical activity level. KU Leuven differs from Maastricht University (UM) in the number of educational contact hours.

Objectives: To investigate the association between (1) the university and students' physical activity levels; (2) education time and students' physical activity levels during weekdays; (3)self-study time and students' physical activity levels during the week.

Methods: 126 first-year students (mean age = 19.3±1.0, mean BMI = 22.0±3.0) completed a demographics questionnaire, a 7-day academic activities logbook, and wore the activPAL3 monitor for 7 days. Linear mixed models were used to examine the relationship between academic activities and students' activity levels.

Results: On weekdays, only MPVA differed between UM and KU Leuven. On the weekends, UM students spent 53.1 minutes more being sedentary, 8.7 minutes less engaging in MVPA, and had a 0.143 lower active sedentary behavior ratio compared to KU Leuven students. During weekdays, each hour of scheduled education time was significantly associated with a 1.3 minutes decrease of MVPA. Scheduled education time was not associated with sedentary time, LPA, and active sedentary behavior ratio. Each hour of self-study time was significantly associated with 8 minutes more sedentary time, 6 minutes less LPA, and 1.3 minutes less MVPA. Self-study time was not associated with the active sedentary behavior ratio. During the weekends, each hour of self-study time was associated with an additional 21 minutes of sedentary time and a reduction of 15.5 minutes of LPA. Self-study time was not associated with time spent on MVPA and the active sedentary behavior ratio.

Conclusions: UM and KU Leuven students' physical activity levels significantly differ on weekends, not on weekdays. UM students showed more sedentary and less MVPA than KU Leuven students during the weekend. Scheduled education time is negatively associated with MVPA. Self-study time, on the other hand, is more strongly associated with sedentary behavior and physical activity. The more time students spend on self-study, the more sedentary and the less physically active they are. This suggests that it is crucial to offer a study environment that also promotes physical activity.

OD3-34 Feasibility and measurement error in using food supply data to estimate diet costs in Canada

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: All ages
Subject Category: Nutrition

Purpose: The cost of food is a key influence on diet. A growing literature has examined how diet cost predicts diet quality. The majority of studies derive diet costs by matching intake data from population-based surveys to a single source of food supply prices (e.g. the Consumer Price Index (CPI)). No methodological studies have examined the validity of using the CPI to price intakes. Our aim was to examine the methodological significance of using food supply data to price dietary intakes.

Methods: We examined food groups and nutrients in dietary intakes captured by the CPI. For prices, we used 2015 Canadian CPI national average monthly item prices. For dietary intakes, we used reported intakes from the 2015 Canadian Community Health Survey (CCHS)–Nutrition, 1st 24-hour recall (n=20,487), the most recent nationally-representative dietary intake survey. i) 2015 CPI item prices ($/g) were matched to the 156 food items from the 2015 CCHS-Nutrition; ii) CPI capture was calculated for each respondent by dividing total food and beverage intake (g) for which CPI price data was a match, without water; iii) differences in mean CPI capture were calculated for Canadian Nutrient File food groups, v) descriptive statistics and ANOVA (α=0.05) were used to compare mean intakes of food groups and nutrients of interest/concern by quantile of CPI capture.

Results: The CPI covered on average 76.3% of total dietary intake (g) without water. Staple food groups that were more commonly consumed had better CPI price coverage than those less commonly consumed. Yet some food groups (vegetables, additions, sweets) that were also commonly consumed by Canadians were not well covered by price data. Individuals in the poorest CPI coverage quartile reported consuming significantly greater fibre (g), gram weight (g), dietary fibre (g), and energy (kcal) as compared to those with the best coverage.

Conclusions: Differential CPI price coverage exists among food components and commonly consumed food groups; additionally dietary intake differs significantly in the population by CPI coverage. Methodological refinements are needed to better account for error when using prices from food supply data to estimate diet costs.

OD3-35 The Index of Sedentary Screen Time is Associated with Cardiometabolic Risk Scores in Healthy Adults

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Purpose: Engaging in prolonged periods of sedentary behaviour is increasingly common and is associated with numerous cardiometabolic health risk factors. Screen time is a ubiquitous activity often completed while sedentary and may pose a greater health risk than other sedentary activities like reading or socializing. The purpose of this study was to determine if a novel composite measure of device-measured total sedentary time and self-reported screen time could better predict cardiometabolic health risk than sedentary time or screen time alone.

Methods: In this cross-sectional study, healthy participants (n = 69; 68% female; 40 ± 17 years) wore an ActivPAL4^{TM} (PAL Technologies Ltd) inclinometer for seven days to measure sedentary time and physical activity. A reliable questionnaire was used to assess typical leisure screen time. Device-measured sedentary time and self-reported screen time were combined as a weighted average to create Index of Sedentary Screen Time (ISST) scores. Fasted capillary blood samples were collected to measure glucose, glycosylated hemoglobin, and lipid panels using the CardioChek® Plus Analyzer (PTS Diagnostics) and A1CNOW®+ machine (PTS Diagnostics). Saliva samples were collected to measure salivary C-reactive protein as a marker of inflammation. Body mass index, waist circumference, and resting blood pressure were also measured. Clustered cardiometabolic risk scores (CMRS) were calculated as an average of these 12 risk factors. Associations between the dependent variable of CMRS and the independent variables of sedentary time, screen time, and ISST scores were assessed using multiple linear regressions (covariates of age, sex, and physical activity).

Results: Multiple linear regression showed that neither self-reported screen time ([$F_{(5,60)}$ = 3.561, p <.26], R^2 = .229) nor device-measured total sedentary time ([$F_{(5,60)}$ = 3.766, p <.15], R^2 = .239) were predictors of CMRS. However, ISST scores were a significant predictor of CMRS ([$F_{(5,60)}$ = 4.288, p <.045], R^2 = .263).
Conclusions: We used a novel approach of combining device-based measures of sedentary time with self-reported information about screen time, which is a common a sedentary activity. These findings suggest that ISST scores may help identify individuals at greater cardiometabolic health risk based on their movement behaviours.

OD3-36 Interrupting prolonged sitting with resistance exercises reduces postprandial glyceia and insulinemia in a group of New Zealand adults

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Sedentary Behavior

Interrupting sedentary time during the day reduces postprandial glycemia (a risk factor for cardio-metabolic disease). However, it is not known if benefits exist for postprandial glucose, insulin and triglyceride profiles in the evening, and if these benefits differ by BMI category.

Thirty adults aged 18 to 40 years (BMI <25: n=10, BMI 25-29.9: n=10, BMI <30: n=10) were recruited to participate in this randomised crossover study. The regular activity-breaks intervention involved interrupting sitting with 3-min of resistance exercise, every 30-min over a 4-h period; the sitting intervention involved 4-h of uninterrupted sitting. Participants were provided with standardised meals to be consumed before arriving at the laboratory at ~5pm. In the laboratory, plasma glucose, insulin and triglyceride concentrations were measured in response to two meals that had a macronutrient profile of 55% carbohydrate, 15% protein and 30% fat. Total energy was provided relative to participants' body weight. Blood samples were collected at baseline, 30 and 45-min after each meal, then hourly for 4-h. This study was registered prospectively with the Australian New Zealand Clinical Trials Registry (ANZCTR) No. ACTRN12621000250831.

Overall, regular activity-breaks lowered plasma glucose and insulin incremental area under the curve (iAUC) when compared to prolonged sitting (mean difference -126mmol/L/240min, 95%CI -197 to -55, p=0.001 and -26.2%, 95%CI -39 to -9.9, p=0.003, respectively). While the interaction between BMI and intervention was not statistically significant, regular activity-breaks reduced glucose and insulin iAUC by a greater magnitude in normal weight participants (mean difference -163mmol/L/240min, 95%CI -310 to -16, p=0.030 and -32.7%, 95%CI -55.2 to 1.1, p=0.057, respectively) when compared to participants who were overweight (mean difference -117mmol/L/240min, 95%CI -243 to 9, p=0.069 and -29.4%, 95%CI -46.8 to -16.5, p=0.015, respectively) or obese (-94mmol/L/240min, 95%CI -167 to -21, p=0.011 and -14.5%, 95%CI 36.5 to 15.1, p=0.302, respectively). No differences were found for plasma triglyceride iAUC.

Possible differences in the magnitude of these reductions by weight status were unexpected and require further investigation. Performing regular activity-breaks in the evening reduced postprandial glycemia and insulinemia in this group of adults. Interventions that interrupt non-occupational sedentary behaviours in the evening have the potential improve cardiometabolic health.

OD3-37 Determining health promotion priority areas among Australian professional sporting organisations

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SIG - Primary Choice: N. Other
Age Category: All ages
Subject Category: Physical Activity

Purpose: Professional sporting organisations are optimally positioned to promote health by using their reach and standing within communities. The purpose of this study was to: (1) identify health promotion (HP) priority areas among Australian professional sporting organisations and (2) explore the development, implementation, and evaluation of HP programming within the identified priority areas.

Methods: Participants were community-focussed staff from 61 professional sporting organisations across Australia. To identify HP priory areas, three rounds of surveys were used in a Delphi procedure. In round one, participants described their organisations' top two HP priority areas. In round two, participants reviewed the collated priorities from round one and rated how important each priority was to their organisation on a four-point Likert scale (4= very high priority, 1= very low priority). In the final round, participants ranked the top-rated priorities. Participants were then invited to participate in semi-structured interviews focused on the development, implementation, and evaluation of HP programs. Interviews were audio-recorded, transcribed verbatim and, a content analysis was conducted.

Results/Findings: Of the 103 community staff invited to participate in the Delphi, 28 participated in at least one round and 16 completed all rounds. The mean (±SD) age of participants was 37.8±10.5 years. Most participants were male (61%), university educated (82%), and were employed in New South Wales (64%). Overall, the priorities fell under 7 main categories: (1) access or participation in sport; (2) general HP; (3) physical activity and healthy eating; (4) mental health, wellbeing, and social health; (5) community, culture, and inclusion; (6) youth development; and (7) support for HP initiatives. Eleven community-focussed staff participated in an interview (mean duration= 53±5.9 minutes) and the central themes included: needing support with program design/evaluation, needing support from government/governing bodies, building capacity/upskilling staff and greater collaboration.

Conclusion: This study determined HP priority areas among professional sporting organisations using a consensus generating approach. Preliminary interview findings demonstrate that community-focussed staff are committed to delivering HP programs, but struggle with funding, staff capacity, and program design and evaluation expertise. The findings from our interviews reveal potential avenues of collaboration between researchers and sporting organisations for HP programming.

OD3-38 Supporting participants with severe mental illness and associated cognitive deficits to engage in physical activity and sedentary behaviour research

Dr. Sarah Howes[1], Mr. Andrew Atkinson[9], Dr. John Brady[7], Ms. Briege Carroll[9], Prof. Mary Clarke[8], Prof. Mike Clarke[2], Mr. Maurice Dillon[9], Ms. Ann Donnelly[7], Ms. Heather Kerr[6], Ms. Duana McArdle, Dr. Judith McAuley[6], Dr. Catherine McDonough[9], Ms. Mairead McMahon[9], Prof. Marie Murphy[1], Dr. Ailsa Niven[3], Dr. Tony O'Neill[2], Prof. Mark Tully[1], Dr. Julie Williams[5], Dr. Iseult Wilson[2], **Prof. Suzanne McDonough[1,4]**

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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Physical activity and sedentary behavior

Purpose: The Walking for Health (WORtH) study is a feasibility randomised controlled trial of a multi-component behaviour change intervention to support adults with severe mental illness (SMI) to increase their physical activity and reduce their sedentary behaviour(McDonough2021). People with SMI can experience deficits in several cognitive domains. When this was observed to influence participants' engagement with the WORtH study, modifications were made to support their engagement with outcome assessment and intervention delivery.

Methods: The WORtH study was conducted over a series of recruitment waves. A record was maintained of observations related to participant engagement. This record was supplemented by qualitative interviews with participants and the clinicians delivering the intervention. Findings were presented to the trial management group to identify modifications to procedures that were implemented in the subsequent recruitment wave.

Findings: Observations from the first wave (n=9 participants) included the requirement for increased support from the clinical and research team to engage with intervention delivery, e.g., with scheduling and completing study materials, and both quantitative and qualitative outcome assessment, e.g., with completing paper-based assessments. Since cognitive function may have influenced participants' engagement with the study, the Montreal Cognitive Assessment – Blind version was added to the baseline assessment as a potential explanatory measure. Other modifications included: shorter study sessions; appointment reminders; additional written study materials and instructions; and telephone support. Changes to the qualitative data collection included: in-person interviews, when possible; giving participants a summary of interview questions in advance; providing visual cues of the study components; and use of more closed questions and member checking. Service user involvement supported amendments to intervention delivery, including format of the education session to improve engagement, provision of additional study materials and training support for participants.

Conclusions: Delivering and evaluating physical activity and sedentary behaviour interventions with people with SMI can present challenges, and researchers need to be flexible and responsive in delivery. Ongoing dialogue

with participants and other stakeholders is important to ensure appropriate modifications. The modifications detailed have enhanced the project to improve participant engagement with intervention delivery and outcome assessment and may be valuable for future research in this area.

OD3-39 Diet Quality Component Differences Among United States Adolescents with Non-Passing and Passing Diet Quality Scores

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: United States (US) adolescents generally have poor diets with some dietary components especially lacking in adequacy. Whether dietary components with lower adequacy are similar between adolescents with non-passing and passing total diet quality scores is not clear. Thus, this study's purpose was to explore differences in diet quality component scores between US adolescents with non-passing and passing total diet quality scores.

Methods: Two cycles, 2015-2016 and 2017-2018, of National Health and Nutrition Examination Survey (NHANES) data were used for this study. Dietary intake was measured using 24-hour dietary recalls and diet quality was assessed using the 2015 Healthy Eating Index (HEI-2015; 100-point scale with 13 components). Total and component diet quality scores <60% of maximum scores were classified as non-passing while scores ≥60% were classified as passing. Self-assessed diet quality was measured by asking adolescents (16-19 years of age) to rate the healthfulness their diet with responses including excellent, very good, good, fair, and poor. Data were analyzed using descriptive statistical methods for complex survey designs.

Results/findings: Out of 1086 adolescents, 928 (85%) had non-passing total diet quality scores while 158 (15%) had passing total scores. For the non-passing group, the mean total score was 42% and mean scores for the 13 diet quality components ranged from 20% (greens and beans) to 80% (total protein) with only total protein achieving a passing score. For the passing group, the mean total score was 67% and mean scores for the 13 diet quality components ranged from 47% (whole grains) to 90% (total protein) with all components except greens and beans, whole grains, and sodium achieving passing scores. Based on 95% confidence intervals, mean total diet quality and all component scores differed between the two groups except for total dairy. Among adolescents who self-assessed the healthfulness of their diet as poor, fair, good, very good, and excellent, 4%, 9%, 14%, 26%, and 26%, respectively, had passing total diet quality scores.

Conclusions: Dietary interventions targeting US adolescents should consider paying particular attention to improving greens and beans, whole grains, and sodium intakes whereas less attention may be given to total protein intake.

O.3V.09 - School- and city-based constraints in behavioral nutrition and physical activity

Virtual Session #1

May 21, 2022, 12:20 PM - 1:50 PM

Movement policies, guidelines and recommendations in the early childhood education and care setting: A scoping review

Ms. Elizabeth Wenden[1,2], Dr. Rosa Virgara[3], Dr. Natasha Pearce[1,2], Dr. Charley Budgeon[2], Associate Prof. Hayley Christian[1,2]

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SIG - Primary Choice: H. Policies and environments
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical activity and sedentary behavior

Purpose: Meeting 24-hour movement behavior (physical activity, sedentary behavior and sleep) guidelines is associated with better health and development outcomes in children. Early childhood education and care (ECEC)-specific movement policies, recommendations and guidelines acknowledge that improved movement behaviors impact on the health and wellbeing of the children attending care. This scoping review determined the prevalence, content and development of movement behaviour-related policies used in ECEC settings internationally and summarizes the implementation supports provided.

Methods: A systematic search of EMBASE, CINAHL, Web of Science, Proquest, Scopus, EBSCO, PubMed and grey literature was conducted in July/August 2021. ECEC policy documents (policies, guidelines, recommendations) from 2010 onwards containing minutes/day or times/day for at least one movement behaviour were identified. Data extraction was informed by the Comprehensive Analysis of Policy on Physical Activity (CAPPA) framework.

Results/findings: On reviewing 539 documents, 48 were included in the review (8 studies; 40 websites, databases, reports) from eight countries. Three-quarters originated in the US with the remainder from other high-income countries. Most policy documents (75%) were sub-national (state or province) and were formulated with a range of stakeholders, most commonly government (health sector), NGOs and ECEC end-users. The amount of daily physical activity was specified in 60% of documents (range 30-180 minutes/day). The amount of sedentary and sleep time was specified in 58% (15-60 minutes/day) and 22% (30-120 minutes/day) of documents, respectively. Two-thirds of policy documents recommended outdoor physical activity at least daily (range 30-160 minutes/day) and most did not allow screen time for children 2 years or less but did so for children above 2 years (range 20-120 minutes/day). Most policy documents (86%) were accompanied by resources, practice guides, training and around half provided implementation tools and advice.

Conclusions: Few ECEC-specific movement behaviour policy documents were nationally focused. There were inconsistent and a wide range of daily time recommended for all movement behaviors. The development of policy documents most commonly included the health sector, a range of stakeholders and some type of

implementation support. Findings indicate that global harmonization of movement behavior policies, recommendations and guidelines with best practice evidence is warranted in the ECEC sector.

Examining the Transport to School Patterns of New Zealand Adolescents by Home-to-School Distance and Settlement Types

Prof. Sandra Mandic[1,2,3], Dr. Enrique García Bengoechea[4,5], Associate Professor Debbie Hopkins[6], Associate Professor Kirsten Coppell[3], Associate Prof. Melody Smith[7], Associate Professor Antoni Moore[3], Associate Professor Michael Keall[3], Dr. Christina Ergler[3], Associate Professor Susan Sandretto[3], Mr. Gordon Wilson[8], Mr. Gavin Kidd[8], Mrs. Charlotte Flaherty[3], Prof. Jennifer Mindell[9], Prof. Janet Stephenson[3], Mrs. Kimberley King[3], John Spence[10]

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SIG - Primary Choice: H. Policies and environments
Age Category: Adolescents 13-18 yrs
Subject Category: Physical Activity

Purpose: Scholarship on active transport to school has mostly focused on (large) urban areas and examined walking and cycling to school together under the umbrella of "active transport". This study examined patterns of active transport to school among adolescents living in both rural and urban settlements in the Otago region of Aotearoa New Zealand.

Methods: Patterns of transport to school by home-to-school distance, and across school locations are described for 2,403 adolescents (age: 15.1±1.4 years; 54.8% females) attending 23 of 27 secondary schools in large urban areas (n=1,309; 11 schools), medium urban areas (n=265; 3 schools), small urban areas (n=652; 4 schools) and rural settings (n=177; 5 schools). Empirical data were collected through an online survey, in which adolescents reported sociodemographic characteristics, travel to school and perceptions of walking and cycling to school. Home-to-school distance was measured for the shortest route determined using Geographic Information Systems (GIS)-based network analysis and categorised as 'walkable' (≤2.25 km), 'cyclable' (>2.25-≤4.0 km) and 'beyond cyclable' (>4.0 km) distance.

Results: Overall, 27.0% of adolescents used active, 59.6% motorised and 13.4% mixed transport to school. Transport to school patterns differed significantly by home-to-school distance and across settlement types. With increasing distance, rates of walking (walkable/cyclable/beyond cyclable distance: 57.5%/13.5%/1.0%) and cycling (6.3%/5.5%/0.6%) to school decreased significantly while rates of travelling to school by motorised transport [primarily by car (20.7%/58.2%/44.5%) and by bus (1.1%/7.7%/34.2%)] increased. While prevalence of walking to school ranged from 19.0% to 24.5% across different settlement types, greater variations were observed for other transport modes (cycling: 0.7% to 10.0%; car: 15.8% to 50.6%; bus: 12.5% to 35.6%). Transport patterns to school also differed by distance to school across settlement types. Profiles of different transport user groups showed significant variability in sociodemographic characteristics, family factors, average distance to school, self-reported physical activity and perceived health.

Conclusions: Initiatives to promote active transport and reduce reliance on car transport to school, whether to improve health or to reduce greenhouse gas emissions, need to consider settlement types, distance to school and characteristics of different transport user modes when planning such initiatives.

School Food Environments: A Longitudinal Analysis

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SIG - Primary Choice: H. Policies and environments
Age Category: Children 0-18 yrs
Subject Category: Nutrition

Purpose: The 2010 Healthy, Hunger-Free Kids Act (HHFKA) was designed to improve the nutritional quality of food served in schools by setting nutrition standards. In this longitudinal study, we analyze changes in the school food environment by school-level factors between 2010–2018.

Methods: Public schools (n=141) in four school districts in New Jersey provided food environment data every year from school year (SY) 2010-11 to SY 2017-18. Six food indices were used to assess the number of healthy and unhealthy items offered in school meals, vending machines, and a la carte. Trends in indices were examined over time considering school level (elementary vs middle/high school), the proportion of students eligible for free or reduced-price meals (FRPM), and school-level race/ethnicity.

Results: Over the study period, the number of healthy items offered as part of the National School Lunch Program (NSLP) increased (p<.001), while the number of unhealthy items in the NSLP decreased (p<0.001). The trends for foods offered in vending and a la carte (both healthy and unhealthy) were quadratic, increasing after the HHFKA and falling with the introduction of Smart Snacks in 2014. No differences by school race/ethnicity were observed for the trends in NSLP healthy items. For unhealthy items served in NSLP, schools with majority Hispanic students did not show the same negative trends as the whole sample (p for trend = 0.125), while trends in schools with majority Black students did have a significant negative trend (p=0.004). Finally, schools with majority Hispanic students did not show significant changes in competitive food offerings in either vending or a la carte, healthy or unhealthy, while schools with majority non-Hispanic Black students drove the overall quadratic trends. There were no differences in trends in the school food environment across school level or the proportion of students eligible for FRPM; however, these trends did mirror the full sample.

Conclusion: Positive changes were observed in the school food environment following the implementation of the HHFKA. These changes were consistent across FRPM eligibility and school level. However, there were racial differences in competitive food offerings but not in offerings in the NSLP.

Long-term trends in multiple lifestyle risk behaviours by socioeconomic status in New South Wales, Australia

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SIG - Primary Choice: H. Policies and environments
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Monitoring the temporal trends of lifestyle risk factors in the population and across socioeconomic subgroups is important for tracking public health progress and prioritising strategies. Few studies have examined trends in lifestyle behaviour inequalities. This study examined 1) the long-term (2004-2019) trends of individual lifestyle risk factors and a combined lifestyle risk index and 2) trends in socioeconomic inequalities in these risk factors, in New South Wales (NSW) adults.

Methods: Data was sourced from the NSW Adult Population Health Survey, an annual telephone survey of adults aged ≥16 years residing in NSW, Australia, for the period 2004-2019, totalling 191,905 completed surveys. Four individual risk behaviours (excessive alcohol consumption, smoking, insufficient physical activity, insufficient fruit and vegetable intake) and a combined lifestyle risk index (overall high-risk lifestyle defined as total number of lifestyle risk behaviours ≥2) were examined. Socioeconomic status was assessed using education attainment, postal area-level Index of Relative Socioeconomic Disadvantage, and remoteness based on Accessibility-Remoteness Index of Australia Plus. Socioeconomic inequalities were examined as prevalence difference (PD) for absolute inequalities and prevalence ratio (PR) for relative inequalities. The prevalence of lifestyle behaviours by levels of each socioeconomic status variable were estimated using predicted probabilities from logistic regression models.

Results: After adjusting for covariates, there was a decrease in prevalence over time for most lifestyle risk behaviours. Between 2004-2019, the prevalence decreased for smoking from 21.8% in 2004 to 17.1% in 2019, insufficient physical activity from 39.1% to 30.9%, and excessive alcohol consumption from 15.4% to 13.7%. The prevalence of an overall high-risk lifestyle also decreased from 50.4% to 43.7%. Socioeconomic inequalities, based on one or more of the socioeconomic variables, increased over time for smoking, insufficient physical activity, and an overall high-risk lifestyle (PD increased between the least and most disadvantaged education groups from 12% in 2004 to 22% in 2019; PR increased from 1.3 to 1.6).

Conclusions: Overall, the health behaviours of the NSW population improved between 2004 and 2019. However, some socioeconomic inequalities also increased during this time, highlighting the need for effective public health strategies that improve health behaviours among the most socioeconomically disadvantaged.

Preschool children are more active in non-home residences than local parks and playgrounds? A mixed-methods study using Global Positioning System (GPS), Geographic Information System (GIS) and accelerometry data

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SIG - Primary Choice: H. Policies and environments
Age Category: Preschoolers 2-5 yrs
Subject Category: Physical Activity

Purpose: It is important to understand where preschool children are active because physical activity is positively associated with preschool children's physical and mental health and development. However, to date little is known about where preschool children engage in physical activity outside of their home and childcare centre environment. The aim of this study was to identify the locations preschool children engage in Moderate to Vigorous Physical Activity (MVPA) within and outside of their neighbourhood, and if this differs by sex, socioeconomic status, weekdays or weekends.

Methods: A layer with 25 meter by 25 meter fishnet cells was overlaid on a high-resolution aerial map of the Perth and Peel area in Western Australia using ArcGIS Pro. Combined 7-day accelerometer and GPS data from 165 preschool children aged 2 to 5 years old was analysed in ArcGIS Pro to identify the locations with the highest (top 20%) MVPA counts per fishnet cell. Such fishnet cells were labelled as "locations with high MVPA counts" and the land use for each cell was determined.

Results: For locations with high MVPA counts within 500 meter from a child's home, 66.7% were playgrounds, 16.7% were schools and 16.7% were parks. For locations with high MVPA counts within 500-1600 meter from a child's home, 33.3% were playgrounds, 29.6% were residential, 3.7% were parks and 11.1% were childcare centres. For locations with high MVPA >1600 meter from a child's home, 54.7% were residential, 6.8% were playground and 5.3% were parks.

Conclusion: Within preschool children's immediate neighbourhood, the majority of MVPA counts occurred in playgrounds, while outside of the child's immediate neighbourhood, the majority of MVPA counts occurred in residential locations. These findings suggest that local playgrounds and residential areas outside the neighbourhood are important locations for preschool children's MVPA. Further investigation of the types of physical activity done in these locations, and the reasons why residential areas outside the neighbourhood are high MVPA locations for this young age group is required. Findings from this research will inform the design of key locations within and outside the neighbourhood to better support preschool children's physical activity.

Characterizing food insecurity among students at a private college

Dr. Lanae Hood[1], Dr. Rebecca Hagedorn-Hatfield[1], Mrs. Logan Pressley[1]
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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Young adults 19-24 yrs
Subject Category: Nutrition

Purpose: Food insecurity (FI) occurs when adequate and safe food is limited or uncertain, or cannot be obtained in socially acceptable ways. Research has consistently reported a high rate of FI among college students, but little research has been conducted among private college populations. Considering the negative outcomes food insecurity can have on physical and mental health, psychosocial development, and cognitive performance, the study gives insight into FI in an unknown and potentially at risk population. The aims of this study were to 1) measure the prevalence of FI at a small, private college; 2) identify food coping strategies; and 3) determine behaviors associated with increased risk for FI.

Methods: Data was collected using a cross-sectional, anonymous questionnaire administered using Qualtrics software in two phases between 2018-2019. Participants were recruited with a campus wide email listserv. Data was analyzed using JMP statistical software. Descriptive statistics were performed on sociodemographic and behavioral variables and measurement of the students' food security status was accomplished using the USDA's Food Security Survey Module (FI Score of 0-10). The study was approved by the College IRB.

Results/Findings: A total of n = 711 surveys were collected across two waves. During the first wave, 34.2% of students were classified as food insecure and 16% experienced hunger. Those figures increased to 40.7% and 18%, respectively, for the second wave, rates on par with the national average of FI on college campuses. Over 80% of students reported receiving some type of financial aid. Students utilized a number of coping strategies to access food when money was low including 1) buying cheap, processed foods, 2) holding one-or more part time jobs, 3) attending campus or community functions with free food, 4) relying on credit to purchase food, and 5) stretching food to make it last longer.

Conclusions: Students at private colleges experience similar rates of FI and struggle with many of the same barriers as their peers at public institutions. Findings from this study can be used to design appropriate interventions to overcome barriers to nutritious food access for students at private colleges.

O.3V.10 - Latest evidence in behavioral nutrition and physical activity

Virtual Session #2

May 21, 2022, 12:20 PM - 1:50 PM

Development, validation and item reduction of a food literacy questionnaire (FLQ) with Australian adults

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SIG - Primary Choice: L. Assessment and Methodologies in Behavioral Nutrition and Physical Activity
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: Food literacy is conceptualised as 11 components under four domains of planning and managing, selecting, preparing, and eating. Existing food literacy questionnaires utilise differing conceptual frameworks and vary in the methods conducted to assess psychometric properties. With recent research identifying the Vidgen & Gallegos definition and conceptualisation as the core framework, a valid and reliable questionnaire is needed that comprehensively addresses this conceptualisation. Therefore, this study builds on existing research to develop a food literacy questionnaire using item response theory.

Methods: 1000 participants were recruited across two studies, with principal component analysis (PCA), item response theory (IRT) and test-retest reliability conducted to assess the targeting, responsiveness, reliability and validity of the food literacy questionnaire.

Results: The PCA saw the 171-item pool reduced to 100-items across 19 sub-components of food literacy. After the thresholds of 26-items were combined, the food literacy questionnaire reported ordered thresholds, acceptable item locations (-0.00226 to +1.52523), appropriateness of the measurement model (n=92% expected responses), high validity (>0.99), reliability (>0.99) and good test-retest reliability (ICC 2,1 0.55-0.88).

Conclusion: This study developed the first 100-item food literacy questionnaire to comprehensively address the Vidgen & Gallegos conceptualisation with good targeting, responsiveness, reliability and validity in a diverse sample of Australian adults.

Preventing unhealthy gestational weight gain: evaluation of the Get Healthy in Pregnancy program

Dr. Bronwyn Mcgill[1], Dr. Dominic Lees[2], Ms. Tahlia Reynolds[2], Ms. Justine Salisbury[2], Dr. Blythe O'Hara[1]
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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Purpose: Risks associated with unhealthy weight gain during pregnancy include complications for the mother, and health risks for the baby. Healthy eating and physical activity can reduce these risks. While the efficacy of lifestyle interventions for pregnant women is established, the effectiveness of such interventions is equivocal. Get Healthy in Pregnancy (GHiP), a free, real-world program supporting healthy gestational weight gain (GWG) offers up to 10 personalised health coaching calls over six months. We investigated the impact of the program on participant's GWG and their behavioural lifestyle outcomes.

Methods: Participants enrolled in GHiP (2018-2019) provided demographic information at baseline and weight, physical activity and dietary information at each coaching call (n=656). Using a pre-post design, we conducted McNemar's tests to explore within-individual change for behavioural outcomes and logistic regression to assess associations between demographic characteristics and behavioural and weight outcomes.

Results/findings: Approximately two thirds of women gained weight below (31%) or within (33%) GWG guidelines. Pre-pregnancy weight was significantly associated with meeting GWG guidelines: women with obesity had 70% lower odds of GWG within guidelines (95%CI: 33%-86%, p=0.003), and those with overweight had 60% lower odds of having GWG within guidelines (95%CI: 13%-80%, p=0.02) compared with women with healthy pre-pregnancy weight. Women with a healthy pre-pregnancy weight were more likely to complete GHiP (p<0.001). At graduation, the proportion of women meeting physical activity guidelines (39.7%-50.5%) and consuming the recommended serves of vegetables (13.2%-30.8%) and fruit (67.4%-74.4%) increased (all p<0.001). These women reported increased walking (+0.8 sessions/week, p<0.001), vigorous physical activity (+0.3 sessions/week, p<0.001) and vegetable consumption (+1.1 serve/day, p<0.001), and decreased takeaway meal (-0.8 meals/week, p<0.001) and sweetened drink consumption (-0.2 drinks/day, p<0.001).

Conclusions: The majority of participants did not gain weight above the guidelines and made lifestyle related improvements. Women in this scaled up health coaching program showed improved physical activity and dietary behaviours. Reaching and attracting women with pre-pregnancy overweight and obesity to a such a telehealth program and keeping them engaged is important to maximise the health of women and their babies, as well as realising the real-world public health benefits of these kinds of efficacious interventions.

Longitudinal associations between commercial physical activity app use and physical activity engagement

Ms. Jasmine M Petersen[1], Prof. Eva Kemps[1], Associate Professor Lucy K Lewis[1], Associate Professor Ivanka Prichard[1]
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SIG - Primary Choice: D. e- & mHealth
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Commercial physical activity apps (e.g., Fitbit, Strava) present unparalleled opportunities to promote physical activity engagement. There is a dearth of evidence relating to the long-term effectiveness of these apps. This study aimed to examine the associations between the use of commercial physical activity apps and engagement in physical activity over a 6-month period. The roles of social support, self-efficacy, and motivation were also investigated.

Method: An online survey assessed physical activity, engagement with commercial physical activity apps, and psychological constructs (social support, self-efficacy, motivation) at three time points (baseline, 3 and 6 months). Data were analysed using Generalised Estimating Equations. Alpha was set at 0.05.

Results: Participants were 731 Australian adults aged 18 to 74 years (M_{age} = 34.1 ± 13.3 years, 88.0% female). Approximately half of the participants reported using a physical activity app at all time points. App users engaged in significantly higher levels of physical activity than non-users over the 6-month period, reporting on average 59 minutes more physical activity per week (B=59.3, p<.001). When adjusting for psychological constructs (social support, self-efficacy, and motivation), physical activity app use was no longer a significant predictor of physical activity engagement (B=18.0, p=.108). Instead, identified regulation (B=57.6, p<.001) self-efficacy (B=55.0, p<.001), social support (B=46.3, p<.001), and introjected regulation (B=13.6, p=.016) were positive predictors of physical activity over the 6-month period.

Conclusions: Commercially available physical activity apps have potential to support long-term engagement in physical activity. Social support, self-efficacy, and motivation (identified and introjected) are important predictors of long-term physical activity, and commercial physical activity apps should seek to more widely incorporate features that target these psychological constructs to maximise effectiveness. Randomised controlled trials evaluating the capacity of commercial physical activity apps to support the initiation and maintenance of physical activity are warranted.

Vegetable consumption among adolescents: a comprehensive enquiry into its social determinants

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SIG - Primary Choice: I. Socio-economic inequalities
Age Category: Adolescents 13-18 yrs
Subject Category: Nutrition

Purpose: Vegetable consumption among adolescent is one of the topical public health issues. With the goal of highlighting avenues to limit further diseases related to low vegetable consumption, this study aimed to identify the individual and school social determinants as well as the trends in such disparities.

Methods: Data came from four rounds (1990, 2002, 2014, 2018) of the Belgian "Health Behaviour in School-aged Children" (HBSC) survey. Vegetable frequency consumption was estimated using a self-administrated short Food Frequency Questionnaire. Adolescents provided information on various social factors, like parental education level, family structure and migration status. The school social determinants include the school socioeconomic index (SES), an official index based on the characteristics of each school population. In addition, school staff members completed a questionnaire on food availability, food-related projects and health promotion. Statistical analyses consisted of multilevel logistic regressions including non-daily vegetable consumption as outcome.

Results/findings: In the 2018 HBSC survey, 44.1% of adolescents reported eating vegetable non-daily. The social characteristics of adolescents were all associated with non-daily consumption. For instance, adolescents of a secondary or lower parental education level were more likely to consume vegetables non-daily than adolescents of a post-secondary level (OR= 1.42 (95%CI: 1.25-1.60)). Furthermore, the social disparities were wider among natives than among immigrants. The school SES was also a major determinant of non-daily vegetable consumption ($OR_{middle\ vs.\ high}$: 1.36 (1.16-1.60); $OR_{low\ vs.\ high}$: 1.77 (1.46-2.16). However, neither health promotion, food-related projects nor the type of food sold at school were associated with non-daily vegetable consumption among adolescents. Besides, the prevalence of non-daily vegetable consumption increased from 23.1% to 44.6% between 1990 and 2014, but social disparities decreased during this period. For instance, the relative index of inequality related to the family structure (two-parent, blended or single-parent families) decreased from 1.30 (1.06-1.60) to 1.16 (1.09-1.23).

Conclusions: Insufficient vegetable consumption among adolescents is a major issue. Various social disparities were observed, but the food environment at school did not seem to be a determining factor. Our results

underline the need of implementing efficient actions that take into account both the individual and contextual determinants of dietary habits.

Physical activity patterns and participation influences among Arab immigrants and refugees in Western societies

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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Physical Activity

Purpose: Physical inactivity is the fourth leading risk factor for numerous non-communicable diseases and results in over 3 million global deaths annually. Immigrants and refugees experience higher levels of physical inactivity than the broader population due to various psychosocial, environmental, and cultural influences such as racism/discrimination and different environment attributes. Arab immigrants/refugees (AIR) may be at higher risk due to their distinct cultural norms/beliefs and because they come from countries where the socio-physical environments spontaneously enhanced their physical activity (PA) levels. This systematic scoping review examined PA patterns, knowledge, attitudes and barriers vs. facilitators of PA engagement among AIR.

Methods: This review adopted a systematic search strategy across five electronic databases (Medline, PubMed, Sociology Database, Embase, and Transportation Research Board) following PRISMA guidelines. Qualitative and quantitative studies from Western countries were included with no limitation on age or gender. Studies of AIR from any of the 22 Arab countries were eligible. A stakeholder consultation was performed with six PA specialists who provide fitness services to AIR in Europe and North America to validate the findings. A convenience sampling approach was adopted to recruit the consulted professionals.

Results: Seventy-five studies were included. Despite demonstrating positive attitudes and reasonable knowledge of PA recommendations for health, AIR showed a low PA participation prevalence, highlighting the presence of a knowledge-compliance gap. The prevalence of adequate PA was lowest in the US (11–22%), whereas Europe exhibited the highest adequate PA prevalence (26–45%). Personal barriers to PA engagement included language difficulties and poor PA skills, whereas enhanced PA literacy was a primary facilitator. Family responsibility, perceived discrimination, and cultural restrictions were key psychosocial/cultural barriers, whereas social support, broader community cohesion, and culturally sensitive resources/spaces were powerful facilitators. Lack of availability of cyclist/pedestrian-friendly infrastructure was a leading environmental barrier among AIR in North America, but not in Europe.

Conclusions: Community-engaged and mixed-method PA studies of AIR are required to inform evidence-based, culturally appropriate PA interventions. Intersectoral collaboration is needed to design PA-friendly environments/spaces

and develop inclusive PA-enhancing policies, promoting AIR and other marginalized populations' PA engagement and hence, improving their health and well-being.

A smartphone app and salt substitute for reducing dietary sodium intake of hypertensive adults: Findings from the SALTS randomised controlled trial

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SIG - Primary Choice: M. Disease prevention and management
Age Category: Adults 19+ yrs
Subject Category: Nutrition

Purpose: High blood pressure (BP) from excessive sodium intake is a major contributor to the global burden of disease. New technologies including smartphone apps and low-sodium salt substitutes may offer a solution. SaltSwitch is a smartphone app that enables shoppers to scan barcodes of packaged foods and receive on-screen recommendations for lower-salt options. Our aim was to determine the effectiveness of SaltSwitch combined with a low-sodium salt substitute to support adults with hypertension to consume less sodium.

Methods: The Salt ALTernatives Study (SALTS) was a 14-week, two-arm randomised controlled trial conducted in New Zealand (NZ) from May 2019 to March 2021. 168 adults who owned a smartphone and had high BP (≥140 mmHg systolic and/or ≥85 mmHg diastolic) were randomised to either the intervention or control group (n=84 per arm). The primary outcome was 24-hour urinary sodium excretion at 12 weeks, estimated via spot urine. Secondary outcomes were: (1) self-measured BP, (2) 24-hour potassium excretion, (3) sodium content of packaged food purchases, (4) number of participants achieving BP control, and (5) use and acceptability of the intervention. Intervention effects were assessed by intention to treat analyses using linear regression with multiple imputations, adjusting for baseline outcome value, age, and ethnicity.

Results/findings: The mean (SD) age and BMI of participants was 54 (13) years and 31 (6) kg/m2 respectively. Mean (95% CI) difference between intervention and control groups in estimated 24-hour urinary sodium excretion at 12 weeks was 545 (-331, 1424) mg (p=0.20). There were no significant differences for any secondary outcomes. Most intervention participants reported SaltSwitch helped support low salt food choices and used approximately half of the 300 g of salt substitute provided (20% found the taste unacceptable). Covid-19 lockdowns detrimentally impacted recruitment and use of technology in the target population was lower than anticipated.

Conclusions: SaltSwitch combined with a low-sodium salt substitute was not effective in reducing dietary sodium in 168 hypertensive NZ adults. Further research to increase uptake of the intervention in the target population including for priority population groups may be warranted.

Exploring Health Profession Students' Perceptions in Delivery of the HealtheSteps™ Virtual Lifestyle Counselling Program for Prevention of Chronic Disease

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SIG - Primary Choice: N. Other
Age Category: Adults 19+ yrs
Subject Category: Physical activity and nutrition

Background: COVID-19 had a significant impact on access to training opportunities for the next generation of health care providers to engage with patients.HealtheSteps is a virtual, 6-month, healthy lifestyle counselling program for adults (18+) looking to improve their health behaviours (i.e., healthy eating, physical activity, mindfulness). HealtheSteps coaching has presented opportunities for senior undergraduate medical students and health profession students (i.e., kinesiology) to deliver lifestyle counselling in primary care.

Study Purpose: The study purpose was to theorize how students view their role as a HealtheSteps coach in supporting healthy lifestyles and how this role aligns with their future career goals in the health professions' field.

Methods: A HealtheSteps virtual pilot study was launched in fall 2020, training fourth-year University of British Columbia (UBC) medical and kinesiology students as coaches (as part of a clinical elective) in partnership with UBC Clinical Faculty Family Physicians from across BC who referred their at-risk patients. Guided by constructivist grounded theory methodology, student coaches were purposively sampled and invited to participate in a 30-60 minute interview after being involved in the program for at least four months. Data collection and analysis occurred concurrently to inform further theoretical sampling of students. Theoretical coding, pulling on relevant learning theories, was used to inform application of core categories in the field of health professions' education to understand students' perception of their role in providing healthy lifestyle counselling and how this role is perceived in their future professional role. Data collection will end when theoretical saturation has been reached.

Results: Preliminary themes identified from student interviews include: 1) A desire to practice lifestyle counselling in the future; 2) A positive learning experience that exceeded initial expectations; and 3) HealtheSteps coaching experience met students' goals to include lifestyle counselling in their future practice.

Conclusions: Our work to date has shown wide interest and satisfaction among students involved. This study informs other health-related education programs, providing evidence of how and why it is important to
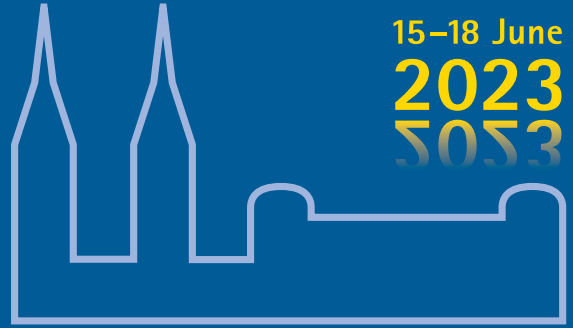
include lifestyle counselling curriculum across health programs. Our findings also suggest that the HealtheSteps coaching experience provides alignment with future student career goals.