



Implementation of Healthy Conversation Skills to support behaviour change in the *Bukhali* trial in Soweto, South Africa: A process evaluation



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ABSTRACT

Background: To address the need for preconception health interventions in low- and middle-income countries, the Healthy Life Trajectories Initiative (HeLTI) was launched in Soweto, South Africa to optimise young women's physical and mental health to establish healthier trajectories for themselves and, where relevant, the next generation. As part of HeLTI trial, the *Bukhali* intervention utilises the Healthy Conversation Skills (HCS) approach to promote behaviour change with 18–28-year-old women. The aim of this article is to report on the process evaluation of implementing HCS, to identify implementation challenges, and make recommendations for HCS adaptations.

Methods: Data were collected from intervention session records (participants' response to setting behaviour change goals, community health workers (CHWs) impression of their HCS use; n = 7418), individual in-depth interviews with participants (n = 35), focus groups (3) and debrief sessions (13) with CHWs who deliver the intervention.

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 CHWs 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 for contextual adaptations of the HCS approach in Soweto, South Africa include simplification of certain HCS tools, language adaptations for a multilingual setting, adapting training to fit in with time constraints of a trial, and adopting a trauma-informed perspective to health behaviour change.

Conclusions: This article 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.

(PACTR201903750173871, Registered March 27, 2019).

1. Introduction

Preconception health is a growing area of global research. From the perspective of developmental origins of health and disease, establishing

healthy behaviours in young women of child-bearing age will not only improve women's own health but, where relevant, increase the likelihood of a healthier pregnancy and a healthier baby, should they become pregnant (Fleming et al., 2018; Stephenson et al., 2018). This is

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particularly pertinent for obesity, both of women and their potential offspring (Wells et al., 2020), and therefore has relevance for health behaviours such as healthy eating and physical activity that are associated with healthy weight. More recently, there has been a call to adopt a bio-social life-course perspective in developmental origins of health and disease work that combines the biomedical life-course discourse (e.g., epigenetics) and the social life-course discourse that draws on social sciences and focusses more on prevention rather than treatment. This perspective also acknowledges distal outcomes in the next generation, and advocates for biomedical and social elements in the support of nurturing care (Hanson and Aagaard-Hansen, 2021). Despite the value of this perspective, there are limited preconception health interventions in low- and middle-income countries (LMICs) (Mason et al., 2014), yet in these countries there are concerns about the health of the next generation, particularly in terms of obesity (Popkin et al., 2020) and early childhood development (Black et al., 2017).

1.1. Healthy Life Trajectories Initiative

To address these concerns, the Healthy Life Trajectories Initiative (HeLTI) was launched to optimise young women's physical and mental health to establish healthier trajectories for themselves and, where relevant, the next generation. HeLTI is being implemented in Canada, China, India, and South Africa, with support from the World Health Organization and the Canadian Institutes of Health Research.

In South Africa, in partnership with the South African Medical Research Council, HeLTI aims to generate research evidence to guide policy and practice relating to preconception health. The HeLTI 'Bukhali' randomised controlled trial is being conducted in Soweto, South Africa; details of intervention and implementation are reported elsewhere and explained further below (Draper et al., 2020; Norris et al., 2022). In brief, the intervention is delivered individually to participants by 'Health Helpers', who are intended to be equivalent to a community health worker (CHW), to enable later implementation and scale-up within the primary health care system in South Africa. To optimise the physical and mental health of participants, health literacy materials are shared, along with health feedback and services through individual sessions in person or telephonically. The health literacy materials address a range of health behaviours, and to optimise the acceptability for participants, Health Helpers tailor the discussion about these materials according to participants' health behaviours requiring attention, or healthy behaviours needing to be maintained. This is guided by the health feedback provided (through 6-monthly health checks), as well as participants' own preferences for which health behaviour to address. Intervention participants also receive micronutrient supplements. The *Bukhali* intervention is the first intervention to target preconception health in South Africa and can therefore provide insight into policy and practice relating to preconception health in this setting.

Soweto is a densely populated, peri-urban, and multilingual setting in Johannesburg. Soweto has numerous social and economic challenges, which have been highlighted in HeLTI qualitative formative work conducted prior to the trial (Cohen et al., 2020; Draper et al., 2020, 2019; Ware et al., 2019), such as unemployment, gender-based violence, and food insecurity, as well as multiple risks to physical and mental health. In particular, the Soweto environment is not conducive to healthy behaviours related to obesity due to a range of environmental, social, and structural constraints for young women's choices about health and their capacity for health behaviour change (Ware et al., 2019). Furthermore, depression and anxiety are prevalent amongst young women (Redinger et al., 2018). As part of this formative work conducted for the development of the *Bukhali* intervention, young women indicated their preference for community health workers as the supportive delivery agent for an intervention (Draper et al., 2019). This qualitative formative work was crucial for understanding the potential acceptability of the intervention, and the extent to which it would be appropriate and feasible to implement in this setting.

More recent research has highlighted the social vulnerability of young women participating in the HeLTI pilot trial, which is associated with food insecurity and parity (Ware et al., 2021). The "preconception knowledge gap" has been noted amongst young women in this setting, and again emphasised the extent of the social and economic challenges that they face as well as the importance of mental health. Health behaviours once again featured low on the priority list for these young women (Bosire et al., 2021), highlighting potential challenges for the acceptability of the intervention. The limited success of many behaviour change interventions (globally, not only in settings such as Soweto) has been noted, along with the need to better understand the social and economic challenges that influence behaviour (Kelly and Barker, 2016). Furthermore, individuals exposed to trauma, both acute (e.g. abuse) and chronic (e.g. living in poverty), may have even more difficulty with health behaviour change which tends to emphasise long-term health benefits, when they are trying to deal with immediate stressors (Marks et al., 2021).

1.2. Implementation of the Bukhali intervention

Given the need for HeLTI to inform policy and practice in the public health sector, the *Bukhali* trial is being implemented pragmatically to align with 'real world' conditions. The Health Helpers who deliver the intervention share similar qualifications and salary levels to CHWs in South Africa. For the purposes of this trial, these individuals are hired and trained specifically for this trial. Health Helpers employed in the *Bukhali* trial are all women, and between the ages of 23–40 years. Initially, there was a preference to recruit Health Helpers who would be older than participants; however, Health Helpers who are a similar age to participants have proved to be a better fit for intervention delivery and staff retention. Specifically, similar age Health Helpers were found to relate better to participants, more receptive to the delivery approach, and less likely to leave for better employment opportunities. Health Helpers are required to have completed secondary school and have some tertiary training, but they are not required to have had any formal training as a CHW. When recruiting Health Helpers, preference has been given to individuals who have experience working in a community setting, not necessarily focussed on health.

The salary of Health Helpers is benchmarked against a typical salary for a government funded CHW (approximately a third of a registered nurses' salary in South Africa). This is necessary to make realistic recommendations about the potential scalability and sustainability of the intervention, and to understand implementation issues that are grounded in the local context. For *Bukhali*, Health Helpers receive training on the delivery of intervention materials, as well as training in Healthy Conversation Skills (HCS) (Barker et al., 2011; Lawrence et al., 2016). HCS training is typically a full day (usually spread over two days), and training on delivery of intervention materials is broken up according to the trial component (preconception, pregnancy, infancy, early childhood). Other general components include overall induction, introduction to research ethics, consenting, micronutrient supplementation, data management. The total training time is 28 days, although this is generally spread over a longer period, given that training has to happen somewhat concurrently with intervention delivery (as part of the ongoing trial), especially when there is turnover of staff. While interventions are partly harmonised across the four HeLTI country sites to allow for site-specific needs, all interventions are incorporating HCS, and teams have received the same HCS training.

1.3. Healthy Conversation Skills

The HCS approach aims to maximise health care practitioners' skills to support and empower patients, in a non-judgemental, person-centred way, through the process of behaviour change. The philosophy of the approach is outlined in Table 1. HCS are designed to be practical and straightforward, and intended for use in any setting, in any type of

Table 1
Healthy Conversation Skills and philosophy.

<p>Healthy Conversation Skills</p> <ul style="list-style-type: none"> • Use Open Discovery Questions to help someone explore an issue (starting with ‘what?’ and ‘how?’). • Reflect on your practice and conversations. • Spend more time listening than giving information or making suggestions. • Use Open Discovery Questions to support someone to make a SMARTER plan. <p>Philosophy</p> <ul style="list-style-type: none"> • I am not responsible for the choices people make. • Being given information alone does not make people change. • People come to us with solutions. • It is not possible to persuade people to change their habits.
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conversation (Barker et al., 2011). ‘Healthy conversations’ aim to explore barriers to, and opportunities for, healthy behaviours, using the skills outlined in Table 1. Open Discovery Questions assist with exploring and reflecting on patients’ (or in this case, participants) behaviours, factors influencing these behaviours, and the potential for behavioural change. Reflection on practice and conversations enables practitioners (in this case, Health Helpers) to better understand their own beliefs about the HCS philosophy and their ability to have ‘healthy conversations’, including spending more time asking questions and listening, compared to providing information or making suggestions. Furthermore, Open Discovery Questions are intended to provide a structured goal setting approach using the SMARTER planning tool when a behavioural goal has been identified (Barker et al., 2011).

The HCS SMARTER planning tool (Fig. 1) is used to support goal setting for the health behaviours addressed in the *Bukhali* intervention, i.e., physical activity, sedentary behaviour (including screen time), sleep, healthy eating (e.g., reducing sugar intake, portion sizes, or salt), and testing for HIV. The HCS approach is intended to start with patients’ (or participants’) own agenda, which may or may not relate to health and health behaviours, thus helping to enhance the acceptability of the approach for participants. The approach also provides support to discuss, reflect and problem solve around the lives and issues of patients (or participants), even if health behaviour changes are not made. However, it can be challenging to implement this approach within a particular project where there are specific behaviours being targeted, such as those listed above. To overcome this challenge, *Bukhali* intervention participants are also able to identify any other salient goals that they wish to work on, e.g., completing their secondary education, or looking for a job.

Bukhali is the first trial to implement HCS in South Africa. Given the economic, cultural, and linguistic differences between high-income settings (where HCS was developed) and Soweto, the application of HCS in this context needs to be appraised. The aim of this article is therefore to report on the evaluation of implementing HCS to support behaviour change in the *Bukhali* intervention. In addition, we intend to identify implementation challenges, and to make recommendations on how to best adapt HCS for this context. These recommendations have potential applicability for other South African and LMIC settings.

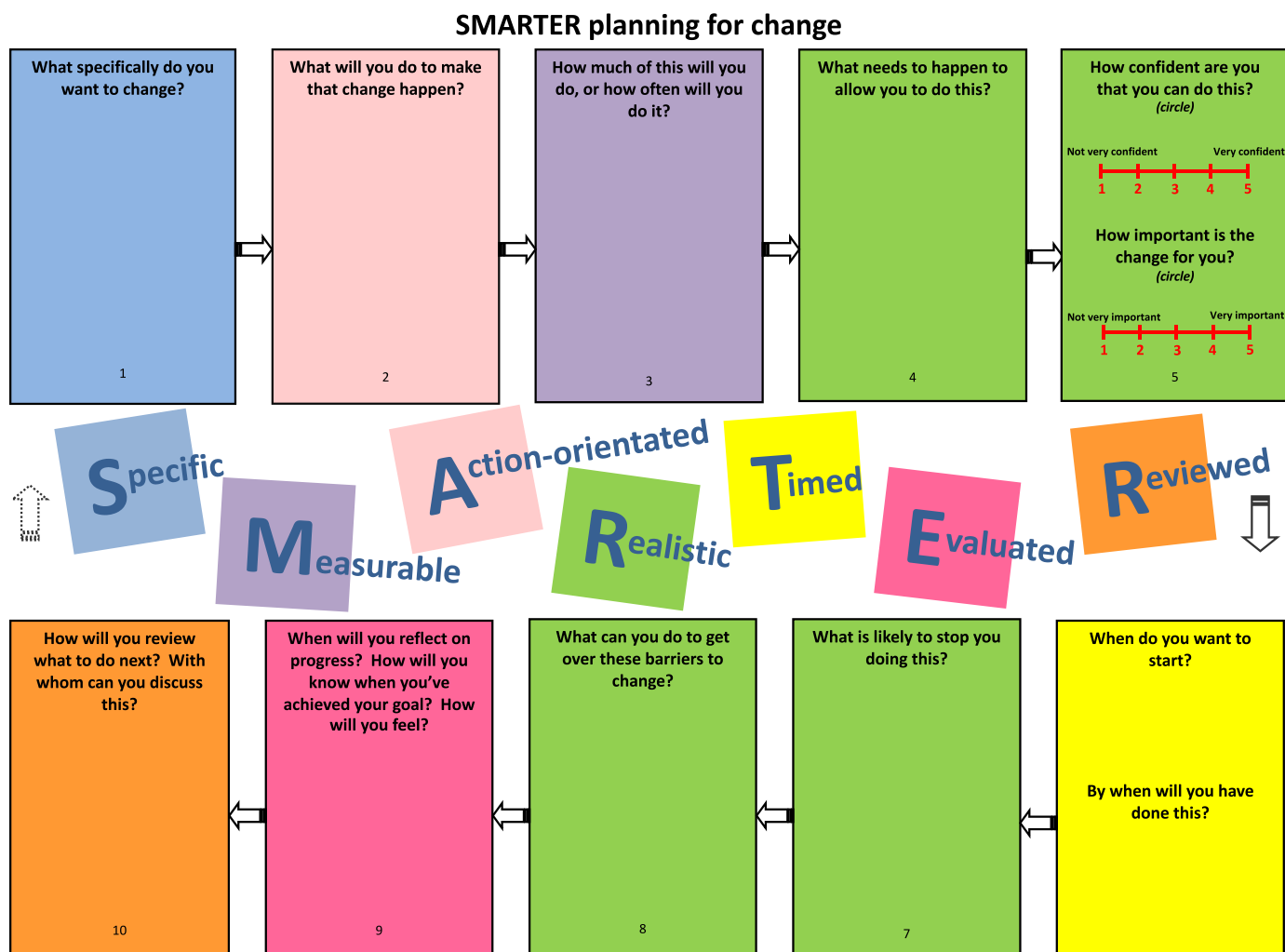


Fig. 1. Healthy Conversation Skill SMARTER planning tool.

2. Methods

This article draws on quantitative and qualitative data from the *Bukhali* trial process evaluation (ongoing, with the trial): from Health Helpers who deliver HCS (intervention session records, focus groups and debrief sessions), and participants (individual in-depth interviews). Ethical approval for these methods was obtained from the Human Research Ethics Committee (Medical) at the University of the Witwatersrand (Ref: M190449). All methods were carried out in accordance with relevant guidelines and regulations, and all participants gave written informed consent for their involvement in the study. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The *Bukhali* trial has been registered with the Pan African Clinical Trials Registry (<https://pactr.samrc.ac.za>; identifier: PACTR201903750173871, Registered March 27, 2019).

2.1. Sample and recruitment

Bukhali trial participants are 18–28-year-old women from Soweto. After recruitment using a range of community-based methods (such as house-to-house recruitment, recruitment drives, and social media adverts), women undergo baseline testing, after which they are individually randomised to intervention or control. If they are randomised to intervention, they are introduced to a Health Helper to receive the intervention, details of which have been described elsewhere (Draper et al., 2020). As part of the process evaluation, a sub-sample of intervention and control group participants were recruited (telephonically) to participate in individual in-depth interviews as part of a qualitative longitudinal component of the process evaluation of the *Bukhali* trial. These participants were asked to participate in four interviews over the course of 12 months, and data included in this article are from the first round of interviews ($n = 35$) conducted approximately three months after randomisation.

2.2. Data collection

Intervention session details are recorded and managed in REDCap (Research Electronic Data Capture) (Harris et al., 2019, 2009) hosted at the University of the Witwatersrand (Harris et al., 2019). Individual session records (for the intervention group) ask Health Helpers to record whether participants would like to set any behaviour change goals using the SMARTER planning tool, and their impression of their use of HCS. A total of 7418 session records (with intervention participants) were used to evaluate the extent to which the components of HCS have been implemented as intended, and if these data can give an indication of HCS implementation challenges and participants' priorities.

2.2.1. Focus groups and debrief sessions

Three focus groups were conducted with Health Helpers (2020–2021) to obtain their feedback about the implementation of the intervention, specifically in terms of barriers to implementation. The focus groups were facilitated by an experienced facilitator (same as above) and a note-taker, and a semi-structured discussion guide was used. Health Helpers were specifically asked about HCS – their general perceptions, how they have helped in their sessions with participants, challenges of using HCS, and how these skills can be adapted to suit the implementation context. Notes from 13 debrief sessions (2020–2021) with Health Helpers were also used as a qualitative data source, since these sessions provided additional opportunities for Health Helpers to discuss the implementation of HCS in their sessions with participants. Each focus group and debrief meeting included 6–7 Health Helpers.

2.2.2. Interviews

Individual in-depth interviews were conducted to gain insights into participants' priorities and life circumstances. These interviews took place in-person at the research site (following COVID-19 safety protocols), from January–February 2021. The interviews were conducted by one interviewer and one note-taker who were both women, familiar with the local context, able to converse in the home languages of most participants (which is generally not English) and experienced in qualitative data generation. A semi-structured interview guide was developed by the co-authors, and covered participants' experiences of being part of the *Bukhali* trial, their feelings about health and their health behaviours, and participants were asked to share their life story. The questions pertaining to participants' health behaviours and their life stories are the focus of this article, since these provide insight into participants' priorities and life circumstances. Interviews ranged in length between 20 and 50 min (average 28 min), were audio recorded, and transcribed verbatim after being translated into English, where necessary (if participants did not respond in English in the interviews).

2.3. Data analysis

The UKMRC guidance on process evaluations of complex interventions (Moore et al., 2015) provided an overarching framework for the analysis of these data, specifically the key components of implementation and context, which are relevant to these analyses. This guidance highlights the implementation concepts of fidelity, dose, and adaptations. It also emphasises that contextual factors influence our understanding of how an intervention works, as well as the contextual factors that affect implementation, intervention mechanisms, and outcomes. These concepts are addressed in the results, which have been presented in two sections: extent of implementation (fidelity and dose), and implementation challenges, which could be considered as *a priori* themes. Frequencies were calculated from the quantitative session record data to determine the extent of HCS implementation.

For the theme of implementation challenges, 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 (Hsieh and Shannon, 2005). Both directed and conventional approaches to content analysis are utilised to interpret meaning from text data, such as interview and focus group transcripts, using a systematic process of coding and identifying categories or themes (Hsieh and Shannon, 2005). For the data generated for this process evaluation, directed content analysis was appropriate for participants' perceptions of health and health behaviours, and for analysing data from the Health Helper focus groups and debrief sessions. The key concepts covered by the interview and focus group discussion guide formed the basis of the initial coding categories. Conventional content analysis was more appropriate for analysing participants' life stories, since the coding categories were derived from the data, and the main purpose was to describe participants' life circumstances (Hsieh and Shannon, 2005). Given the aim of this article, the intention was not to explore these circumstances in depth, since that will be achieved more comprehensively as part of the qualitative longitudinal component of the process evaluation mentioned previously.

After familiarisation with the data, a coding framework was used to identify relevant portions of the text that corresponded to these codes, and coded sections were then summarised. Within this theme of implementation challenges, the identified categories were grouped into the following sub-themes: Health Helpers' perceptions and the contextual adaptability of the HCS approach, the circumstances of participants (health, health behaviours and life stories), and other implementation challenges. At the end of the results, recommendations for the adaptation of HCS are provided.

3. Results

3.1. Extent of implementation

Within the 7418 sessions evaluated, in only 10% of the sessions did participants indicate that they wanted to set a goal; 47% of these goals related to the intended health and health behavioural outcomes of the trial. Of these stated goals, 39% were about losing weight; 31% were to do with dietary changes; 19% mentioned physical activity, exercise, or fitness; 8% were about improving sleep habits; and only 3% referred to sedentary behaviour or screen time. Other stated goals related to finding employment, furthering their education, or improving their financial position. In terms of the Health Helpers' use of HCS, only 17% indicated that the participant did most of the talking, while 29% indicated that they and the participant did about the same amount of talking; 3% said they did most of the talking, and 50% did not respond (i.e., the field was left blank in the session record). For the use of Open Discovery Questions (see Box 1), 26% of the Health Helpers reported using these most of the time; 21% said they used them half of the time; 3% said they used them less than half of the time; and 50% did not respond. In terms of Health Helpers' ratings of how they felt the conversation went, 28% indicated that it went well most of the time; 15% said it went well half of the time; 2% reported it went well less than half of the time; and 55% did not respond.

3.2. Implementation challenges

3.2.1. Health Helper perceptions and contextual adaptability of HCS

In the FGs and debrief sessions with Health Helpers, the discussions tended to be dominated by numerous operational challenges, as can be typical with a large-scale trial, although some feedback was provided on the implementation of HCS. Health Helpers indicated that the HCS approach was more acceptable to some participants, and less so with others, and that it is sometimes easier to just ask a participant what she thinks, rather than using the specific HCS, even though a question like "What do you think about ...?" would be considered an Open Discovery Question. Health Helpers found that HCS, and Open Discovery Questions in particular, can make some participants despondent because they resort to saying that they do not know or do not have an opinion on the subject matter. Some participants were reported to be resistant to being asked questions, or to not understand the point of being asked questions and thus take a long time to open up, making it difficult to implement HCS. Some Health Helpers expressed that being unable to share their real-life experiences with participants, which they perceive the HCS approach to discourage, can sometimes be a hindrance to working with and establishing connections with participants. These challenges can make establishing rapport between Health Helpers and participants more difficult at the start of each participant's intervention process, since sharing some personal information can be helpful in establishing this rapport and thus encouraging participants to open up.

Language was reported to be the main challenge with implementation of HCS, in terms of contextual adaptability. Soweto is a multilingual setting, and while most participants are conversant in English, this is not their home language. South Africa has 11 official languages, and almost all of these are spoken to some extent in Soweto, with the three main home languages of residents identified as isiZulu, Sesotho and Setswana (approximately 37%, 15% and 12% respectively; (Statistics South Africa, 2012). Health Helpers cited language as an overall challenge when it comes to working with participants. HCS Open Discovery Questions emphasise starting questions with 'what' and 'how', and HCS training focusses on asking these in English. However, in practice, the Health Helpers are having to often converse with participants in vernacular languages, both to build rapport with participants, and if participants' English comprehension skills are limited. Health Helpers frequently reported that asking these Open Discovery Questions in vernacular languages is difficult, and starting a question with 'what' or 'how' can come

across as "rude". Rephrasing these in vernacular languages often changes the start of the question to 'why', which the HCS approach recommends not using, as this can be perceived as judgemental.

Furthermore, Health Helpers explained that it is difficult to work through the intervention materials in English. Translation of the materials into multiple vernacular languages (in addition to the three mentioned above) was not feasible for *Bukhali*. Firstly, this requires professional translation services, which are prohibitively expensive, particularly if numerous translations are required. Secondly, translation into vernacular languages can make materials lengthier and more complicated, since direct translation from English is not always possible, thus requiring longer explanations in a vernacular language to convey the same information. Therefore, it is not uncommon for English to be the preference for intervention materials, even when participants' home language is not English. However, the variability in delivery as a result of translation in sessions, and the challenges this would have introduced for Health Helpers (e.g. being mentally tiring) are acknowledged. Efforts have been made to simplify the language of more recently developed intervention materials to make the translation process less demanding.

An additional challenge to implementing HCS and the acceptability of the intervention was the difficulties participants experience with the SMARTER planning tool, and this relates to the English proficiency of participants. The SMARTER terms are nuanced and optimised for English speakers. As explained above, when translating to vernacular languages, there are often not equivalent words or terms, which make it difficult for Health Helpers to translate and explain to participants, and for participants to fully understand the components of the SMARTER planning tool. From the initial stages of implementing the *Bukhali* intervention and using HCS with participants, Health Helpers report that participants have not typically responded well to the SMARTER planning tool and the process of goal setting, such as being unresponsive to questions about setting a goal, not understanding the components of the SMARTER planning tool, or stating that they did not want to set a goal. This was in spite of the fact that Health Helpers are consistently encouraged to incorporate these in interactions with participants and follow up on their progress. This feedback corresponds with the data presented above on the extent to which these components are implemented as intended.

Despite these challenges, as implementation has progressed and Health Helpers have had more opportunities to develop their competency in HCS, they have been able to better recognise the strengths of this approach. These strengths include talking less and listening more to participants, reflecting on skills, and correcting where necessary, and unlearning old habits of communication (telling/suggesting). This allows participants to have agency in sessions, resulting in participants opening up more and helping Health Helpers to explore issues with participants in order to encourage participants to divulge information they may not have otherwise shared. Overall, from the perspective of Health Helpers, the HCS approach has value, but there are certain adaptations that are necessary to facilitate successful implementation in a setting such as Soweto.

3.2.2. Participants' circumstances

Participants provided mixed feedback about their health and health behaviours; illustrative quotes of this mixed feedback are provided in Table 2. Some participants described themselves as being in good health, whereas some mentioned being overweight or obese; a few participants described themselves as unhealthy, mentioned their HIV status, or said that they had been made aware of high blood pressure because of participating in the trial. Some mentioned making positive changes to their health behaviours since they started the intervention, whereas a similar number of them claimed to have not made any changes. More participants stated that they were regularly physically active than inactive, although more mentioned having an unhealthy diet compared to those who described their diet as healthy. Some spoke about not getting enough sleep, but several participants said that they sleep too much. A large proportion of participants spoke about spending a significant

Table 2
Quotes about health and health behaviours.

[Are you happy with your health?] No, I'm not happy. I recently started exercising a bit because the last time I came and went on the scale; they told me I have obesity so I thought to myself 'no, I don't want to die'. Because when someone is obese, they can get sugar diabetes, and all those random illnesses you see. So, in order for me to lose weight, I have to stop eating food that has a lot of fat and what not ... Eat healthy, exercise you see.

I felt bad because I thought that was the end of me, I thought that was it for me because I am HIV positive, I was admitted into Bara, my sister was under stress, everyone was under stress, but I am alright, everything is alright. [So you were born HIV positive?] Yes. [But you only found out?] I have always known, I have always been taking treatment, I didn't know what it was for, until they told me, when I went to a check-up. [When did they tell you?] ... when I was 13 years old, but I didn't take it seriously because I didn't understand what it was, but now I can see that it is like this now.

I don't sleep well, sometimes I wake up at night and think about a lot of things, so that affects me, I don't sleep a lot. [And what kind of things do you think about at night?] I think about a job, I think about kids, I think about the situation at home, things like that, so at night, if I happen to wake up, I don't sleep well.

It has to be my phone and the TV. Yeah, I spend like the entire day on my phone. I only rest for like 6 h when I'm sleeping then after that I'm here ... on my phone, sometimes I'm on my phone while watching TV so, it takes up a lot of my time honestly.

amount of time on screens (phone or television), but only a few participants mentioned smoking or abusing alcohol. Many participants expressed a lack of or limited support for healthy behaviours, or mentioned other intrinsic barriers to healthy behaviour, such as laziness or lack of motivation. While participants responded to questions about their health and health behaviours, they did not seem inclined to discuss these in detail, which gives some indication about the priority placed on these topics.

Participants seemed to be willing to speak at greater length about their life stories, which included details of education and socioeconomic circumstances, pregnancy, and motherhood, as well as family and interpersonal relationships. Illustrative quotes from these stories are provided in Table 3. In terms of education and socioeconomic circumstances, many participants spoke about dropping out of school, being currently unemployed, having financial challenges within their family, or of the COVID-19 pandemic having a negative impact on their family (including job loss). A few mentioned struggling academically or having limited educational opportunities, which were exacerbated by the COVID-19 pandemic. Almost half of participants had an early pregnancy (<18 years), and some participants had more than one child by the time they were recruited for the study. While some participants spoke about a good relationship with the father of their child, or the father being present in the child's life, more participants spoke about difficult relationships or absent fathers. A few participants reported problematic pregnancies, either as a result of rape, or of miscarrying or losing their child.

Family and interpersonal relationships seemed to be problematic for most participants, either due to conflict in relationships with or estrangement from family members, a lack of support from family members, divorce or separation of their parents, infidelity, or fathers having another family (which was sometimes only discovered later in life). About a third of participants either stated having no friends, being a loner, or not being close to any peers. Many participants spoke about having an absent father (mainly due to abandonment), or an absent mother (generally with the mother being away for work). As a result, a number of participants were raised by other family members, most often a grandmother.

As part of their life stories, most participants spoke about traumatic events that they had experienced. The most common was the death of a close family member (including parents), followed by abuse (physical and/or emotional) in the home, and abuse by a partner. Other events mentioned less frequently included rape and attempted rape, substance abuse by a family member, and criminal involvement (sometimes leading to incarceration) of a family member. While many participants did not share in detail about how this trauma had impacted their mental health, a

Table 3
Quotes about family circumstances, relational issues, and traumatic events.

My father passed away when I was in grade 9 ... so there was that thing that, the school that I went to, there was this thing that happened, which is that fathers came so I wasn't able to do that, but I came with my uncle, so at school, they used to make fun of me for things like that, that I am useless, you don't have a father ... so grade 9, after my father passed away, I fell pregnant grade 9. My mother, we have been living with my child since then, and then now I am looking for a job so that I can support at home.

I grew up without my parents ... By the time I was 7 years old, I could do everything for myself, my own laundry, babysit and still go to school ... I would babysit all weekend even until Monday because the mothers wouldn't fetch their children, so I would miss school. Sometimes I would have to ask for food from next door and if I did that my granny would beat me, asking why I was asking for food ... when my mother heard about me being abused, she never believed it and said that could never happen to me ... When I got to high school my oldest sister was abusing me, the one I stayed with. I got pregnant in grade 10 ... The father of the child denied being the father and I later found out I was HIV positive. I gave birth to a healthy baby and in 2019 I went back home. I then fell pregnant again in 2019, I was stressed and hadn't accepted I was HIV positive and was scared to share things with people, thinking I would make them sick, but counselling helped me. I stayed being abused by my sister ... At school I finished in grade 10. I couldn't go back because my child was always sick.

My dad passed on in 1993 when I was 5 months old. So, I can say my life growing up was tough because my mother was not working, and I was raised by outsiders while my mom was here in Jozi to make ends meet ... I grew up not knowing anyone from my father's side until I was 18 years. They came to fetch me; I was also not aware that my father passed on when I was young. My mother never told me. No one in my family ever told me that I don't have a dad ... I was shocked at that time and angered. Really, I have a family? I didn't know that. They knew that I exist and only showed up 18 years later?..2015 I fell pregnant ... but it was challenging because my child was prematurely born at 5 months ... It was tough because I was not getting support from the father's side. I was always alone only being supported by my mother. Today the child's father is not bothered on how the child is surviving. The child managed to grow and is now 6 years old.

We left with my mother and lived in a shack, while we were living in a shack, we lived with our stepdad. So our step dad was someone who was involved in crime and stuff and he got arrested and my mother became a single parent and she took care of all of us ... it was 2011, my mother was pregnant with the seventh child, and I was angry with my mother, I was like how can you be pregnant with the seventh child when you know that you struggle to provide for us, so I was angry ... then my mother passed away, the baby was 6 months ... my mother passed away and we are alone.

I got a boyfriend actually, he was also abusive, he almost killed me until a child who was 11 years helped me, from there that affected me, I didn't feel like a person anymore, there was no one to support me, since this happened, how do you feel, where will you get the help ... I don't have one, ever since the one tried to kill me, I haven't had a boyfriend, I don't feel safe around males.

I grew up in a very abusive home ... my mom left, passed on 2008, and then I was left with my dad. And then my dad started abusing me, like physically, emotionally and so forth, until to the last day, where I think I was like 18, I thought I was enough, that's when I decided to ... I started to get him arrested, like opening a case against him, and then my family decided to abandon me ... then my dad chased me away, so I had to stay with my cousin in a shack, and I had to sleep on the floor, and then that's when I had to start helping out, and coming with food, so I started dating and dating and dating in order to get food, and turned into, yeah, to look smart and bath and take care of my child, and then they decided to take my child ... my dad is wealthy and for the reason that I revealed the secret [of the abuse], ever since then he has never taken care of me until today

Then he poured me with the hot water, but he waited for the water to cool up a little bit, the water was a little warm. That is when I told him that I will no longer be able to stay with him because it shows that he can even kill me. So I left him and went and stayed with my mother ... So we got back together but even now, sometimes I don't feel comfortable staying with him because of what he did to me. I am asked that he will do that again or he will kill me. I am staying with him out of risk.

few disclosed attempting suicide, harming themselves, or being depressed. Some participants mentioned being concerned about their mental or emotional health, or said that they "think too much". A few said that they do not have any emotional support or that they find it difficult to open up; hardly any of the participants spoke about seeking help for their mental health challenges, such as going for counselling or joining a support group. When participants have disclosed traumatic events to their Health Helper, attempts have been made at referring participants to appropriate mental health services. However, such services are inadequate in Soweto, and during the COVID-19 pandemic, have often been telephone or online services only. For reasons discussed below, remote mental health services are generally not feasible for

participants. In debrief sessions, Health Helpers also shared that participants frequently do not take up these referrals, and many do not want to go for counselling.

These family circumstances, relational issues, traumatic events, and various systemic issues depict multiple and often interconnected challenges for young women living in Soweto, and it is understandable that health behaviour change is overshadowed by the need to deal with everyday challenges as well as deep-seated trauma, in some cases. This provides some explanation for the difficulty participants experience with goal setting for behaviour change, as reported by Health Helpers. However, it is encouraging that for some participants, even in the early stages of the intervention, they have been motivated to take steps to modify their health behaviours, or at least be aware of these behaviours.

3.2.3. Other implementation challenges

There are various other delivery issues relating to feasibility that provide insight into the challenges of implementing HCS in the *Bukhali* trial. Firstly, due to many participants being unwilling to have sessions in their homes or at the research site, sessions are generally delivered telephonically by Health Helpers, which has been a somewhat advantageous shift during the COVID-19 pandemic; face-to-face sessions only happen approximately every six months. While HCS can be used in telephonic conversations, given the contextual realities of participants explained above, it is reasonable to surmise that face-to-face interactions would provide more meaningful opportunities for Health Helpers to interpret visual cues, gauge participants' emotional state and engage with them about health behaviour change, while helping them to navigate their challenging life circumstances by providing a safe space to talk and referrals as needed. In addition, face-to-face interactions could also be more effective in boosting not only the Health Helper's competence in HCS, but also their confidence in using this approach in the Soweto context.

Secondly, telephonic sessions are not without their own challenges. South Africa has unreliable electricity supply, and periodically experiences rolling blackouts, where electricity is off for hours at a time. Soweto has additional electricity supply issues, and these all impact on the connectivity of cellular networks, making it difficult to maintain reliable contact with participants. This also impacts on data connection, and data costs in South Africa are high, making it impossible to rely on internet-based methods of communication (e.g., WhatsApp, Skype). In addition to all of this, participants frequently change numbers, lose their phones, are generally difficult to contact telephonically, or do not want to engage in lengthy telephone conversations. As a result, Health Helpers are often given the impression that participants do not want to engage with them, which can be demoralising for Health Helpers in terms of using HCS as intended. Therefore, when telephonic sessions do take place and participants are somewhat disengaged, it is understandable that Health Helpers find it difficult to prioritise HCS, despite believing in the benefits of this approach.

Lastly, given the skill level required for Health Helpers and salary level mentioned earlier, it seems apparent that, despite the simplicity of the HCS approach, this approach may assume a base level of communication skills that an individual with only a secondary education and limited work experience may not yet possess – notwithstanding the language complexities explained earlier. Furthermore, Health Helpers are intentionally recruited from Soweto and other similar areas, and may therefore have experienced many of the same challenges to those described by participants: family and relational difficulties, trauma, and difficulties accessing educational and employment opportunities. While these circumstances help Health Helpers better understand and relate to participants, their own life experiences may have influenced their own ability to communicate with participants about health behaviour change in the context of challenging life circumstances. While it is possible to implement HCS under these conditions, the optimal use of these skills may require more extensive training and support; this is not necessarily feasible in the context of the typical pressures associated with a trial,

where Health Helpers are each responsible for 150–200 participants.

3.2.4. Recommendations

The following recommendations for the adaptation of HCS to enhance the acceptability, appropriateness, feasibility and fidelity in a setting such as Soweto: 1) simplify the use of the SMARTER planning tool; 2) adaptations for multilingual settings, and where educational level is typically lower for those delivering HCS; 3) adapting training in a trial setting, where there is time pressure; and 4) adopt a trauma-informed perspective to health behaviour change. Specific suggestions for each of these recommendations are presented in Table 4. These could be relevant for other LMICs, as well as low-income settings in high-income countries, especially where English is not the dominant language.

Table 4
Recommendations for the adaptation of HCS.

Recommendation	Specific suggestions
Simplify the use of the SMARTER planning tool.	<ul style="list-style-type: none"> De-prioritise goal setting in the first 2–3 sessions, or until the Health Helper feels she has obtained the trust of a participant and understands a participant's context and priorities. Clearly articulate short- vs long-term goals and allow more time to achieve goals (and hence behaviour change). Prioritise the most critical SMARTER components for this context: Specific, Measurable, Action-oriented, Realistic. Once a participant has been able to articulate responses to these components, introduce the additional components: Timed, Evaluated and Reviewed.
Adaptations for multilingual settings, and where educational level is typically lower for those delivering HCS.	<ul style="list-style-type: none"> Formulate specific examples of questions for the SMARTER planning tool that can easily be translated into local languages. Formulate examples in local languages of Open Discovery Questions that may not start with 'what' and 'how', but still achieve the purpose of encouraging participants to speak openly. Consolidate Evaluated and Reviewed components of the SMARTER planning tool, since the nuanced differences between these are not easily conveyed in local languages, or where language comprehension may be limited. Provide specific input for sharing basic health information, where necessary.
Adapting training in a trial setting, where there is time pressure.	<ul style="list-style-type: none"> Encourage regular (e.g., every 3 months) sharing of experiences of how HCS have been implemented well, as well as challenges experienced so that the team can generate contextually appropriate solutions. Encourage ongoing peer-to-peer support, rather than lengthy refresher training sessions.
Adopt a trauma-informed perspective to health behaviour change.	<ul style="list-style-type: none"> Be aware of participants' trauma and how this impacts their priorities and ability to set long-term goals; focus on small, short-term goals first, which aligns with the 'Realistic' component of the SMARTER planning tool. Provide participants with a safe, non-judgemental space to share about their life circumstances, and work to build trust over time. Encourage participants' autonomy in identifying behaviour change priorities. Recognise the potential need for trauma management in those delivering the intervention.

4. Discussion

This article provides novel data on the implementation of HCS in the HeLTI *Bukhali* trial, in the context of a LMIC. A key finding is that there are several contextual challenges to the implementation of HCS, in its original form, with young women in a low-income setting in South Africa. One of the main implementation challenges identified was language, highlighting a need to adapt this approach for a multilingual context. Other challenges experienced by Health Helpers included participants' difficulties with handling questions, making it easier for Health Helpers to rely on the provision of information, which goes against the philosophy of the HCS approach. This could be related to overall health literacy of these young women, which has been identified as a broader concern in LMICs (Malik, 2017; Meherali et al., 2020), and more specifically to the "preconception knowledge gap" identified in previous HeLTI work (Bosire et al., 2021). It is reasonable to conclude that in contexts with low health literacy, basic health information needs to be provided more frequently than would be the case in high-income countries.

These findings align with previously mentioned qualitative work that has indicated that in the presence of numerous social and economic challenges, health and health behaviours are generally not a priority for young women in Soweto (Bosire et al., 2021; Draper et al., 2020; Ware et al., 2019). This has clearly had an impact on participants' willingness or ability to set goals, and Health Helpers have had difficulty with implementing this aspect of the HCS approach, specifically the SMARTER planning tool. Similar challenges with the acceptability and fidelity of goal setting and action planning have been identified with adolescents in another LMIC setting, Zimbabwe (Simms et al., 2022).

What this article further adds to the discussion about these young women's priorities is the extent to which these young women have experienced and are currently experiencing trauma. While further research is needed to investigate the relationship between trauma and behaviour change in this context, adopting a trauma-informed perspective to understanding the health behaviour change (Marks et al., 2021) of these women certainly provides some clarity as to why health (and long-term health benefits) is not prioritised, and why goal setting according to a specific framework has proved to be such a challenge for the young women receiving the *Bukhali* intervention. In addition, since trauma can negatively impact on these women's sense of agency and autonomy (Marks et al., 2021), it is important to consider how the *Bukhali* intervention fosters agency and autonomy, given that interventions that require a high level of individual agency are less likely to be effective (Adams et al., 2016). This needs to be done with due consideration of the various systematic issues that these young women are facing, as evidenced by the life stories shared by participants.

Despite the challenges, these findings show promise for the application of HCS in LMIC settings like Soweto. Health Helpers were able to recognise the value of these skills, and whether the practical recommendations provided for the contextual adaptation of this approach can be implemented, HCS can provide a helpful framework for supporting behaviour change in this context. Health Helpers can also help to open dialogue for participants and facilitate referrals to support networks – where these exist and are functional. In contexts where trauma is pervasive, it would be important to also promote the four key resilience factors that mediate the relationship between health behaviours and trauma: safety, autonomy, trauma awareness, and trust (Marks et al., 2021; SAMHSA, 2014). Allowing participants to share about traumatic events or circumstances and mental health challenges with their Health Helper, and not being limited to only discussing physical health and health behaviours, is the first step to being aware of the trauma these young women are experiencing. Given the problematic dynamics between young women and their families and/or partners reported in this paper, if Health Helpers can provide a safe space with participants and build their trust over time, this can help to support behaviour change, even if it takes longer than anticipated. HCS is intended to be an

empowering approach that promotes the autonomy of participants to make decisions about their behaviour change, which can also contribute to participants' resilience when navigating behaviour change. Beyond behaviour change, greater autonomy and resilience have the potential to be extended to navigating other life challenges.

These findings underscore the importance of adopting a bio-social life-course perspective (Hanson and Agaard-Hansen, 2021) that acknowledges the social lives of these young women (which would include economic and political contexts), and takes into consideration how context influences behaviour change. If physical and mental health are to be optimised, it is also essential to consider the systemic social and economic issues that negatively impact young women's health, causing both acute and chronic trauma. Furthermore, if behaviour change intervention efforts intend to promote nurturing care of young children in the next generation, then it is imperative that intervention strategies are realistic about how context can hinder the provision of such care. Attention also needs to be paid to how these strategies can contribute to breaking cycles of intergenerational trauma, which have already been identified in Soweto (Kim et al., 2021), and in South Africa more generally where many historic legacies of apartheid persist (Gobodo-Madikizela, 2016). Acknowledgement of higher-level drivers of trauma has been recognised as one of the guiding principles of a trauma-informed approach, specifically cultural, historical and gender issues (Centers for Disease Control and Prevention, 2020). The data presented in this article have touched on many of these issues, and future work should continue to consider these in the implementation of health behaviour change interventions as these provide a backdrop against which these changes take (or do not take) place.

The findings of this study may also call into question the appropriateness of an intervention targeting individual health behaviour change in a context where the constraints for prioritising health and making healthier choices about behaviour, including the impact of trauma, are so extensive. Without perpetuating a narrative of individual responsibility in the face of so many systemic obstacles, is individual health behaviour even possible? The *Bukhali* intervention provides a valuable opportunity to grapple with this question, as well as questions about the framing and focus of health promotion interventions, so that intervention content and delivery are sensitive to the lived experiences of trial participants in a setting such as Soweto. Given the limited evidence on preconception interventions in LMICs (especially those that offer a continuum of intervention through to pregnancy and early childhood), it is important to acknowledge that the learning curve on such interventions will be steep, and that as far as possible, trials in these settings should endeavour to be open to new insights. Learnings should be fed back into the trial in order to maximise the appropriateness and acceptability of the intervention for participants, and the feasibility and fidelity of its implementation.

In terms of the implications of these findings for future application of the HCS approach with CHWs, both in South Africa and other global settings, it is evident that with some considerations, HCS can be used by CHWs. Firstly, given that CHWs may have had limited educational opportunities in South Africa, it is essential that there are realistic expectations about pre-existing skills and knowledge. HCS was developed to be accessible to all levels of the workforce, and to be implemented in low-income settings where low levels of education, knowledge and skills can be challenge. However, it is likely that because of the income and educational inequities that persist in South Africa, low-income settings in South Africa may not be comparable to low-income settings in high-income countries where HCS have been implemented.

Secondly, since CHW positions are not high paying and can be linked to insecure funding (e.g., donor or contract research funding), there may be frequent staff turn-over if better paying job opportunities arise. Thirdly, it is critical that expectations are also realistic about the workload that CHWs can carry. This is specifically in relation to the trauma that many patients or participants experience, and the mental health issues that CHWs may have to navigate with participants because of this

trauma. This is especially difficult when CHWs are aware of the lack of mental health services available to patients or participants, and the pressure they may feel to offer solutions and practical help. These challenges of providing appropriate support, work-related stress, and the emotional toll on non-specialist health workers (such as CHWs) has been highlighted in other LMIC settings, particularly in relation to mental health, and where these individuals may not have the training or resources to provide adequate support (Bunn et al., 2021; Simms et al., 2022). The importance of interpersonal skills for non-specialist providers to effectively manage interpersonal dynamics in mental health interventions has also been highlighted in LMICs (Healy et al., 2018). Furthermore, CHWs may be experiencing some degree of acute or chronic trauma themselves. Future research should also explore CHWs experiences of trauma, given that the relationship between their experiences, their traumatic stress and the support they have available is complex in a setting such as South Africa (Padmanabhanunni, 2020).

Given that this article was intended to highlight challenges to health behaviour change for young women in a low-income setting, it could be considered a limitation that only young women's perspectives were presented here, given that the role of trauma was highlighted. To obtain a broader range of perspectives, work is underway to explore the perspectives of these young women's primary caregivers regarding health and health behaviour change. Previous HeLTI research has shown these relationships to be complex and often challenging (Cohen et al., 2020). Health Helpers' perspectives could also have been explored in more depth, and this is also the focus of future work. However, given the typical time and workload pressures of a trial, methods to generate data for the process evaluation needed to not add an additional burden to the workload of the Health Helpers.

In conclusion, the implementation of the HCS approach in a LMIC setting, has challenges, but with contextual adaptations, this approach can assist behaviour change interventions. There may be numerous parallels that can be drawn to other low-income, urban settings in South Africa and other LMICs. Intervention research applying trauma-informed approaches to behaviour change is limited, and this article provides some initial reflections on how this approach can be applied in contexts where trauma appears to be pervasive amongst young women. Future research should be conducted to add to these insights and recommendations across a range of global settings, given that trauma – developmental, acute and/or chronic – is a reality of life in many parts of the world due to the COVID-19 pandemic, natural disasters, and conflict.

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CRedit authorship contribution statement

Catherine Elizabeth Draper: Formal analysis. **Gugulethu Mabena:** Formal analysis. **Molebogeng Motlathledi:** Formal analysis. **Nomsa Thwala:** Formal analysis. **Wendy Lawrence:** Formal analysis. **Susie Weller:** Formal analysis. **Sonja Klingberg:** Formal analysis. **Lisa J. Ware:** Conceptualization. **Stephen J. Lye:** Conceptualization. **Shane A. Norris:** Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Adams, J., Mytton, O., White, M., & Monsivais, P. (2016). Why are some population interventions for diet and obesity more equitable and effective than others? The role of individual agency. *PLoS Med.*, *13*, Article e1001990. <https://doi.org/10.1371/journal.pmed.1001990>
- Barker, M., Baird, J., Lawrence, W., Jarman, M., Black, C., Barnard, K., Cradock, S., Davies, J., Margetts, B., Inskip, H., & Cooper, C. (2011). The southampton initiative for health: a complex intervention to improve the diets and increase the physical activity levels of women from disadvantaged communities. *J. Health Psychol.*, *16*, 178–191. <https://doi.org/10.1177/1359105310371397>
- Black, M. M., Walker, S. P., Fernald, L. C. H., Andersen, C. T., DiGirolamo, A. M., Lu, C., McCoy, D. C., Fink, G., Shawar, Y. R., Shiffman, J., Devercelli, A. E., Wodon, Q. T., Vargas-Barón, E., & Grantham-McGregor, S. (2017). Early childhood development coming of age: science through the life course. *Lancet*, *389*, 77–90. [https://doi.org/10.1016/S0140-6736\(16\)31389-7](https://doi.org/10.1016/S0140-6736(16)31389-7)
- Bosire, E. N., Ware, L. J., Draper, C. E., Amato, B., Kapueja, L., & Norris, S. A. (2021). Young women's perceptions of life in urban South Africa: contextualising the preconception knowledge gap. *Afr. J. Reprod. Health*, *25*, 39–49.
- Bunn, M., Gonzalez, N., Falek, L., Weine, S., & Aciri, M. (2021). Supporting and sustaining nonspecialists to deliver mental health interventions in low- and middle-income countries: an umbrella review. *Intervention*, *19*, 155. https://doi.org/10.4103/INTV.INTV_47_20
- Centers for Disease Control and Prevention. (2020). 6 guiding principles to a trauma-informed approach [WWW Document]. URL https://www.cdc.gov/cpr/infographics/6_principles_trauma_info.htm, 9.1.21.
- Cohen, E., Ware, L. J., Prioireschi, A., Draper, C., Bosire, E., Lye, S. J., & Norris, S. A. (2020). Material and relational difficulties: the impact of the household environment on the emotional well-being of young black women living in Soweto, South Africa. *J. Fam. Issues*, *41*, 1307–1332. <https://doi.org/10.1177/0192513X19887524>
- Draper, C. E., Bosire, E., Prioireschi, A., Ware, L. J., Cohen, E., Lye, S. J., & Norris, S. A. (2019). Urban young women's preferences for intervention strategies to promote physical and mental health preconception: a Healthy Life Trajectories Initiative (HeLTI). *Prev. Med. Rep.*, *14*, Article 100846. <https://doi.org/10.1016/j.pmedr.2019.100846>
- Draper, C. E., Prioireschi, A., Ware, L., Lye, S., & Norris, S. (2020). Pilot implementation of Bukhali: a preconception health trial in South Africa. *SAGE Open Med.*, *8*. <https://doi.org/10.1177/2050312120940542>, 2050312120940542.
- Fleming, T. P., Watkins, A. J., Velazquez, M. A., Mathers, J. C., Prentice, A. M., Stephenson, J., Barker, M., Saffery, R., Yajnik, C. S., Eckert, J. J., Hanson, M. A., Forrester, T., Gluckman, P. D., & Godfrey, K. M. (2018). Origins of lifetime health around the time of conception: causes and consequences. *Lancet*, *391*, 1842–1852. [https://doi.org/10.1016/S0140-6736\(18\)30312-X](https://doi.org/10.1016/S0140-6736(18)30312-X)
- Gobodo-Madikizela, P. (Ed.). (2016). *Breaking Intergenerational Cycles of Repetition*. Verlag Barbara Budrich. <https://doi.org/10.3224/84740613>
- Hanson, M., & Aagaard-Hansen, J. (2021). Developmental Origins of Health and Disease: towards a combined bio-social life-course perspective. *Acta Paediatr. apa*. <https://doi.org/10.1111/apa.15905>, 15905.
- Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., & Duda, S. N. (2019). The REDCap consortium: building an international community of software platform partners. *J. Biomed. Inf.*, *95*, Article 103208. <https://doi.org/10.1016/j.jbi.2019.103208>
- Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J. Biomed. Inf.*, *42*, 377–381. <https://doi.org/10.1016/j.jbi.2008.08.010>
- Healy, E. A., Kaiser, B. N., & Puffer, E. S. (2018). Family-based youth mental health interventions delivered by nonspecialist providers in low- and middle-income countries: a systematic review. *Fam. Syst. Health*, *36*, 182–197. <https://doi.org/10.1037/fsh0000334>
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qual. Health Res.*, *15*, 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Kelly, M. P., & Barker, M. (2016). Why is changing health-related behaviour so difficult? *Publ. Health*, *136*, 109–116. <https://doi.org/10.1016/j.puhe.2016.03.030>
- Kim, A. W., Mohamed, R. S., Norris, S. A., Richter, L. M., & Kuzawa, C. W. (2021). Psychological legacies of intergenerational trauma under South African apartheid: prenatal stress predicts increased psychiatric morbidity during late adolescence and early adulthood in Soweto, South Africa, 2021 *medRxiv*. <https://doi.org/10.1101/2021.01.11.21249579>, 01.11.21249579.
- Lawrence, W., Black, C., Tinati, T., Cradock, S., Begum, R., Jarman, M., Pease, A., Margetts, B., Davies, J., Inskip, H., Cooper, C., Baird, J., & Barker, M. (2016). "Making every contact count": evaluation of the impact of an intervention to train health and social care practitioners in skills to support health behaviour change. *J. Health Psychol.*, *21*, 138–151. <https://doi.org/10.1177/1359105314523304>

- Malik, M. (2017). Health literacy as a global public health concern: a systematic review. *J. Pharmacol. Clin. Res.*, 4. <https://doi.org/10.19080/JPCR.2017.04.555632>
- Marks, C., Pearson, J. L., Zúñiga, M. L., Martin, N., Werb, D., & Smith, L. R. (2021). Articulating the trauma-informed theory of individual health behavior. *Stress Health smi*, 3068. <https://doi.org/10.1002/smi.3068>
- Mason, E., Chandra-Mouli, V., Baltag, V., Christiansen, C., Lassi, Z. S., & Bhutta, Z. A. (2014). Preconception care: advancing from 'important to do and can be done' to 'is being done and is making a difference. *Reprod. Health*, 11, S8. <https://doi.org/10.1186/1742-4755-11-S3-S8>
- Meherali, S., Punjani, N. S., & Mevawala, A. (2020). Health literacy interventions to improve health outcomes in low- and middle-income countries. *HLRP Health Lit. Res. Pract.*, 4, e251–e266. <https://doi.org/10.3928/24748307-20201118-01>
- Moore, G. F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O' Cathain, A., Tinati, T., Wight, D., & Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council guidance. *BMJ*, 350. <https://doi.org/10.1136/bmj.h1258>. h1258–h1258.
- Norris, S. A., Draper, C. E., Smuts, C., Pioreschi, A., Ware, L. J., Dennis, C. L., Awadalla, P., Bassani, D. G., Bhutta, Z. A., Briollais, L., Cameron, B., Chirwa, T., Fallon, B., Gray, C., Hamilton, J., Jamison, J., Jaspan, H., Jenkins, J. M., Kahn, K., Kenge, A., Lambert, E. V., Levitt, N., Martin, M. C., Ramsey, M., Roth, D. E., Scherer, S. W., Sellen, D., Slemming, W., Sloboda, D. M., Szyf, M., Tollman, S., Tomlinson, M., Tough, S., Matthews, S., Richter, L. M., & Lye, S. J. (2022). Building knowledge, optimising physical and mental health, and setting up healthier life trajectories in South African women (Bukhali): a preconception randomised control trial part of the Healthy Life Trajectories Initiative (HeLTI). *BMJ Open*, 12, Article e059914. <https://doi.org/10.1136/bmjopen-2021-059914>
- Padmanabhanunni, A. (2020). Caring does not always cost: the role of fortitude in the association between personal trauma exposure and professional quality of life among lay trauma counselors. *Traumatology*, 26, 420–426. <https://doi.org/10.1037/trm0000262>
- Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. *Lancet*, 395, 65–74. [https://doi.org/10.1016/S0140-6736\(19\)32497-3](https://doi.org/10.1016/S0140-6736(19)32497-3)
- Redinger, S., Norris, S. A., Pearson, R. M., Richter, L., & Roachat, T. (2018). First trimester antenatal depression and anxiety: prevalence and associated factors in an urban population in Soweto, South Africa. *J. Dev. Orig. Health Dis.*, 9, 30–40. <https://doi.org/10.1017/S204017441700071X>
- SAMHSA. (2014). *TIP 57: Trauma-Informed Care in Behavioral Health Services*. Department of Health & Human Services.
- Simms, V., Weiss, H. A., Chinoda, S., Mutsinze, A., Bernays, S., Verhey, R., Wogrin, C., Apollo, T., Mugurungi, O., Sithole, D., Chibanda, D., & Willis, N. (2022). Peer-led counselling with problem discussion therapy for adolescents living with HIV in Zimbabwe: a cluster-randomised trial. *PLoS Med.*, 19, Article e1003887. <https://doi.org/10.1371/journal.pmed.1003887>
- Statistics South Africa. (2012). *Census 2011*. Pretoria: Statistics South Africa.
- Stephenson, J., Heselehurst, N., Hall, J., Schoenaker, D. A. J. M., Hutchinson, J., Cade, J. E., Poston, L., Barrett, G., Crozier, S. R., Barker, M., Kumaran, K., Yajnik, C. S., Baird, J., & Mishra, G. D. (2018). Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health. *Lancet*, 391, 1830–1841. [https://doi.org/10.1016/S0140-6736\(18\)30311-8](https://doi.org/10.1016/S0140-6736(18)30311-8)
- Ware, L. J., Kim, A. W., Pioreschi, A., Nyati, L. H., Taljaard, W., Draper, C. E., Lye, S. J., & Norris, S. A. (2021). Social vulnerability, parity and food insecurity in urban South African young women: the healthy life trajectories initiative (HeLTI) study. *J. Publ. Health Pol.* <https://doi.org/10.1057/s41271-021-00289-8>
- Ware, L. J., Pioreschi, A., Bosire, E., Cohen, E., Draper, C. E., Lye, S. J., & Norris, S. A. (2019). Environmental, social, and structural constraints for health behavior: perceptions of young urban black women during the preconception period—a healthy life trajectories initiative. *J. Nutr. Educ. Behav.*, 51, 946–957. <https://doi.org/10.1016/j.jneb.2019.04.009>
- Wells, J. C., Sawaya, A. L., Wibaek, R., Mwangome, M., Poullas, M. S., Yajnik, C. S., & Demaio, A. (2020). The double burden of malnutrition: aetiological pathways and consequences for health. *Lancet*, 395, 75–88. [https://doi.org/10.1016/S0140-6736\(19\)32472-9](https://doi.org/10.1016/S0140-6736(19)32472-9)