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Abstract

Physical activity and healthy eating are important for physical and mental health, yet long-standing inequalities constrain the ability of ethnic minorities in the United Kingdom (UK) to adopt these behaviours. Programmes aimed to improve these behaviours have also often not been engaged with by these communities.

This study therefore aimed to: 1) identify the values underlying the physical activity and healthy eating behaviours of UK ethnic minorities and 2) explore how structural, socio-economic and environmental factors interact with these values to influence their physical activity and healthy eating behaviours.

The study adopted a relativist ontological and subjectivist epistemological philosophical assumption. Qualitative interviews were used to address research objectives. A total of 10 group and five individual interviews were conducted with 41 participants. All participants were from an ethnic minority background (Black, Asian or Mixed according to the UK Office for National Statistics classification), recruited purposively and aged between 18 and 86 years and were living in England and Wales. Data were analysed using inductive thematic analysis. Community engagement was embedded throughout the study.

We found that culture and family, community and social life, and health are important values underlying the physical activity and healthy eating behaviours of UK ethnic minority communities. External factors, including racism and access (geographical, social and economic), interact with these values to drive health behaviours. Using an illustrative guide, we conclude the paper with policy and practice recommendations on how public health programmes on physical activity and healthy eating can be aligned with these values to ensure relevance for ethnic minority communities.

Keywords

Healthy eating; physical activity; values, UK ethnic minority communities; qualitative research; community engagement.

1. Background

Physical activity and healthy eating are important for physical and mental health [1,2]. These behaviours lower the risk of noncommunicable diseases [3], improve immune function [4] and contribute to the management of physical and mental health conditions [5]. They also bring national economic benefit by lowering healthcare costs [6], increasing workplace productivity and reducing working age morbidity and mortality [7]. As a result, physical activity and healthy eating are a focus of health promotion nationally and globally [5,8,9].

Despite this, about 25% of the global adult population do not meet the recommended 150+ minutes of moderate-intensity activity weekly [1] and fruit and vegetable consumption remains low [2]. Similar is observed in the UK with about two in five UK adults not meeting physical activity recommendations [10] and many people continuing to eat too much sugar and saturated fat and not enough fruit, vegetables, fish and fibre [11]. These figures are even worse for UK ethnic minority communities, who face longstanding social, economic and health inequalities [12]. For example, adults from Black and Asian communities are less likely to be physically active [10] and to eat five portions of fruit and vegetables daily [13] than the UK average.

Physical activity and healthy eating behaviours are driven by system, political and socio-environmental factors and not just by the individual's decision to eat or exercise. Ethnic minority communities have and continue to experience political, social and environmental disadvantages [14] that affect their ability to eat well and be physically active. To reduce health inequalities associated with these outcomes, approaches are needed that address these factors as part of a system but also as an individual capacity and choice. The development and implementation of coproduced and tailored policies and programmes are therefore required [15,16].

Historic injustice and negative personal experiences may have bred suspicion and distrust among people from some ethnic minority communities, such that they do not engage with public health programmes [17]. In addition, generic public health programmes may not reach some ethnic minority communities because they are not aligned with their needs, cultural values and daily realities. This failure to engage

ethnic minority communities and acknowledge their diversity can result in widening health inequalities; the relative reluctance of ethnic minorities to take part in the UK COVID-19 vaccination programme is direct evidence of this [18].

Studies on barriers to and facilitators of physical activity and healthy eating among UK ethnic minority communities have been conducted [19-21]. These studies highlight the main barriers to being physically active and eating healthily, such as lack of time, limited financial resources, lack of awareness, cultural barriers and religious beliefs. The first three of these are, to some extent, reflections of the priorities placed on physical activity and healthy eating. The question remains about whether if more time and money became available to this group, they would be spent on being active and eating healthily. People have their own reasons for behaving in ways that may be detrimental to their health. Negative health behaviours, such as smoking, may have non-health-related values attached to them that override the health imperative [22].

Developing effective and relevant physical activity and healthy eating programmes, therefore, requires a deep understanding of the different cultural values and beliefs of ethnic minority communities, including their realities and values and of how these factors affect their health behaviours. Such an understanding would enable interventions and programmes to be tailored to meet the needs of this diverse group and the varied cultural contexts they represent [19,23,24]. Understanding what matters most to these communities would enable interventions and programmes to be aligned with their priorities and values [25]. Personal values have been previously defined as "normative behavioural criteria or guiding principles in our lives" [26]. Programmes and interventions will also have to take into consideration wider determinants of health and health behaviours, as there will be ways in which structural, social, economic and environmental factors interact with personal values to shape health behaviours.

This study had two objectives: 1) to identify the main values underlying physical activity and healthy eating behaviours among some UK ethnic minority communities and 2) to explore how structural, social, economic and environmental factors interact with these values and their influence on physical activity and healthy eating behaviours.

2. Methods

2.1 Design

This study was part of research conducted to coproduce messaging and strategies to improve physical activity and healthy eating among ethnic minority communities as part of a UKRI-ESRC-funded project titled "Consortium on Practices for Wellbeing and Resilience in BAME Families and Communities (Co-POWeR)" within the Work Package on Physical Activity and Nutrition. The Co-POWeR project was funded and conducted during the COVID-19 pandemic following increased awareness of the long-standing inequalities, including COVID-19 infection and death rates, faced by ethnic minority communities and of the need to investigate the impact of the pandemic and inequalities on ethnic minorities' health and wellbeing.

Qualitative research methods (interviews) were used to generate data to address the research objectives. These methods allow for detailed exploration of behaviours and experiences [27]. This study adopted the relativist ontological and subjectivist epistemological philosophical assumption that there are multiple realities constructed and influenced by social environment, experiences, historical and cultural norms and the interaction with the researcher [28,29]. The main researcher in this study (OG), a young woman of ethnic minority background, has significant experience working in the field of public health and nutrition with ethnic minority communities and conducting qualitative research. Sharing some lived experiences with study participants potentially impacted on the data collection, analysis and interpretation process. For example, being familiar with the conversation style and body language meant she could identify when participants needed further prompts to expand on a topic and during analysis, she could find latent and implicit meanings within the data.

Community engagement and involvement were embedded in all phases of the study; a pool of 51 active community partners worked with the research team on the study. The Consolidated Criteria for Reporting Qualitative Research (COREQ) [30] is used in reporting the study (Additional file 1).

2.2 Study participants and recruitment

People aged >15 years, living in the UK and identifying themselves as of an ethnic minority background were eligible to participate. A purposive sampling strategy was used for recruitment (Table 1) to reach people from ethnic minority communities. As most participants were recruited during visits to community centres and groups, through snowballing and social media, the number of those approached is unknown. A total of 43 participants were recruited, two of whom were no longer available at the time of data collection.

Table 1. Summary of recruitment of study participants

2.3 Data collection

A study information sheet coproduced with community partners was provided to those who expressed interest in the study. This sheet was coproduced to ensure ease of understanding by participants. Study details were also explained by OG during a face-to-face visit or phone call to address any concerns before receiving verbal and written informed consent.

A topic guide for interviews collecting data for the Co-POWeR study work package on physical activity and nutrition was developed with project collaborators and community partners. The data presented in this paper were generated from a subset of questions in the topic guide (Table 2).

Table 2. Subset of questions taken from topic guide for interviews

Semi structured interviews (group and individual) were conducted to allow participants to share their views while focusing on key topics [31]. Care was taken to ensure that people of similar age were in a group to prevent inhibited conversation. A pilot group interview (120 minutes) was held on the 29th of July 2021 which led to a decision to reduce the length of discussions. Data collection took place between July 2021 and March 2022, during the COVID-19 pandemic. All sessions lasted between 60 and 90 minutes, and participants were offered a shopping voucher to thank them for their time.

Interviews were conducted either face-to-face or online, based on participants' preferences and in line with COVID-19 guidelines. Face-to-face sessions (four groups and one individual interview) were held at locations agreed upon with participants, including a community venue, university campus locations

and a food bank. Sessions were facilitated by OG (MSc Public health), the lead researcher on the project, with the community group coordinator present to foster more relaxed conversations. Online data collection sessions were held using Zoom conferencing software, facilitated by OG and co-moderated by MS (PhD, project lead), SA (PhD, research fellow) or Beatrice Sankah (BS) (PhD, PhD student and research assistant). All moderators had previous experience of conducting interviews with people from these communities.

Communication in some group interviews was facilitated by the fact that some participants knew each other or were members of the same community groups. All participants had interacted with the lead researcher (OG) before data collection to establish a relationship and facilitate openness during discussions. During these prior interactions, OG shared the reasons behind the Co-POWeR project, how it was focused on ethnic minority communities and the overall work package goal to improve physical activity and healthy eating. These conversations were often informal to ensure potential participants felt free enough to express themselves. All moderators and co-moderators (OG, MS, SA and BS) of the interviews being from a visible ethnic minority group may have contributed to more open conversations during the interviews.

Interviews were audio-recorded using the built-in Zoom recording system for online sessions or a digital recorder for face-to-face interviews and were transcribed verbatim by a transcription service with a confidentiality agreement in place. All transcripts were fully anonymised and checked against field notes by OG to ensure non-verbal communication and accent differences were captured. Participants were given an alphanumeric identifier starting with "I" or "G", indicating individual or group interview, followed by a participant number.

2.4 Data analysis

Transcripts were analysed inductively using thematic analysis to address the research objectives, paying particular attention to latent concepts within the data.[32]. We noted from the outset that although sharing the same label of minority and perhaps similar experiences of inequalities, ethnic minority communities are not a group of homogenous people who have the same behaviours, priorities and

experiences. This was taken into consideration during analysis, and similarities and differences between ethnic minority groups were highlighted. OG developed the analysis plan which was reviewed by all co-authors. Analysis was conducted independently by OG and MS using NViVo R1 software to organise the data. Analysis was discussed by MS and OG before coding began. Codes were subsequently compared, and disagreements resolved through discussion with MB. All co-authors reviewed and agreed on the values, factors, sub-themes and illustrative quotes to be used. Participants corroborated the research team's interpretation while taking part in workshops that formed another phase of the Co-POWeR research and will be reported elsewhere (manuscript in preparation). Participants felt that the researcher's interpretations reflected their own experiences and opinions.

3. Results

3.1 Participant characteristics

A total of 10 group interviews (two to six participants per group) and five individual interviews were conducted, involving 41 participants aged between 18 and 86 years. Participants lived mainly in England and Wales. Just over half were women, and the great majority were Black, Black British, African or Caribbean (Table 3).

Table 3. Characteristics of study participants

Findings from this study, and themes from the discussions, are presented as they relate to the two study objectives.

3.2 Objective 1: To identify the main values underlying physical activity and healthy eating behaviours among UK ethnic minorities

Three major values underlying physical activity and healthy eating behaviours were identified from the analysis: 1) culture and family; 2) community and social life; and 3) health. These values are described in detail below with subthemes and illustrative quotes presented in Table 4. For context, we used quote numbers (Qx) to refer to relevant quotes in Table 4 within the text. In addition, 'routines' was identified

as a coping strategy that worked to enable participants to behave in a way that was consistent with their values. This is discussed after the presentation of themes that discuss the values.

Table 4. Values underlying physical activity and healthy eating behaviours, sub-themes and illustrative quotes

3.2.1 Culture and family

Participants of all ages and ethnicities placed high value on culture and family. These values defined eating behaviours, including the kinds of food eaten, taste, methods of preparation and the act of cooking and eating together as a family or community. Cultural meals were perceived as "*good food*" and as a reward for a long workday, especially among first- or second-generation migrants. Although participants were open to trying new meals especially with their families, not having their usual cultural meals was described as "*a big gap"* on the plate (Q1, Q2).

Most participants (mainly those aged 20-64 years) acknowledged the negative health impacts of their cultural meals, especially the cooking methods used. This was not enough to stop participants from eating these meals (Q3, Q4).

Some participants described embarking on weight loss diets, which involved avoiding their usual cultural meals, as recommended by digital apps or online websites; however, these efforts were not sustained, leaving participants sad because they were unable to eat the foods they loved. Participants did not mind having cultural foods slightly adapted; for example, through healthier cooking methods, they just did not want a complete change in diet. Most participants, therefore, highlighted the need for interventions focused on exploring how cultural foods could be made healthier (Q5).

A participant described how it was not cultural for them to run on the streets instead of going to work, making a living or fending for the family. Younger participants also described how parents sometimes do not encourage their engagement in sports or physical activity, placing a higher priority on time spent on education (Q6).

Family dietary and physical activity behaviours were influenced by other family members. This included children influencing parents' diet, partners' influencing each other's diet, and parents influencing children's diets. Younger participants described maintaining their family's healthy eating habits as they ventured into adulthood (Q7). Where possible, they found ways to overcome barriers to maintaining these family habits (Q8). Parents also mentioned how they adjusted their diets or engaged in physical activity based on their children's preferences. This influence was described by a parent (Asian, adult, man) as being *"under pressure"*, and he highlighted the need for health education for children in schools so they can positively influence family meals. This suggestion was also reflected by some participants who described becoming more active as a result of the activities sent home from school (Q9, Q10).

3.2.2 Community and social life

Most participants, regardless of their age, ethnicity or geographical area, belonged to at least one community or social group and they explained how this was important to them. These groups which included elderly clubs, friendship groups, neighbourhood groups, youth activity clubs, boxing clubs or even sou-sou groups (an informal money contribution group), all had one thing in common: an ethnically diverse population.

It appeared that the value of these groups was tied to the experience of belonging and inclusion participants gained. For example, a participant highlighted how although they missed being a part of a community group, they were hesitant to go to groups found online because they questioned how diverse these groups were and whether they would be accepted; they wanted to avoid previous negative experiences they had had in non-diverse community groups (Q14).

Sometimes, community groups have physical activity or healthy eating benefits such as group exercises, joint cooking and sharing hot meals together. However, participants explained that those health benefits were secondary to the main benefit of spending quality time as a part of a community (Q11, Q12). Other participants who, either due to COVID-19 lockdown or a change in residential location no longer

belonged to any community group at the time of the interviews, described how that had somehow negatively affected them.

Community food banks led by people from ethnic minority communities understood the value and importance of cultural foods and so provided these foods to members of the community. Participants, mainly adult women, emphasised how valuable such food banks within their communities were in helping them and their families eat well (Q15).

3.2.3 Health

Most participants valued the physical and mental health benefits of healthy eating and physical activity. Young people especially recognised that they were from a high-risk group and that these behaviours reduced their risk of long-term conditions (Q19, Q20).

There was also a strong emphasis on the value of healthy eating and physical activity in weight management during conversations with all age groups and both genders, though women focused mainly on healthy eating when talking about body weight, while men focused mainly on physical activity. There were few references to the importance of this for health; most of the weight concerns were related to the desire to look and feel good. Although they appeared to value health, this value seemed to be secondary to the aesthetic value of engaging in physical activity and eating healthily (Q16, Q17).

In some cases, body weight concerns were strong enough to provoke short-term changes in participant's diet and physical activity, but such changes were not often maintained. The value participants placed on cultural foods and the role food plays in their social lives appeared to be more important than the desire to look good or be healthy.

Encompassing these three values, "routine" was a coping strategy observed in the data that demonstrated how these values manifested in participants' day-to-day lives. It was the structure that facilitated valued behaviours. Most participants (both men and women) had created a way to accommodate their multiple caring, work and family responsibilities to achieve some form of balance. These routines revolved around the things that mattered to them, working to provide for family, spending time cooking the cultural foods they loved and attending community activities. For many

participants, new activities involved disrupting this routine, which was built to protect existing priorities and values and were therefore not well received. Participants explained that sometimes when they heard or saw health messages, they would think about changing their behaviours but not do so because they could not see how to fit the recommendations into their day-to-day lives without disrupting their established routines.

3.3 Objective 2: To explore the interactions of structural and systemic factors with values and their influence on physical activity and healthy eating behaviours

Two main factors were identified that affected how the values of ethnic minority communities shaped their physical activity and healthy eating behaviour: 1) racism and 2) access. These are further explained with example quotes in Table 5.

Table 5. Factors influencing how values shape physical activity and eating behaviours, sub-themes and illustrative quotes

3.3.1 Racism

Participants' past, present and fear of future experiences of racism and discrimination played an important role in shaping their lifestyles, values, physical activity and healthy eating behaviours (Q21, Q22). This was especially true for participants of Black African ethnicity, regardless of their age or sex. Participants also expressed concern about engaging with community groups and useful community services because their previous experiences made them question whether those groups would be inclusive (Q21, Q25).

Some participants felt that they had to be more scrupulous in their behaviour during the pandemic to avoid racism. For example, one participant spoke about how she was unable to engage in her usual walks in the park even when they were permitted during the pandemic because she did not want to feel different or have people questioning why she was outside in a "*sad moment*" (Q23). She subsequently explained that the root reason for this behaviour was her previous experiences of being treated differently by people who believed that those with "*darker skin colours were the spreaders of the virus*" (Q24).

3.3.2 Access

Participants highlighted how factors relating to access in all its forms (physical, geographical, socioeconomic etc.) played important roles in shaping their health behaviours.

Living in a neighbourhood with access to green space and nature positively influenced participants' ability to act on the value placed on social activities or shared outdoor activities. However, living in built-up areas with increased air pollution resulted in participants being less able to engage in physical and social activities even though they valued them (Q26, Q27).

People's ability to access facilities interacted with their experience of racism. Although appropriate facilities were available in their neighbourhoods, they chose not to use them to avoid facing racism. For example, a participant claimed to be lucky because they had a secluded space on the way to the public park they could use for family activities, unlike her friend who lived in the same neighbourhood but did not have such space. This meant that even though there was clearly a public park in this neighbourhood, it was not considered a space for physical activity (Q28).

Some participants from Black African or Caribbean ethnicities, especially among first- or second-generation migrants, had a perception that some foods sold in large supermarkets and shops, including fruit and vegetables were unhealthy because they were "*fake*". Some participants responded to this by feeling less motivated to include such foods in their diet.

Participants, mainly men, also tended to prefer shopping at independent shops or markets rather than supermarkets. They reflected on how the placing of items in a supermarket, often less healthy foods by the tills, sometimes affected the foods they had ended up buying (Q31). Participants also reflected on how expensive eating healthy was and how even though they wanted to sometimes, they were unable to due to high cost (Q32, Q33).

4. Discussion

This study used a qualitative approach to identify the values underlying the physical activity and healthy eating behaviours of UK ethnic minority communities and explored the structural and systemic factors

that interact with these values. Three main values; culture and family, community and social life and health, influenced their physical activity and healthy eating behaviours. Racism and issues of access constrain people's capacity to be physically active and eat healthily.

Culture had a stronger influence on eating behaviour than on physical activity because it determined the tastes and ingredients they preferred and how food was sourced, prepared, eaten and shared within the family. Cultural foods were referred to as *"good food"*, and while participants were aware of the health implications of eating their cultural foods, the value they placed on foods significant to their culture overrode these concerns. This finding is consistent with previous studies [33,34,35] that highlight the central role played by cultural norms in ethnic minority communities' diets.

Culture is a set of transmissible non-genetic information or guidelines on the right way to live that are available, accessible and applicable to a group of people [36]. This suggests that culture is a dynamic concept and cultural norms may be adapted to accommodate acceptable changes. Cultural norms, as they apply to food, have been undergoing this process of adaptation; some cultural foods are being made differently now that mechanised kitchen equipment is available (grilling or air frying instead of frying in oil). Study participants appeared open to trying new methods of cooking that were more consistent with healthy eating than established culturally determined practices. This emphasises the value attached to culture but also suggests an opportunity for public health practitioners to work with communities to coproduce culturally acceptable but healthier adaptations to the preparation of cultural foods. Consistent with our findings, several studies have also shown families to strongly influence physical activity and healthy eating behaviours among ethnic minority communities [37,38], with a recent review of qualitative studies highlighting that ethnic minority communities prioritise family over health when making dietary decisions [38].

Cultural barriers to using public physical activity spaces experienced by women are often raised in past studies [19,21,39], and we also expected such conversations in this study. However, this topic was not mentioned at all. This could be because issues relating to access, harassment and cultural acceptability have caused participants to close their minds to the use of the gym for physical activity to the point that it is no longer considered relevant in discussions. This introduces an intersectional constraint to the use

of gyms by women from some ethnic minority backgrounds. Women of all ethnicities describe experiencing or being concerned that they might experience sexual harassment or threats to their safety when using physical activity facilities or engaging in active travel [20,40,41]. This coupled with expectations of specific sociocultural roles for women [19, 20, 41] and cultural acceptability of different sports [42] may make it difficult for women from some ethnic minority communities to be more physically active. For these reasons, formal and public physical activity programmes may not be well received by ethnic minority communities. Changes in cultural expectations are required for physical activity programmes to be successful.

Community and social support provide motivation, peer-support and encouragement for the initiation and maintenance of physical activity and healthy eating [39,43,44]. These benefits were echoed by participants in this study, but the value placed on community and social support went beyond just encouraging behaviour change. Community was key to fostering feelings of belonging and inclusion. Studies of physical activity [20,45], nutrition [19,46], mental health [35,47], research inclusion [48] and public health messaging [15,49] have highlighted the importance of community groups to people from ethnic minority communities and how change is often better received when community groups are engaged. Belonging to a community group that provided social support was tied to a deeper sense of wellbeing, acceptance, trust and freedom of expression. There is no clear definition of what counts as a community group; however, study participants referred to informal friendship groups, formal community groups, sports clubs and religious groups as community groups. They were all attractive to participants because they were ethnically diverse.

One observation was the occasional clash of values between those held personally by younger participants and those held by their parents. These reflected differences in priorities, in that some parents wanted their children to spend all their time studying to achieve success in life, while young people wanted to engage in community sports and activities with friends. This observation has been made before; sometimes there are aspects of cultural or even regional beliefs and norms that people do not necessarily accept or endorse and so omit or even oppose in their day-to-day practices [50].

Acknowledging and understanding these conflicting values held by younger and older members of the same community is important when developing culturally relevant programmes.

Health itself is often not a driver of sustained behaviour change [51]. Many people continue with usual behaviour despite being aware of implications for health [51,52]. The topic of health for risk reduction was frequently raised during the discussions in this study. This sometimes drove participants to make healthier choices, but only for a short time. It is possible that although health was valued, the methods adopted to change behaviour were not aligned with other values participants had. This potentially led to a clash in values, with one giving way to the other. For example, participants described attempting to change behaviour using diet apps or watching YouTube videos. These seemed the most accessible form of support for participants but are unlikely to have all been evidence-based behaviour change interventions; more importantly, they were also unlikely to have aligned with what mattered most to them. This further emphasises the need for future interventions to engage with fundamental personal values [53].

Participants, especially those of Black ethnicity recounted how experiences of perceived racism toward them or others in their communities prevented their engagement in physical activity and healthy eating behaviours. They described not engaging in physical activities with community members in outdoor spaces, not using public physical activity facilities and not going to shops to purchase cultural foods in a bid to avoid being policed or racially harassed, particularly during the COVID-19 pandemic. Other studies have identified the negative impacts of experiences of racial discrimination and harassment on the willingness and ability of people from ethnic minorities to be active and eat healthily and on health in general [39,45,54].

There is robust evidence that economic access observed as low socioeconomic status, is closely linked with reduced intake of healthy food [35,55,56] and reduced engagement in physical activity [10,57]. Evidence also shows that UK ethnic minority populations are more likely to experience poverty and live in more-deprived neighbourhoods [54,58]. Our findings correspond with this evidence. With healthy foods being more expensive and less healthy foods being cheaper and readily available in more

deprived neighbourhoods, the ability of people from ethnic minority communities to eat healthily or engage in physical activity is impacted even though they want to.

4.1 Public Health Implications

A summary of study findings highlighting the values and issues that affect the ability of people from some ethnic minority communities to be physically active and eat healthily are presented in Figure 1. These factors need to be considered when developing public health policies and programmes for UK ethnic minorities.

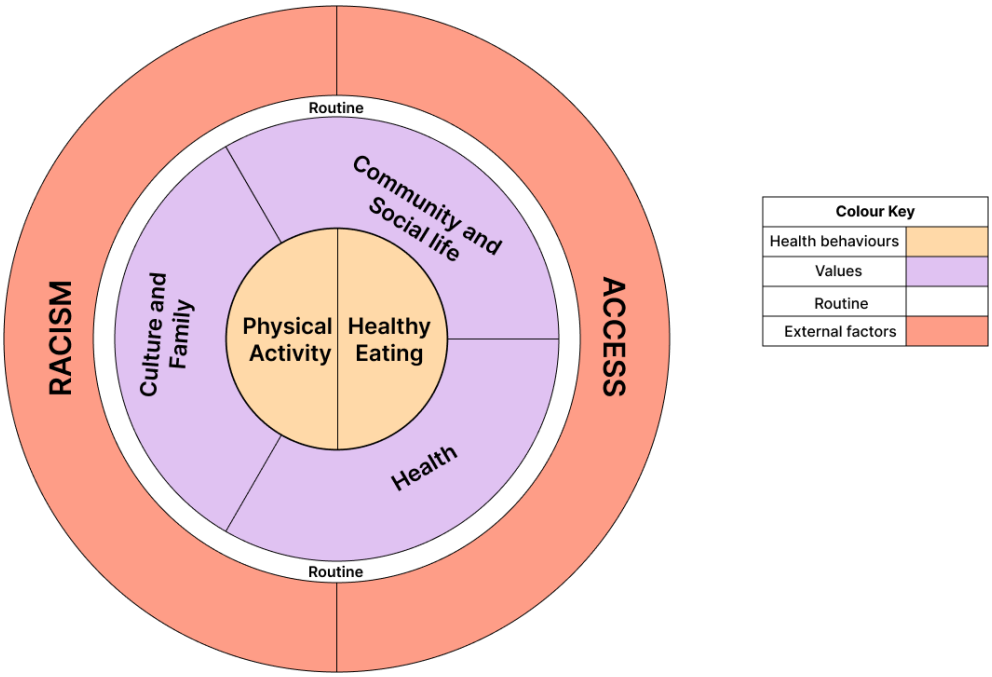

Fig. 1 *Values and factors influencing physical activity and healthy eating behaviours among UK ethnic minorities*

Based on these findings, we recommend three questions that policy makers, practitioners and researchers can ask when developing physical activity and healthy eating policies or programmes (Figure 2). Coproduction with ethnic minorities should run across all stages of this guide.

463

464 ***Fig. 2*** *Guide questions when planning physical activity and healthy eating policies and programmes*

465 In Table 6, we demonstrate with an example how these guide questions can be used in developing a
466 cycling programme.

467 *Table 6. Example of using guide questions when developing a physical activity programme*

468 Similarly, one of the recommendations of the National Food Strategy to reduce diet-related inequality
469 is to trial a "Community Eatwell" programme where fruit and vegetables and education and training
470 programmes to gain food skills would be prescribed by general practitioners to members of the public
471 [59]. This programme can be made more relevant to ethnic minority communities when: i) the fruit and
472 vegetables being prescribed reflect the various cultural foods for the various communities; ii) education
473 and training programmes on food skills are embedded in already existing ethnically diverse community
474 groups and iii) recommendations on how physical activity and healthy eating can be included in their
475 day-to-day lives are provided.

476 **4.2 Strengths and Limitations**

477 This study is the first, to the authors' knowledge, to explore how values dominant in UK ethnic minority
478 communities influence physical activity and healthy eating behaviours. These insights can be used by
479 policy makers, practitioners and researchers in developing public health programmes and policies that

are more likely to be effective at supporting healthy eating and physical activity than those currently in use.

It is important to consider these recommendations in the context of qualitative methodology. Qualitative research does not seek to represent the views of the population under study but instead endeavours to present the range and diversity of views held by this population. The adopted recruitment strategy may also have impacted the study findings. Most participants were recruited through community groups, suggesting that study participants may represent a group of ethnic minorities who particularly value belonging to a community group.

An important strength was that ethnic minority communities were engaged through coproduction and consultation activities throughout the study. Community engagement activities included partaking in planning meetings and decision-making activities, reviewing ethics documents and topic guides and facilitating recruitment. This active involvement helped to promote recruitment, gain trust and facilitate more transparent and honest conversations, enhancing the robustness of the data. A community engagement partner also reviewed this manuscript before submission to ensure that the study interpretation reflects the realities of UK ethnic minority communities.

5. Conclusions

Culture and family, community and social life and health are important values underlying UK ethnic minorities' physical activity and healthy eating behaviours. External factors including racism and geographical, social and economic access to physical activity facilities and healthy foods, interact with these values. In developing relevant programmes and policies for diverse ethnic minority communities, these values and factors need to be actively considered and accounted for. Establishing mechanisms by which ethnic minority communities can be actively involved in developing programmes to improve their physical activity and healthy eating will be important for increasing their acceptability and effectiveness.

Declarations

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Competing interests

The authors declare that they have no relevant financial or non-financial interests to disclose.

Data availability

The anonymised qualitative data used in the current study are available upon reasonable request from the corresponding author.

Code availability

Not applicable

Author contributions

OG, MS, SA-B, NA, PC, MT, SM and MB conceived of this study through a series of discussions. OG led qualitative data collection for the study with SA-B and MS co-moderating where necessary. OG developed the analysis plan which was reviewed by all co-authors. OG and MS independently conducted data analysis, MB resolved disagreements and all co-authors reviewed and agreed on the values, factors, subthemes, illustrative quotes used. Funding acquisition for the study was by MS. OG wrote the first draft of the manuscript in discussion with MS, SA-B and MB. All authors provided input on revisions and approved the final version of the manuscript.

Ethics approval

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethics approval for this study was received from the AREA Research Ethics Committee, University of Leeds (no. 20-120), and the Faculty of Environmental and Life Sciences Ethics Committee, University of Southampton (no. 65351.A1).

Consent to participate

Written and verbal informed consent was obtained from all individual participants included in the study.

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Table 1. Summary of recruitment of study participants

Recruitment strategy	**Description**
Face-to-face visits by research team to community groups and networks	Community groups and networks (e.g., lunch clubs, elderly clubs, youth groups, religious groups, food banks) across the UK that serve ethnic minority communities were identified by community partners, the research team and project collaborators. Emails, phone calls or face-to-face meetings with group coordinators were held by OG and MS to introduce the project. Face-to-face visits to group meeting locations were then held by OG. Most of the groups visited physically were in Southampton and Wales. Others were contacted online. Visits involved sharing details of the research project and asking interested people to let the researchers know at a subsequent visit, through the group coordinator or by email or phone call to OG.
Recruitment posters and social media graphics	Posters and graphics inviting people to get in touch with the lead researcher by email or phone were coproduced with community partners and shared on social media pages and in community locations also identified by community partners (corner shops, cultural food shops, bookshops) as often visited by ethnic minority communities.
Snowballing	To facilitate further recruitment, people who had expressed interest and consented to take part in the project were encouraged to also invite other people from their communities by sharing the project poster and social media graphics with them.

721 *Table 2. Subset of questions taken from topic guide for interviews*

Topic	**Question**	**Sub questions and prompts**
Experiences	What were your experiences over the past year with the COVID-19 pandemic?	Friends, families and community Health Physical activity Diet
Physical activity priorities	How important is being physically active to you?	On days you engage in physical activity or exercise, what kind of activities do you do? Why do you do that activity?
Healthy eating priorities	How important is eating a healthy diet to you?	Are there specific days/times/periods when you feel more motivated to eat healthily? Why? On those days, what do you eat?
Factors interacting with priorities	(Researcher provided a brief statement describing the government recommendations for healthy diet and physical activity.) In your opinion or experiences, how possible are these recommendations to achieve?	What specifically makes it possible/not possible for you to achieve these?
Support	What may best support you to achieve these recommendations for diet and physical activity?	

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Table 3. Characteristics of study participants

	Number of participants
Age group (years)	
18 – 19	8
20 – 34	12
35 – 64	18
≥ 65	3
Gender	
Men	20
Women	21
Ethnicity	
Asian or Asian British	4
Black, Black British, Caribbean or African	28
Mixed or multiple ethnic groups	4
Other ethnic minority groups	5
Country of Residence	
England	26
Wales	14
Scotland	1

742 *Table 4. Values underlying physical activity and healthy eating behaviours, subthemes and illustrative*

743 *quotes*

Values	**Subthemes**	**Quote number**	**Illustrative Quotes**
Culture and Family	Cultural food is "good food"	Q1	*"When you've been working hard you want to have a good hard food… it gives you the nutrition that you need plus our bodies yearn for it because that's what we were brought up on".* I13, Adult, Caribbean, woman.
		Q2	*"Another thing that would be very important especially for people from the African and Caribbean group would be…cooking books that are tailored to our ethnic group …because after working so hard, you wouldn't want to eat salad for dinner…I definitely will not have a good night's sleep and I'll have to wake up again and do the same job. It would be hard, the energy to do that won't be there …"* G02, young adult, African, man
	Concerns about healthy eating and cultural foods	Q3	*"It can be quite difficult because it's not that we don't use healthy foods, but I think it's the process in which we cook them that kind of throws all the health out of the window… so, it's not just telling them to eat healthy foods because they will tell you, 'I do eat vegetables, but how do we eat it?'…it's about actually how we cook it…"* G08, young adult, African, woman.
		Q4	*"…you're always mindful of trying to make it as healthy as possible but then it's like, you know what, it doesn't taste right, I'm going to make it anyway".* G39, adult woman, African.
		Q5	*"I think a very good cookbook that teaches us how to eat healthy and not go too much outside our comfort zone…especially, we Africans and Caribbeans…that could help people".* G02, young adult man, African.
	Culture and physical activity	*Q6*	*"…didn't have the support of his parents, they don't see it, they say they buy him, they go "is he a cow, are you going to sell him". They don't see it like that, all they see is that education or money. They don't give you the chance…the parents say no, you are not wasting your time on this".* G26, Adult, Mixed, man.
	Family influences on diet and physical activity	*Q7*	*"I do like to eat a lot of vegetables…but I think what motivates me is a bit of habit in the sense that that's how I grew up and that's what my mum used to prepare a lot, so that is what I'm accustomed to and sometimes if the plate doesn't have green on it, in my mind it's not complete".* G04, young adult, Caribbean, woman.
		Q8	*"I think getting five a day is achievable for me because we tend to have vegetable-based meals quite often…I know like the cost is high for fruit, but there are things you can do to get cheaper fruit. You can buy reduced fruit or like veg boxes now at Lidl and Aldi…and the price was quite reasonable. But for the general public, it's probably not feasible to achieve five-a-day…".* G11, young adult, Asian, man.

		Q9	*"But my thinking is education has to start at school, not just the parents. Parents are under pressure from children to go out for food… At school, I think there needs to be more effort educating our children about food at large...".* G17, adult man, Asian.
		Q10	*"…they were sending homework online which included physical activity…we were doing that for our little one without knowing we were helping ourselves mentally and physically..."* G39, adult woman, African.
Community and Social life	Health benefits are secondary	*Q11*	*"I think community clubs and groups are the best thing. It's quite hard to do something yourself… but when you're with a group of like-minded people, they push you and motivate you more…and it's like a group of people." G27, young person, African, man*
	Valuing community is part of valuing the experience of ethnic diversity in the community group	*Q12*	*"it doesn't matter what community club you're in…you're going to be in an environment with your good friends… they're going to be there to push you to be a better person. You enjoy it, you get fit, you get healthy and it is almost like a secondary benefit. It's just amazing"* G29, young adult man, African.
		Q13	*"…coming from London and moving to York, although I love York as a city, it isn't as multicultural and that's something I really miss from being down in London. So, it's just nice to be in a culture where it's more diverse. When I did the Lindy hop dancing, it was diverse in that it attracts a lot of people from LGBT backgrounds but it doesn't, for whatever reason, attract people from ethnic minorities so I didn't feel like I fitted in as much"* I19, adult, Mixed, woman.
		Q14	*"…you're a bit apprehensive because you don't know if there'll be anybody of your ethnicity. Because people do still look at you and think 'can you speak English?'…Whereas if you knew that when you got there that it didn't matter, all welcome from all different backgrounds …".* I41, adult woman, Asian.
	Community food banks provide the cultural foods needed	*Q15*	*"the food bank is really helpful in terms of this five a day…they give you different kinds of fruit…They give us rice, you know rice, that's African food, tomatoes, vegetable oil, all those things…everything that you can put in the pot and make as food. You can easily get it here. So, anything including our own soup, you know what we call soup is not what they call soup here"* G33, adult, African, woman
Health	Body weight concerns	*Q16*	*"the weight thing does affect me. if I don't exercise, I'll put a lot of weight on my thighs and then as soon as I exercise the weight will drop off there. It makes me feel good. I can see my arms are getting a bit more defined and muscly and I'm like, oh! And friends will be like, check out your guns!"* I19, adult, Mixed, woman
		Q17	*"I know that as you get older, especially I'm reaching that age where I'm going to face menopause, and I knew that if I don't get hold of myself now, I want to look good in clothes, that's my motivation. I want to stay and look*

			as young as I possibly can. I know that's in my control". G16, adult woman, Asian.
	Weight gain encourages physical activity and dietary changes	Q18	"*I looked at my stomach, it was big like this and my knees were starting to pain me, I said to myself, I don't have anybody here to help me so I have to help myself. In the morning, when I wake up, after my prayers I start marching and jumping in my room".* G25, Adult, African, woman
	Benefits of physical activity and healthy eating for health	*Q19*	*"knowing that I have people in the family who have hypertension, then you stand a higher chance of getting one, so that makes me like, ok, I need to move, do things but I never really do take it that much serious to be honest, that motivation that, ok, maybe I should try and cut down my sugar, and there are lots of those I still need to do."* G14, adult, African, man.
		Q20	*"I think most of us are thinking about the future… If I don't do these specific things, they can affect me when I grow up. I just like to stay healthy so I can do the things I want to do in life".* G22, young adult, Mixed, man.

776 *Table 5. Factors influencing how values shape physical activity and eating behaviours, subthemes and*

777 *illustrative quotes*

Factors	**Subthemes**	***Quote number***	***Example Quotes***
Racism and discrimination	Increased policing and discrimination during the COVID-19 pandemic.	*Q21*	*"Sometimes you go and people will put you down and saying no don't take that. You can pick something and they will take it from you…they give some people and don't give some others". G34, adult, African, woman*
		Q22	*"…a lot of my friends would go outside and try and stay active and you had an hour a day to do that, but then they'd have police officers following them… telling them to go home… and then other friends telling me 'Oh yes, I went out and nothing happened to me…the white kids didn't find any differences, mixed race and black kids did'…"* G23, young adult man, African.
	Higher moral obligation to avoid racism	*Q23*	*"you don't want to do your walking because people will look at you like is that important to do walking…What are you doing outside? You don't want to feel different…even those activities in the park, you can't use it… I was thinking if I go do that outside that I'm showing off…"G39, adult, African, woman*
		Q24	*"I think we was treated in a different way because people was thinking that our skin, our people, like African people, we are getting this virus worse than others. Because we was the one that people can point their fingers at… If you are black, you will be looked at in a certain way because you are black, even if you have a mask…"G39, adult, African, woman.*
	Concerns about inclusion of community groups	*Q25*	*"I've been trying to find yoga classes and searched the internet but then you're a bit apprehensive because you don't know if there'll be anybody either your age or your ethnicity. Because people do still look at you and think can you speak English. Do you know what I mean? So I think sometimes you don't go because of those things. But whereas if you knew that when you got there that it didn't matter, all welcome from all different backgrounds or everybody welcome" I41, Adult, Asian, woman.*
Access	Geographical location	*Q26*	*"I've moved to an area where there's a lack of green space, there's lots of houses so walking for physical exercise has been a big problem…because I used to live in an area where it was green, now I'm living in a dump house, the pollution of the air is not healthy and lack of green space so really I can see my health declining in that way if I continue staying here". I13, Adult, Caribbean, Woman.*

		Q27	*"We had a youth club in our area, where people can come together and just like have open work outs…work outs in the public…making people socialise…but they closed it down and they turned it into a hub instead…a working hub…it affected. A lot of people from the community used to go to the youth club". G21-G24, young people, men.*
	Access and racism	*Q28*	*"I'm just lucky because there is a long shortcut that people don't stay, you don't see people, it's like a shortcut that will take you to the park. So that space [not the park] was like our exercise space. If you want to do skipping rope, I will do it in the corridor and I will play football with my boy, so it was like physical activity area for us, if not, like my other friend in the flat, oh my God, I don't know where I will be". G39, Adult, African, woman.*
	Healthy foods including fruit and vegetables sold in big supermarkets and shops are over processed or fake.	*Q29*	*"my friend always says to me about not eating meat and eating veg and I'm like well I don't even know because it depends on what's in the ground so it doesn't really make any difference, everything is contaminated anyway so try not to dwell on all of that…" G31, Adult, Caribbean, woman.*
	Preference for standalone healthy foods or fruit and vegetable markets to supermarkets	*Q30*	*"Before the lockdown, my mum, she'd go to the fruit market she'd buy her fruit, veg and all that and then she'd buy the meat. When lockdown happened, she was still cooking but most of the food we were getting was from the supermarkets, just like I said, they made huge profits. You can imagine how unhealthy it was." G27, young person, African, man.*
		Q31	*"That's the difference, when you could just go to the local fruit shop, it's only fruit and veg and for the meat you know where you're going. When you go to the supermarket, you go there for fruit and veg, but you end up buying other things, the kids see the chocolate and sweets and call you to the sweets at the till".* G26, adult man, Mixed.
	Healthy eating perceived as expensive, and unhealthy foods are readily available.	*Q32*	*"before we had the local fruit and veg shop and you have the local butcher now, we haven't got this anymore, you're right, they're all closing down and we have these massive supermarkets and, on every corner, there is a takeaway. There is a fast-food chain everywhere, it's so easy, you just walk past and it's so easy to buy it." G26, Adult, Mixed, man.*
		Q33	*"Let me talk for my own self. Fruit is very expensive yes, with what I am being paid, I told you if I want to start doing five a day, I'm not going to meet up…I try*

			my best, but it is not possible in my own situation". G33, adult woman, African.

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781 *Table 6. Example of using guide questions when developing a physical activity programme*

Programme	Suggested questions based on guide	Possible actions after coproduction
Cycle lanes to promote physical activity	1) Is it normal cultural practice for target population to cycle? Can cycling be done with family, community or friends? What health benefits are associated with cycling? 2) Can cycling be incorporated in the day-to-day lives of target population? How and what would this look like for them? 3) Will issues such as access or racism inhibit target population from using the lanes? For example, would they have the financial ability to purchase a road safe bike and other cycling gear?	1) It could be that although cycling is not normally part of the culture of the community, they might be open to trying the activity in their community groups as a way of socialising; hence a community cycling programme could be co-created. 2) It could however also be that they are completely uninterested in cycling and would prefer a community walking programme.

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