Exploring the social-ecological factors related to physical activity participation among Black, Asian and minority ethnic immigrants.

TITLE PAGE

Authors: Godi Katito, Emma L Davies

Faculty of Health and Life Sciences, Oxford Brookes University, UK

Corresponding author: Godi Katito – email: gkatit2@gmail.com

Running header: **Social-ecological factors related to physical activity participation among BAME immigrants.**

Keywords: Social-ecological model, black and ethnic minorities, barriers, physical activity participation, culture.

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Abstract

Despite the health benefits of physical activity (PA), participation rates Black, Asian and minority ethnic (BAME) adults in the United Kingdom (UK) are low in comparison to the general population. This study aimed to explore the social-ecological factors related to PA participation among BAME immigrants.

Methods: Semi-structured interviews were carried out with 12 purposively selected adults from the BAME populace residing in one postcode district of a city in southern England.

Results: The two main themes that developed from this study demonstrated that the barriers to PA participation among BAME were perceived to exist at intrapersonal and environmental (social and physical) levels.

Originality: Prominent barriers included intrapersonal factors such as deportation fear and cultural beliefs; and environmental factors such as the cost of accessing PA facilities. Length of residency appeared to be related to increased PA.

Research implications: Understanding these unique social-ecological factors may assist in intervention development.

Exploring the social-ecological factors related to physical activity participation among Black, Asian and minority ethnic immigrants.

Introduction

It is widely acknowledged that physical activity (PA) participation has numerous psychological and physical benefits (McKinney et al., 2016). For example, PA has positive impacts on the reduction and prevention of some cancers, coronary heart disease, stroke and diabetes (Gąsiewski, 2017; McKinney et al., 2016), the prevention and management of obesity (Friedrich, 2017), reduction in falls amongst older individuals, decrease of osteoporosis and management of arthritis (Nelson et al., 2007). PA has numerous psychological benefits such as increased self-esteem, improved confidence, enhanced wellbeing and reductions in stress, anxiety and depression (Pate, 1995; Warburton, 2006). The UK chief medical officer's guidelines recommend that an adult should at least engage in moderate-to-vigorous PA activity for not less than 150 minutes per week for positive physical and mental health (Gov.uk, 2021).

Inactive lifestyles have contributed to increasing rates of obesity, heart disease, stroke, diabetes, depression, cancer, and poor mental health in the UK, especially among Black, Asian and minority ethnic groups (BAME) (Stapelberg et al., 2011; Warburton, 2006). For example, coronary heart disease prevalence is 6% and 8%, respectively higher in men from Indian and Pakistani ethnic groups in comparison to the majority population (Bhf.org.uk, 2010; Chaturvedi, 2003), hypertension is three to four times higher in the Black African population, and the highest prevalence of stroke is in the Black Caribbean men, Bangladeshi women and Pakistani women (Bhf.org.uk, 2010; Chaturvedi, 2003). Bangladeshi and Black Caribbean women are over three times more likely than the general population to get Type 2 diabetes (Bhf.org.uk, 2010; Chaturvedi, 2003).

There is an inverse relationship between the levels of PA and health status, and it has been observed that individuals who regularly engage in PA face fewer health risks than those who

are physically inactive (McPhee et al., 2016). Despite the critical health benefits, one can experience from regular exercise such as the reduced risk of cardiovascular-related morbidity and prevention of chronic diseases, PA participation levels among BAME populations remains low in comparison to the general population (Durstine et al., 2013; Kokkinos, 2012). For example, in 2017/18 the proportion of physically active BAME people in the UK was found to range from between 55% and 60%, which is comparatively lower than the national average of 62% (Gov.uk, 2019). The UK government have increased its commitment towards undertakings aimed at improving health and PA participation. (For example, "Uniting the Movement") (Sportengland.org, 2021). However, Results from latest surveys in the UK show that the percentage of BAME individuals engage in PA is still lower than the national average (gov.uk, 2021), and it appears that these endeavours have had no significant impact ~~in~~ on shifting BAME PA participation trends despite the evident relationship between the high levels of health disparities and the low PA participation rates in these groups (Durstine, Gordon, et al., 2012).

Understanding of PA participation barriers among BAME adults can serve as an invaluable tool for facilitating effective strategies to increase PA participation. One particular BAME group that may be participating in PA at even lower rates are those who have immigrated to the UK (Bhatnagar, Shaw & Foster, 2015). There are numerous reasons why immigrants' PA participation rates are low compared to the general population. Delavari et al. (2013) suggest that the differences may be possibly linked to acculturation, ~~this~~ that is the process of cultural, psychological, and social changes that occur during their adaptation into a new culture. Acculturation has been identified as a significant construct in addressing the needs of diverse populations and explaining differences in health experiences between ethnic groups (Abraído-Lanza et al., 2006; Schutt & Mejía, 2016).

Social-ecological factors related to physical activity participation among BAME

Previous studies investigating the relationship between acculturation and PA participation have mainly been carried out on ethnic minority immigrant groups outside the UK, mainly in the United States of America (Evenson, Sarmiento & Ayala, 2004; Liu et al., 2009). However, studies investigating the barriers of PA among BAME immigrants, including the relationship between acculturation indicators such as length of residency and PA participation, are currently missing in the UK. Therefore, it is essential to investigate if there is a relationship between the PA activity disparities and the health inequalities among the BAME immigrants and the process of cultural, psychological, and social changes that occur during their adaptation into a new culture. Understanding this relationship can be a critical strategy of stimulating an increase in PA participation and addressing the health inequalities among the BAME immigrants.

Theoretical framework

There is a complex reciprocal interaction between multiple factors from different domains that influence an individual's PA behaviour (Bolívar et al., 2010). In order to tailor PA interventions effectively, psychological, socio-cultural and environmental factors should be investigated (Bopp et al., 2006). Factors such as culture, environment and past experiences are critical in the development of an individual's perceptions and characteristics (Iwelunmor, Newsome & Airhihenbuwa ,2013).

This study used ~~a~~ The Social-Ecological Model as a theoretical framework (Stokols, 1996) to define barriers to PA participation among adults from BAME immigrants residing in one postcode district of a city in southern England. Social-ecological models consider both the physical and social environment of an individual and do not merely exclusively centre on an individual's characteristics. It, therefore, presents researchers with a comprehensive structure

for distinguishing the barriers to PA. Thus, this study aimed to explore the social-ecological factors related to PA participation among BAME immigrants.

Methodology

Research design

Semi-structured interviews were utilised to understand the experiences of BAME immigrants in the UK and identify the barriers to PA participation.

Participants

Critical purposive sampling, a sampling method that adds validity when the proposed sample is too expansive for the investigator to manage was used in this study to recruit a diverse group of 12 individuals from BAME immigrant backgrounds (Cohen et al., 2013). The constrained timeframe for the research, including the known challenges of recruiting individuals from hard-to-reach groups such as BAME (Creswell, 2005; Leavy, 2015), were additional factors that influenced the sampling method choice. Deliberately drawing participants from diverse cultural backgrounds, nationalities, ages and diverse reasons for migration was intended to minimise the chances of inferring that commonalities among the participants might have been caused by them being part of a cohort (Kukull & Ganguli, 2012; Robinson, 2014).

Participants meeting the recruitment criterion were recruited using both face-to-face interaction and snowballing methods, including non-academic college staff via various departments at the primary researcher's workplace. The inclusion criterion for the study required that a participant was an adult immigrant currently residing in one postcode district of a city in southern England and self-identified as BAME. This particular postcode district

was selected as it is a diverse area, where for example, 64% of people classify themselves as white in this postcode district compared to 81.9% as a national average (Postcodearea.co.uk, 2021). Furthermore, there are several immigrant groups from various regions of the world within this community, again with a wider range of nationalities than the national average. Thus, there is a need to provide accessible physical activities to a diverse group of people in this area. Participants had to confirm that they were comfortable and able to communicate adequately well in English to take part in the interviews (see Table 1). The term BAME in this study refers to individuals from mixed, black, Asian and other non-white ethnicities (London.gov.uk, 2021).

[Insert Table 1]

Data collection

Semi-structured interviews were conducted in English and lasted between 30 and 60 minutes.

Procedures

The study was conducted following the British Psychological Society ethical guidelines following the approval of the Psychology Research Ethics committee at Oxford Brookes University. The interviews were conducted in settings that were settled upon by both the researcher and the participants. For example, the participants' homes and workplaces. The interviews were audio-recorded and were then transcribed verbatim by the primary researcher. An interview schedule was used during the interviews (see Table 2).

[Insert Table 2]

Analytical method

The data analysis began immediately after the first interview was carried out. The data analysis followed a 6-step deductive thematic analysis framework (Braun & Clarke, 2006). The first author listened to the audio-recorded data immediately after each interview and wrote down salient points, in order to familiarise themselves with the data. The first author had the opportunity to listen to the audio-recorded data for the second time during the transcription of the audio-recorded data and read and re-read the transcripts after completing the transcriptions. Two of the twelve interview transcripts were double coded by the two authors to ensure data reliability and that the conclusions were not arbitrary or biased in any way, and the remaining ten transcripts were coded by the first author. The identification of the existence of any similarities between the coded data was then carried out, and the codes were then sorted and gathered into provisional themes. The provisional themes were then reviewed, and once a coherent pattern was established to have developed after reading the codes for each of the provisional themes, provisional themes with similar patterns were then gathered into different categories called sub-themes. The decision of what aspects of the research objective the sub-themes fit under was reached, and the sub-themes were categorised into clearly defined and named themes (see Figure 1 for an illustration of how themes were generated). Consistent comparison of the participants' experiences was carried out to guarantee that all the different viewpoints of the participants were represented in the deductive thematic analysis.

[Insert Figure 1]

Results

The two main themes demonstrated that the barriers to PA participation among the BAME immigrants in this study were perceived to exist at an intrapersonal and environmental (social and physical) levels. The main sub-themes that were identified as determinants of PA participation were categorised under these the main themes depending on their level of influence within the socio-ecological framework (see Table 3).

[Insert Table 3]

Intrapersonal barriers

Intrapersonal barriers of PA included factors that were experienced by the participants at the individual level and included individual characteristics that influenced PA participation.

Perception of physical activity

Perception included the participants' beliefs about PA participation and appeared to play an integral role in influencing ~~their~~ attitudes towards PA and, consequently, their PA participation.

The participants' perceptions of PA were varied and mostly negative. Some participants perceived PA as unnecessary and therefore, did not see any need to engage in PA.

You are already married so, why train? (P12, 33, M, Jamaica)

P12's statement appears to highlight how the salacious undertones that are occasionally linked to PA participation, portraying PA participation as a strategy ~~of~~ for making your body attractive for enticement purposes, might hinder PA participation among married individuals. Likewise, some of the outcomes related to PA participation, such as weight loss, were viewed as undesirable.

I don't want to get slimmer because I think I am slim enough (P11, 43, F, Thailand)

Limited exposure to PA participation and the absence of emphasis on PA participation in their countries of origins appeared to influence how the participants conceptualised PA participation. It appeared that most participants conceptualised PA participation as a formal activity that required one to attend unfamiliar environments such as gymnasiums and recreational centres. It appeared that most participants displayed a lack of awareness that PA participation ~~was not~~ does not need to be a formal activity, and PA participation could occur in familiar environments such as their homes or even their places of work. Conceptualising PA participation as a formal activity and associating it to unfamiliar environments posed a participation barrier for many of BAME participants. PA participation was perceived as western culture, and many participants found it challenging to integrate it into their everyday lives.

> *When I came over here, I saw people going to the gym, and it was funny to me, it was kind of strange, I thought these are white people, this is the thing that they do. Right? Because where they live, they do not run out the house and get firewood; this is their lifestyle, you know? And they have to do something to keep them in shape, to keep them looking slimmer like us* (P12, 33, M, Jamaica)
>
> *As a new migrant, I did not know about gyms, and back in our country, we don't use gyms and all those things* (P7, 40, F, Burundi)

The participants appeared to be aware of the curative benefits of PA participation, and various individuals reported that they only started engaging in PA as a cure for their ailments following their doctors' recommendations. However, it appeared that many participants were unaware or did not consider PA participation as a critical preventative device for diseases and would not contemplate engaging in PA for its disease-prevention benefits.

> *While I was considering my job as part of my exercise, my doctor told me that I do not use all my muscles, and I just used the same muscles every day and it has become*

> *a routine, and I am not using other body muscles at all. So, I need to get out there and do some exercises* (P1, 50, F, Kenya)
>
> *I went to the doctor and he said I had to exercise to be able to get rid of my problem I had. I think when they told me that, I believe that is what made me think twice like I need to really be physically fit for my health* (P7, 40, F, Burundi)

Fear of deportation

Numerous participants described how the distress caused by fear of deportation had caused them to keep to themselves and limit their interactions and activities with people outside their community. Participants described how the perpetual fear of deportation led them to prioritise work and make as much money as they could while awaiting their immigration status application determination, leaving them with no energy or time to engage in PA.

> *All these things make you live in fear and you don't feel really settled here. So, you think of investing back at home in case anything happens to you here. Therefore, the focus is not really on physical activity participation* (P5, 44, M, Rwanda)
>
> *You do not want to waste time engaging in physical activity, and yet you do not know about tomorrow* (P1, 50, F, Kenya)

Cultural beliefs

Some of the beliefs originating from the participants' cultures, mainly the African cultures in this study, were reported to perpetuate the notion that PA participation was harmful or undesirable. For example, the belief that gaining weight is a sign of good health and success in life appeared to reinforce the notion that PA participation is harmful due to the association between regular PA participation and weight loss. Losing weight or having a slim body was

viewed as an undesirable outcome and the desire to have a big body over a slim body acted as a barrier to PA participation among the individuals from the African cultures.

> *It is true if you have a big belly back at home, it is associated to doing well and an office-based job which pays well. A big belly here is a big deal, but back at home, it is a status symbol that you are doing well in life. And that is why a man with a big belly back at home is more likely to attract attention from females more because he is considered to have a lot of money. Heads won't turn because you have a six-pack, or you are ripped, nobody cares. They will be like, that is a poor man* (P4, 40, M, Burundi)

Some cultural beliefs from non-African countries similarly appeared to propagate some stereotypes that negatively influenced PA participation.

> *Most of the time the women stay in the house to do household chores and look after the kids. It is more of a cultural thing. It is a bad thing if you don't attend to your family needs first* (P8, 29, F, Philippines)

Cultural norms and expectations and prioritising social and work commitments

Some of the cultural norms emanating from some of the participants' cultures, seemed to pose a great PA participation barrier. Many participants revealed that they were now regarded as wealthy individuals back in their countries because the belief that individuals residing and working in Europe are wealthy was a widespread belief embedded in their communities. There was an expectation for them to take care of both their immediate and extended family members, which meant that they had to work additional hours to meet such expectations or risk losing face in their community. Therefore, they found it quite challenging to meet such expectations and likewise engage in PA.

> *You know the type of pressure you face when you are told that some of your age mates from your village who live in Africa have bought land and built two or three houses while you the man in Europe have nothing to show. Imagine going back there and telling them that you don't own a piece of land, but at least you are physically fit? People will think that you are mad. That is why the focus is always on working extra jobs in order to buy things like land and build houses* (P5, 44, M, Rwanda)

The participants reported observing and fulfilling cultural norms as indispensable and more desirable than PA participation.

> *Like with our culture is very family-orientated and then you have to do your responsibilities first before something else* (P8, 29, F, Philippines)
>
> *I know that it is important to exercise, but I just don't see myself doing it because I have to work* (P2, 43, M, Kenya)

Some of the participants revealed that they construed job-related activities as PA participation substitutes.

> *I think my job is okay for exercise for me because we walk a lot and use our body. So, it is like I am exercising when I am working* (P11, 43, F, Thailand)
>
> *I thought my job was physical enough, and because I was not doing other physical exercises, I took my job as a physical exercise* (P1, 50, F, Kenya)

While most of the participants acknowledged the value of PA participation, they seemingly did not experience the same motivation and commitment towards PA participation as they did towards social and work responsibilities.

> *Well, I will say something about myself as much as I do not exercise; it is not because I do not want to. I have got issues with my body or problems which needs exercise, but I don't have the will power* (P1, 50, F, Kenya)

It appeared that some of the participants did not regard PA participation as pleasant or essential and consequently were not motivated to engage in PA.

> *I would rather drink during my free time than exercise. I don't want to lie; I don't even think of exercising* (P2, 43, M, Kenya)

Environmental barriers (physical and social)

Social and physical aspects of the environment were also reported as important determinants of PA participation. Physical-environmental factors such as the weather and the cost related to accessing PA facilities were reported as PA participation constraining factors.

> *It is cold, sometimes I think about the cold weather, everyone like warm weather, and I just want to be in the house and keep warm in the house* (P11, 43, F, Thailand)

Most of the participants reported that PA participation in their countries was generally free of charge. Thus, the notion of paying for PA participation, for example, paying for a gym membership, was unfamiliar to most of them. Adults' PA participation is not a high priority in their countries, and it is challenging for most of them to embrace the notion of paying to access PA facilities. It appeared that paying for PA participation was viewed as costly and to some extent, wasteful. Some individuals stated that they would only consider PA participation if it was free.

> *I think the first thing should be like free gyms. People want to go and try something different, but you have to pay, but I think if it is free people would go* (P4, 40, M, Burundi)

Social environmental factors were reported as PA influences that involved relationships with family members, friends, and people in the community where they lived. The PA

participation attitudes of family or close friends in the UK was highlighted as a critical determinant of PA participation among these participants.

> *When I first came, I was surrounded by people from my community who didn't know where the gyms were. Especially the women, they didn't even know where the gyms were because they never train. So, I came here, and I was just thinking of making money* (P7, 40, F, Burundi)

> *We want to meet our own. And you find that our own are also people that don't exercise and that reconfirms the idea of you not willing to exercise. As opposed to a person who met and made friends with people who exercise the first time, they arrived here like I did. Therefore, you find that people from our country arrive here and they just continue with the same culture of drinking and eating roast meat every time they are free as we do back at home. And chances are there won't be any urge to exercise* (P4, 40, M, Burundi)

The support from family members and friends, either as a source of motivation or as a strategy of addressing safety concerns, was also highlighted as a key facilitator to PA participation.

> *My friends and my family are very supportive of me to do exercise, and nothing can stop me from exercise if I have time. It is a bit difficult if you are married to a difficult man. They will bully you, you are not allowed to leave the house, and you need to cook and stay at home* (P10, 38, F, Thailand)

> *I have a lot of family here and for at least a few years it made it easy for me to actually settle down* (P8, 29, F, Philippines)

Other factors related to the social environment, such as unwelcoming locals, lead to avoiding PA facilities due to perceived fear and expectation of racial discrimination.

> *The locals always pick on you for no reason when they are drunk, and it seems that they always have an excuse to abuse you. You are different, and they make you feel you are different. They make you to feel withdrawn, they make you to feel isolated, they make you feel that you are not part of this society. So, you tend to stay indoors a lot. So, for you it is home, work, home, work, and family if you have one* (P5, 44, M, Rwanda)
>
> *Sometimes when I go to the gym, I just feel like people are looking at me, I don't know, as a black woman it is in my head that people are looking at me. Um maybe they are not, but that is how I feel. So, it reduces the number of times I go to the gym and sometimes I just do not want to go to the gym. Maybe it is just me, but I am very conscious of my race* (P7, 40, F, Burundi)
>
> *My race has been the main issue that has hindered my adaptation and also affected my physical activity participation. Let me tell you how, there is a park near my house, and I am telling you now that I can only go there during the day when it is bright, and everybody can see what I am doing. But there is no way I am going there in the evening or when it is dark. You know why? Whether or not there are other people in the park, if they are white, I will be the first suspect to be taken in by the police in case a crime is committed, or anything terrible happens in the park when it is dark. You know why? Because of my race. Sometimes I would like to exercise after work in the evening, but there is no way I am going to that park in the evening* (P3, 43, M, Kenya)

Social-environmental factors such as the duration of residency were likewise reported as vital in influencing how individuals accessed information related to PA participation and similarly vital in influencing change in negative attitudes towards PA participation that most of the participants reportedly carried from their countries. The participants associated their

residency in the UK with some factors that appeared to positively affect their attitudes towards PA participation. The UK was described as an environment that encouraged PA participation and increased length of residency in the UK was associated with experiences of positive behavioural and attitudinal changes. For example, the majority of the participants acknowledged that some of the negative attitudes and beliefs they held towards PA participation before relocating, and when they initially migrated to the UK had diminished over time, and their self-awareness concerning living a healthy lifestyle had increased.

> *When I left Jamaica, I wasn't training but it was always in me. But I think the longer you stay the more likely you are to participate in physical activity. Because we adapt, we are exposed to the news all the time about exercising, we watch the TV and know the things we can do to help ourselves* (P12, 33, M, Jamaica)

Other factors, such as the prevalence of positive PA behaviours within a social environment, were reported as vital determinants of PA participation.

> *Also seeing people jogging and being surrounded by people talking about going to the gym also makes you feel like I want to like, it motivates you to get some exercise* (P7, 40, F, Burundi)

> *I think one is likely to exercise the longer you live here. Maybe if they have a friend like me, they will go buy exercise gear and start doing exercise. Maybe they learn more from social media and stuff, they also are more likely to see people exercising, and that will make them want to exercise as well* (P10, 38, F, Thailand)

Discussion

The relationship between PA participation barriers among the BAME immigrants in the UK and the process of cultural, psychological, and social changes that occur during their adaptation into a new culture is still underexplored and is not clearly defined. The aim of this study was

to explore PA barriers among BAME immigrants living in one postcode district of a city in southern England using ~~a~~ the Socio-Ecological Model. It was found that the participants' PA participation were affected by multiple intrapersonal and social-environmental factors. Most of the factors that hindered PA participation in this study were experienced at the intrapersonal level. The participants reported intrapersonal barriers such as perception, cultural beliefs, cultural norms and expectations, social and work commitments and factors emanating from social and work commitments such as time constraints and fatigue, lack of PA motivation and deportation fear. These findings are consistent with studies that have explored the PA participation barriers of minority groups and demonstrated the considerable impact of intrapersonal barriers on BAME's PA engagement (e.g. Farooqi, 2000; Lawton et al., 2005; Williams et al., 2010), This study intended to build on these findings to highlight how intrapersonal factors impact those from BAME immigrant groups, who face unique challenges and experiences.

The findings demonstrate the role of cultural perceptions in constraining PA participation. For example, conceptualising PA participation as western culture discouraged PA participation among the participants. The results corroborate the findings of a great deal of the previous studies that have demonstrated the challenges posed by factors such as cultural perceptions on the health behaviours including PA participation of BAME (Ceria-Ulep, Serafica & Tse, 2011; Harley et al., 2009).However, in contrast to the other studies, viewing gym attendance as a strange cultural activity posed significant PA constraints to some participants. This may be because the participants in this study come primarily from low-income countries where PA facilities such as gyms are uncommon. Cultural perceptions of body shape and weight loss were described as substantial barriers to PA participation. For example, the preference for a bigger belly over a skinny body appeared to discourage PA participation among participants from subgroups that believed that being fat was a sign of

success. The findings are consistent with studies on minority groups that have shown that physical appearance and body shape preference can be a PA participation barrier (Im et al., 2012). Similarly, cultural perceptions appeared to have a meaningful influence on the participants' attitudes towards PA participation and their understanding of the benefits of PA participation.

The lack of exposure to PA participation and information about PA before migrating to the UK similarly seemed to profoundly influence the participants' insight about the psychological and physical advantages of PA participation. For example, the participants appeared not to acknowledge the role of PA participation in disease prevention. Participants in this study appeared to believe that their work-related activities were a replacement for PA participation. This finding is consistent with other studies on PA participation in minority groups, which indicate an absence of understanding of the advantages of PA (Pekmezi et al., 2013), and may have an important implication in developing interventions that are needed to address health disparities among BAME immigrants. A novel and an important finding of this study was the influence of the psychological distress resulting from the fear of deportation on some of the participants' behaviour towards PA participation. The finding adds to our knowledge about the impact that this fear has on PA and health and is consistent with findings from other studies that have demonstrated the substantial influence of the fear of deportation on immigrants' lives (Bekteshi & Kang, 2018; Becerra et al., 2015; Orrenius, 2013), Despite these previous research being predominantly on Latino immigrants in the United States, participants in these studies, similar to the current study, reported avoiding certain activities for fear of deportation. It appears that fear of deportation can lead to social isolation and a variety of health and social problems, and further work should address this related specifically to immigrant groups. Further research is also required to gain more

understanding of the influences of the fear of deportation on other health-seeking behaviours of BAME immigrants in the UK.

The critical role of social-environmental factors such as the support from family and friends in determining PA participation identified in this study was similar to discoveries from other studies that have identified lack of social support as a barrier to PA participation (Hardy & Grogan, 2009; Im et al., 2012), and adds to this in the context of immigrant groups. The attitude and beliefs of friends and family members in the UK seemed to play an integral part in determining PA participation of new immigrants from BAME in the UK. The participants' narratives suggested that new BAME arrivals in the UK tend to surround themselves with people from their countries of origin when they initially arrive in the UK, as they get accustomed to their environment. However, exclusively restricting their interaction to only individuals from their countries of origin appear to negatively impact their PA participation because they end up embracing similar attitudes and behaviours towards PA as their predecessors in the UK, which are frequently negative. This discovery highlights the meaningful role the attitudes and behaviours of the BAME populace who are already in the UK play in determining the PA participation attitudes and behaviours of new arrivals and future arrivals from their countries. The findings reflect those of Vaughn (2009) on Latin-American minority adults, which demonstrated the constraining effects resulting from the negative attitudes of people who are socially important to an individual on their PA participation. However, the impact of social support on adults' involvement in PA is not limited to minorities; it has been found to be equally significant in other adult populations (Lindsay Smith et al., 2017).

A combination of factors related to the physical environment and the social environment such as the perception of safety within one's neighbourhood and within PA facilities, the weather, PA subscription cost and length of residency, were reported as vital determinants of PA

participation. Safety concerns factors such as the expectation of discrimination, ~~and fear of physical attack~~ were described as PA participation barriers and appeared to mitigate outdoor PA participation among the participants substantially. For example, the reluctance to use the park in the evenings or when it was dark due to the expectation of racial discrimination. Expectation of discrimination have been shown to negatively impact PA participation rates among some BAME individuals (Bhatnagar, Shaw & Foster, 2015). Various studies have demonstrated the significance of the outdoor environment in encouraging or inhibiting PA participation among residents in their neighbourhoods (e.g. Boyes, 2012; Tucker-Seeley et al., 2009). The findings demonstrate the impacts of diminished public park use due to perception of safety on adults' PA participation, and are consistent with findings that demonstrate that perceiving the park as safe is positively associated with adult's park use and PA (Lapham et al., 2016 Han et al 2018). Another study similarly found that individuals who could access outdoor facilities reported higher PA participation rates than those who could not access such facilities (Choi et al., 2008). Wilcox et al. (2003) likewise found that higher perceived safety was a critical environmental factor that elicited an increase in PA engagement. The weather in the UK was also described as a factor that mitigated outdoor PA participation. The findings are consistent with studies that have shown that bad weather can adversely affect an individual's PA participation (Belza et al., 2006; Forkan et al., 2006). Many of the participants had previously lived in countries that are normally hot and humid, and the contrast between the cold weather in the UK and the weather in the countries where they had previously lived may have contributed to this barrier.

The findings suggest that the length of residency in the UK may have a positive impact on PA participation and BAME individuals who had lived in the UK for a considerable amount of time were likely to experience positive attitudinal and behavioural changes towards PA participation. The participants acknowledged that PA participation was highly prioritised in the

UK culture in comparison to their countries of origins. They furthermore attributed their experiences of positive behavioural and attitudinal changes towards PA participation to their length of residency in the UK.

Reflexivity and limitations

This study took an approach that has been used frequently in minority group research in the UK and used the term BAME to describe individuals from a diverse range of minority ethnic backgrounds. We acknowledge that using the term BAME to describe our sample is problematic and might suggest that our sample is a homogenous group. It is imperative to state that the term BAME was not used in this study to homogenise our sample. The lack of evidence from the BAME immigrant communities concerning the research question necessitated the requirement to have a diverse sample.

The first author is a black African male, and it is possible that his race and ethnicity might have influenced how the study was carried out. For example, the first author might have shown a bias by prioritising and emphasising the evidence provided by black participants, although steps were taken to bracket off his own personal experiences. Bracketing involved the first researcher discussing and writing down his personal biases and past knowledge and experience about the research topic with the second researcher and his peers during a presentation on the research project before the project began. The study sample likewise appears to demonstrate a bias towards black participants, especially Africans, perhaps reflecting that these participants were more comfortable being interviewed by the researcher. Additionally, the first author has worked as a sports coach for more than a decade, and his convictions and knowledge of the benefits of PA involvement, including his experience as a PA provider may also influence the interpretation of the findings. It is compelling to point out that using multiple coders from diverse backgrounds was a mitigation strategy applied to curb

bias emanating from the first author's background. The second author is a White British female and does not identify as BAME. However, as with all qualitative research, the researcher is part of the process and this subjectivity should be viewed as a feature rather than a limitation.

Recommendations

Most of the previous studies on PA participation barriers and facilitators on BAME in the UK have been on Muslims from the South Asian descent (Grace et al., 2008; Williams et al., 2010; Babakus & Thompson, 2012), and it appears that there are gaps in evidence of barriers and facilitators of PA among immigrant groups, and specifically individuals from African descent in the UK. Therefore, a recommendation is made for future studies to identify PA barriers and facilitators among African adults in the UK.

As a strategy of forming a better understanding of the barriers and facilitator of PA participation among BAME and to expose disparities and address more complex trends of disadvantage between the subgroups, future investigators should utilise clearly defined parameters for their targeted samples by recruiting individuals from BAME subgroups that share comparable social, cultural and contextual attributes instead of exploring BAME as a homogenous group comprised of individuals with similar social, cultural and contextual experiences.

Interventions aimed at increasing PA participation among BAME immigrants should seek for assistance and involvement of community leaders from these groups including the involvement of general practitioners and religious leaders. The strategy of involving individuals holding key leadership positions in the community in interventions aimed at promoting PA participation among minority groups have previously been found to be effective (Sbrocco et al., 2005).

The impact of deportation fear on PA participation among BAME immigrants was a novel and an important finding of this study. Therefore, a recommendation is made that local

organisations that specialise with immigration cases of individuals from BAME groups such as organisations that deal with asylum seekers and refugees should be engaged in promoting interventions aimed at alleviating deportation fear and promoting PA participation. A further recommendation is also made for future studies to further explore the influences of deportation fear on the health-related choices behaviours of BAME in the UK.

Exercise and health providers should increase their efforts in carrying out both mass media and social media PA participation campaigns explicitly targeting BAME groups. Efforts such as the provision of PA-related information highlighting the preventative benefits of PA can be a strategy of enhancing health literacy and a strategy of increasing PA information access.

Health and exercise providers should increase their efforts towards making the PA facilities more accessible to BAME immigrants. Efforts such as the provision of a free gym membership or low-cost gym membership subscriptions can be used successfully to address PA participation barriers related to gym membership subscription cost.

PA providers in the UK seem to overemphasise PA benefits related to body shape and body appearance in their advertisements. However, such benefits would appear to be unattractive to the BAME immigrants in this study. Therefore, PA providers should instead employ advertisement strategies that target and may appeal to similar populations such as increasing their emphasis in highlighting the non-communicable disease-prevention benefits of PA participation.

Conclusion

An interplay between intrapersonal and environmental factors was found to play an integral role in influencing PA participation of the participants. Therefore, any successful attempt to facilitate an increase in PA participation rates among BAME immigrants should be established on the understanding of the numerous components of the socio-ecological model:

intrapersonal social-environmental, and physical-environmental levels. The findings of this study can be used by health and exercise providers to formulate effective strategies for promoting PA participation among BAME immigrants in the UK and furthermore give more insights into what is currently known about the potential causes of PA barriers among these groups in the UK.

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Tables

Table 1

Participants' information.

Name	Country of origin	Age	Gender	Marital status	Number of children	Reason for migration	Education	Religion	Age at migration	Years of residency in the UK
P1	Kenya	50	female	married	3	Employment	Primary	Christian	30	20
P2	Kenya	43	male	single	4	Employment	Secondary	Christian	22	21
P3	Kenya	42	male	single	1	Academic research	Secondary	Christian	32	10
P4	Burundi	40	male	married	3	Political asylum	Secondary	Christian	20	20
P5	Rwanda	44	male	married	4	Political asylum	Secondary	Christian	23	21
P6	Philippines	28	female	married	1	employment	Secondary	Christian	23	5
P7	Burundi	40	female	married	1	Political asylum	University	Christian	20	20
P8	Philippines	29	female	single	0	To join parents	University	Christian	17	12
P9	Nepal	44	female	single	5	To join spouse	Primary	Christian	37	7
P10	Thailand	38	female	married	3	Marriage	Secondary	Buddhist	20	18
P11	Thailand	43	female	married	0	Marriage	Primary	None	33	10
P12	Jamaica	33	male	married	2	To join parents.	Secondary	Christian	19	24

Table 2: Interview questions.

Interview questions
Can you start by briefly telling me about your physical activity participation when you first arrived in the United Kingdom including the type of physical activity you engaged in and how frequently you engaged in physical activity participation then?
How would you describe your physical activity participation in the previous year and is there any contrast between the nature of your physical activity participation when you initially arrived in the United Kingdom and the previous year?
How would you describe your cultural experience in the United Kingdom/ England to this point?
How would you describe the influence of your cultural experience in the United Kingdom in the way you feel and behave towards physical activity participation?
Can you describe some of the factors that you think have facilitated or hindered your adaptation into the British society and how these elements have impacted your physical activity participation (How and why)? (E.g. beliefs, looks, character, language knowledge, gender, religion).
Are there any behavioural or attitudinal changes that you have seen in yourself since you began residing in the United Kingdom? If yes, do you think of the changes as positive or negative and what are the changes? Moreover, how have they impacted your physical activity participation?

Table 3: A summary of themes and sub-themes.

THEME	Sub-themes
Intrapersonal PA participation determinants	**Psychological factors** Perception, cultural norms and expectations, prioritising social and work commitments, lack of motivation and fear of deportation. **Physical factors** Bodyweight.
Environmental PA participation determinants (Social and physical)	**Physical-environmental factors** Facilities and neighbourhood safety concerns (Fear and expectation of discrimination-weather and subscription cost. **Social-environmental factors** Family and friend's support and attitude towards PA. Facilities and neighbourhood safety concerns (Fear and expectation of discrimination), Duration of residency and the behaviour of people in one's neighbourhood.

Figure 1

An illustration of how themes were generated.