EXPERIENCES, ATTITUDES, BARRIERS AND FACILITATORS OF PHYSICAL ACTIVITY AMONG FIRST-GENERATION SOMALI MIGRANTS AGED 40+ YEARS IN BRISTOL, UNITED KINGDOM

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ABSTRACT

Physical inactivity is a significant public health issue among adults and older adults from Black African and other racially minoritised groups, including the Somali community. Lack of physical activity is an important contributor to high levels of inequalities among the Somali community in Bristol. There is insufficient evidence on what works to improve physical activity levels among the Somali community. Therefore, this thesis aims to explore the experiences, barriers and facilitators of physical activity among adults and older adults from the Somali community in Bristol, United Kingdom. A systematic review of qualitative studies on the barriers and facilitators of physical activity among adults and older adults from racially minoritised groups was undertaken first to establish the scope and nature of existing evidence. An explanatory sequential mixed-methods approach involving a survey to determine physical activity levels among the target group and investigate awareness, barriers and facilitators of physical activity was subsequently undertaken. A follow-up qualitative study was conducted with ten members of the Somali community to further explore the critical issues identified in the survey. The findings from the research show that, although members of the Somali community in Bristol are generally aware of the health benefits of physical activity, there are important environmental, sociocultural and practical barriers that prevent them from engaging in physical activity. These factors range from lack of suitable outdoor spaces to lack of culturally appropriate facilities within the local environment. This study demonstrates the importance of designing targeted and culturally appropriate interventions to improve uptake of physical activity. Community-led initiatives can improve participation in physical activity among members of the Somali community. Findings also highlight the need for adopting a whole-systems approach to dealing with physical inactivity among racially minoritised communities.

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'Trust in the LORD with all your heart, and lean not on your own understanding. In all your ways, acknowledge Him, and He shall direct your paths' (Proverbs 3:5–6). These two verses of the scripture summarise my gratitude to God for always directing my path.

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Academic publication

1. Ige-Elegbede, J., Pilkington, P., Gray, S. and Powell, J. (2019) Barriers and facilitators of physical activity among adults and older adults from Black and Minority Ethnic groups in the UK: A systematic review of qualitative studies. *Preventive Medicine Reports*. 15, p. 100952.

Conference Presentations

1. Ige, J. (2021) Determinants Of Physical Activity Among Adults And Older Adults from the Somali Community in Bristol, UK. *8th International Society for Physical Activity and Health Virtual Congress*, Vancouver, Canada, 12-14October 2021.

2. Ige, J., Pilkington, P., Gray, S., and Powell, J. (2018) Barriers and facilitators of physical activity among Black and Minority Ethnic adults and older adults in the United Kingdom: A meta-ethnographic study. *7th International Society for Physical Activity and Health Congress*, Queen Elizabeth II Centre London, England, 15-17October 2018.

Other presentations

1. Poster presentation at the Bristol Somali Careers Fair on 30 March 2019.

2. Presentation at the Research Forum: Equality and Ethnic Diversity Amongst Older People 2 October 2019, Stoke Gifford Retirement Village, Stoke Gifford, Bristol BS16 1YF.

3. Presentation at the Centre for Public Health and Wellbeing Meeting 13 March 2019.

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CHAPTER 1: INTRODUCTION

1.1 Chapter overview

This chapter provides the context surrounding the research conducted in this thesis. It establishes the importance of investigating the experiences, attitudes, barriers and potential facilitators of physical activity among adults and older adults from the Somali community in Bristol. The chapter also provides the aims, objectives and structure of the thesis.

1.2 Physical activity

The World Health Organization (WHO) defines physical activity as any body movement requiring the expenditure of energy (WHO, 2021a). There is no doubt that physical activity is beneficial across the life span, and the evidence of the effectiveness of physical activity, particularly for adults and older adults, is consistent (Hartley and Yeowell, 2015; Cadore *et al.*, 2013). These benefits range from preventing and managing various forms of non-communicable diseases (NCDs) and risk factors to improving or maintaining muscle strength, balance, and flexibility in later adult life (Bherer, Erickson and Liu-Ambrose, 2013; Cadore *et al.*, 2013). There is also strong evidence linking physical activity to the promotion of positive mental wellbeing (Hartley and Yeowell, 2015; Mammen and Faulkner, 2013). Taken together, the benefits of physical activity are what make it to be considered a 'wonder-drug' (Chief Medical Officer, 2009) for health promotion and disease prevention.

The guidelines for physical activity in the UK recommend that adults aged 19–64 years should engage in at least 150 minutes of moderate-intensity physical activity per week or 75 minutes of high-intensity physical activity per week (Department of Health and Social Care, 2019). Adults are also encouraged to undertake muscle strengthening activities on at least 2 days a week. The guideline also recommends a reduction in the amount of sedentary time and a breaking up of long periods of inactivity with some form of light physical activity (Department of Health and Social Care, 2019). Several initiatives and campaigns have been successfully implemented in the UK to raise awareness of the benefits of physical activity and the dangers of sedentary living (Public Health England, 2021a). The recent COVID-19 pandemic has also demonstrated the importance of lowering one's risk factors for chronic diseases by engaging in physical activity and making healthier lifestyle choices (Sallis *et al.*,

2021). However, despite the widespread awareness of the importance of physical activity, uptake among the general public is low (Sallis *et al.*, 2021).

Insufficient physical activity is a global public health issue (NCD Alliance, 2016). Estimates from a worldwide study of trends in physical inactivity suggest that over a quarter of the adult population does not meet the WHO's minimum recommendation of at least 150 minutes of moderate-intensity physical activity (WHO, 2021a; Guthold *et al.*, 2018). In the UK, this figure goes up to 35.9% of the adult population (Guthold *et al.*, 2018). Estimates from the WHO (2021a) also suggest that women are more likely to be less physically active than men, with one in three women not meeting the WHO physical activity guidance compared to one in four men. This global trend is also observed in the UK, as data from the Department for Digital, Culture, Media and Sport (2020) show that in 2019, men were more physically active (65%) than women (61%).

Data on trends of physical activity levels in later life also suggest that people become less physically active when they are older (Suryadinata *et al.*, 2020). Generally, physical activity levels can decrease by between 40% and 80% among older adults (Suryadinata *et al.*, 2020). This can inevitably lead to an increase in the risk of developing long-term conditions. Several factors have been thought to be partly responsible for the decline in physical activity levels as people grow older. This includes loss of muscle mass and strength (Suryadinata *et al.*, 2020). However, other studies, such as Crombie *et al.* (2004) and Victor (2014), assert that fears about perceived ability to engage in physical activity could play a more influential role than the actual decline in strength. Other environmental factors, such as the accessibility of walking and cycling infrastructure for leisure-time activity and the lack of motivation or interest in engaging in physical activity, are vital considerations (Salvo *et al.*, 2018).

1.3 Prevalence and trends in levels of physical activity among racially minoritised groups

People from racially minoritised groups in the UK report disproportionately higher levels of physical inactivity than their non- racially minoritised counterparts. Data from the Department for Digital, Culture, Media and Sport (2020) show that compared to 24% of White British adults, 29% and 31% of Black and Asian adults were classed as inactive in 2019, respectively. A recent report from Sports England (2020) shows that adults from

Pakistani, Bangladeshi and Arab backgrounds are least likely to be physically active than any other ethnic group.

The high levels of physical inactivity among adults and older adults from racially minoritised communities in the UK is a crucial contributor to the widening social and health inequalities experienced by members of these communities. The prevalence of cardiovascular diseases, diabetes, hypertension and stroke are disproportionately higher among people from racially minoritised backgrounds in the UK (Emadian and Thompson, 2017; Stevenson and Rao, 2014; Khunti *et al.,* 2013; Tillin *et al.,* 2010).

The barriers to physical activity among adults and older adults from racially minoritised groups in the UK have previously been thought to be practical barriers similar to those of the majority UK population (Such *et al.,* 2016). These include lack of time, lack of motivation and childcare responsibilities (Emadian and Thompson, 2017). However, people from racially minoritised backgrounds experience peculiar sociocultural barriers, such as language barriers, fear of discrimination and religious barriers (Jepson *et al.,* 2012). The experiences of these barriers could vary depending on the specific subgroup of the racially minoritised population involved. Therefore, conducting research to understand and identify the obstacles to active living among people from specific racially minoritised groups should be a priority in designing effective interventions for such groups.

1.4 The Somali community in the UK

Somalis remain one of the largest migrant groups to have arrived in the UK within the last decade (Office for National Statistics, 2013), yet they are one of the most marginalised communities, with high levels of social and economic inequalities (Khan, 2008; Robinson and Reeve, 2006). Somalis in the UK predominantly reside in large cities, with London being the most popular destination on arrival to the UK. Other cities, such as Bristol, Cardiff, Manchester, Leicester, Sheffield and Glasgow, have well-established Somali communities (Fagioli-Ndlovu 2015; Communities and Local Government 2009).

The UK Somali communities experience disproportionately high levels of health inequalities, including a high prevalence of stroke, high blood pressure and diabetes (Jabłonowski*,* Abdi and Abdi, 2013; Gardner *et al.,* 2010). Most of the aforementioned health-related conditions have roots in unhealthy lifestyles and lack of physical activity,

albeit members of the Somali community in the UK do not give much attention to physical activity (McEwen, Straus and Ussher, 2008). There is very limited research on the determinants, barriers and facilitators of physical activity in this community.

The Somali community might only account for a small proportion of the UK population. Still, they are a rapidly growing racially minoritised community in the UK and have peculiar health needs worth investigating.

1.5 Background of the project

Several studies have investigated the barriers and facilitators of physical activity among adults and older adults in the general UK population, albeit there is insufficient evidence on the experiences, barriers and facilitators of physical activity among people from racially minoritised backgrounds. An umbrella review by Olanrewaju *et al*. (2016) identified nine systematic reviews which examined the barriers and facilitators of physical activity among older adults in Organisation for Economic Co-operation and Development (OECD) countries. The authors reported insufficient evidence on the experiences of physical activity among older adults from racially minoritised groups and recommended that future research aims to address this gap.

Existing research on physical activity among adults and older adults from racially minoritised communities in the UK is centred around the South Asian community (Bhatnager, Foster and Shaw, 2021; Curry and Thompson, 20014; Babakus and Thompson, 2012). There is far less evidence on people from Black African and Afro-Caribbean backgrounds. The reason for this is unclear and perhaps linked to the misconception that other groups, including Black Africans, are harder to reach (Liljas *et al.,* 2019). Racially minoritised communities in the UK are highly diverse and comprise people from various ethnic origins, including Arabs, Africans, Afro-Caribbeans and Asians (Duggal, 2014). Although this is not an exhaustive list of the cultural and ethnic identities of people from racially minoritised backgrounds, the broad classification of different ethnic groups under the umbrella term 'racially minoritised' or 'minority ethnic' or the now obsolete acronym, 'BAME' (Black, Asian and Minority Ethnic) can lead to a false assumption of homogeneity among a highly diverse cluster of groups (Duggal, 2014). In the context of physical activity research, it is dangerous to assume that findings from one subgroup of a racially minoritised group can be generalised across the whole racially minoritised population. This

can lead to an oversimplification of the problem and an underestimation of the scale and scope of barriers and facilitators.

A report by Sports England (2020) acknowledged that addressing the inequalities in physical activity among people from racially minoritised backgrounds will require a clear understanding of the diversity within and between different Black, Asian and racially minoritised adults. This underscores the rationale for this research. In particular, no study has examined the experiences of the Somali population towards physical activity in the UK.

An in-depth understanding of the experiences, attitudes, barriers and motives for participating in physical activity among adults and older adults from the Somali community would contribute to building evidence of what kind of interventions might work for the Somali community.

1.6 Research aims and objectives

In view of this background, this proposed study aims to investigate the experiences of physical activity, the barriers and facilitators of participation in physical activity among adults and older adults of Somali origin in Bristol, United Kingdom, and to discuss the implications of the findings for the development of interventions to promote engagement in physical activity.

The specific objectives of this study are:

1. To review the evidence on barriers and facilitators of physical activity among adults and older adults from racially minoritised groups in the UK;
2. To investigate the levels of participation in physical activity among adults and older adults aged 40+ from the Somali community in Bristol;
3. To explore the experiences and attitudes towards physical activity among adults and older adults aged 40+ from the Somali community in Bristol;
4. To understand the barriers and facilitators of physical activity among adults and older adults aged 40+ from the Somali community in Bristol;
5. To explore the role of culture, religion and wider environmental factors on participation in physical activity among adults and older adults aged 40+ from the Somali community in Bristol;

6. To discuss the implications of the findings for the development of interventions to promote engagement in physical activity among adults and older adults aged 40+ from the Somali community in Bristol.

1.7 Research questions

Main research question

What are the experiences of physical activity, and barriers and facilitators of participation in physical activity, among adults and older adults of Somali origin in Bristol, United Kingdom?

Sub-questions

1 What is the current state of evidence on the barriers and facilitators of physical activity among adults and older adults (aged 40+) from racially minoritised backgrounds in the UK?

2 What is the level of awareness of the importance of physical activity among adults and older adults aged 40+ from the Bristol Somali community in this study?

3 What are the barriers to physical activity among adults and older adults aged 40+ from the Bristol Somali community in this study?

4 What are the facilitators of physical activity among adults and older adults aged 40+ from the Bristol Somali community in this study?

5 What proportion of adults and older adults aged 40+ from the Somali community in this study meet the UK's recommended physical activity levels?

6 In what ways do religion and culture impact the decision to engage in physical activity among adults and older adults from the Somali community in Bristol in this study?

7 How does the built environment impact decisions to engage in physical activity among adults and older adults from the Somali community in Bristol in this study?

8 What can be done to increase physical activity levels among adults and older adults from the Somali community in Bristol in this study?

1.8 Research design

This research is guided by pragmatism, a philosophical movement that acknowledges the importance of both subjective and objective knowledge in addressing complex research questions (Tashakkori, Teddlie and Teddlie, 1998). Chapter 3 of this thesis presents a detailed discussion of the ontological and epistemological positions of this research.

In line with the pragmatist view that reality in social science research can be viewed from multiple perspectives (Creswell and Plano Clark, 2011; Tashakkori, Teddlie and Teddlie, 1998), a mixed-methods study was undertaken for this research. This involved conducting a systematic review of qualitative studies on the barriers and facilitators of physical activity among adults and older adults from Black African and racially minoritised groups. This was followed by an explanatory sequential mixed-methods design involving a cross-sectional survey of adults and older adults aged 40+ from the Somali community and ten follow-up interviews as part of the qualitative arm of the study. Further details of the methods are described in chapter 3 of the thesis.

1.9 The definitional challenge

1.9.1   Adults and older adults

One of the fundamental considerations of this study is the definition of adults and older adults. It is widely accepted that an individual is considered an adult legally at 18 years (Loeffler and Chalfin, 2017). However, psychosocial maturity is thought to be reached in the late 20s (Cauffman, 2012). There is no universal or globally agreed-upon definition of an older adult. Several studies in Europe and America have adopted the chronological age of 65 years to define an older person, while the United Nations uses a chronological age of 60 years (Kowal and Dowd, 2001). Albeit, interpretations of an older adult differ across various African communities. A WHO report shows that, in Africa, people aged 50 and above are referred to as older people (Kowal and Dowd, 2001).

This study was designed from a recognition of the importance of physical activity in preparing for later life among people from racially minoritised groups. Therefore, the researcher defines adults and older adults as people aged 40 and above. This definition is corroborated by the eligibility criteria for the National Health Service (NHS) Health Check,

which aims to prevent the development of chronic diseases among people aged 40 to 74 years (NHS Health Check Programme, 2016). This definition was also tested among a small group of Bristol-based Somali community members and the head of community improvement at the Bristol City Council. These individuals fed into public engagement consultation and confirmed the appropriateness of using this definition, especially as the Somali community in Bristol is said to be young.

1.9.2 Discussion on terminology for referring to people from minority ethnic groups

At the beginning of this research, there were debates about the use of the terms 'Black and Minority Ethnic' (BME) and BAME as being problematic in that they were seen as convenient labels placed on people without considering if the language was acceptable to the people concerned. BME/BAME was also seen to exclude White minority groups, including the Gypsy, Roma and Traveller communities, who are among the most deprived and marginalised communities. However, the lack of agreement on an appropriate terminology to replace BME/BAME meant that these terms were still being used. In this study, although the researcher had her own reservations about the lack of specificity associated with the use of the acronym BAME, the terminology was initially adopted due to its widespread use in the academic literature and its use at the university where the research was conducted. However, as the study progressed, significant developments signalled the possible end of the widespread use of these terms. First, the Commission on Race and Ethnic Disparities (2021) published recommendations in March 2021 that the UK government should stop using the term BAME. In this report, there was an acknowledgement that such terms were unhelpful in understanding the disparities across various ethnic groups.

Furthermore, investigations into racial inequalities in COVID-19 outcomes also served as a significant turning point, highlighting that the use of the acronym BAME did not help in understanding disparities in COVID-19 outcomes between ethnic minority groups (Equality Hub and Race Disparity Unit, 2021). The recommendation from this study was to refer to ethnic minority groups individually rather than as a homogenous group (Equality Hub and Race Disparity Unit, 2021). Following these events, the University of the West of England announced in January 2022 that it would drop the use of the acronym BAME and instead use more specific terms to describe people's ethnicities. A 2021 report from Birmingham

City University also highlights the need to change this terminology but acknowledges the lack of consensus on an alternative term (Malik *et al.,* 2021).

Other terms, such as 'people of colour' and 'minority ethnic groups', have been suggested as alternatives, but several issues have been raised about using such language. While the term 'people of colour' has been positively received for excluding the term 'minority', which is perceived to confer a subordinate status on non-White people, it does not address the lack of specificity (Aspinall, 2020; Milner and Jumbe, 2020). Simply put, the term 'people of colour' does nothing to address the false impression of homogeneity.

In this study, the terms 'BAME', 'minority ethnic' or 'ethnic minority' were replaced with the specific ethnic identities of various groups where appropriate. Where there was a need to discuss concerns across different marginalised ethnic groups in the UK, the term 'racially minoritised groups' was adopted. This term was preferred to 'minority ethnic groups', as it correctly reflects that people are minoritised by others rather than naturally existing as a minority (Milner and Jumbe, 2020). This description also reflects the researcher's position as someone from Nigeria, a country of over 200 million people on a continent of over 1.3 billion people; the researcher does not see herself or anyone with similar ethnicity as a minority but feels that minority status has been imposed by the society.

1.10   Structure of the thesis

This thesis comprises seven chapters. Chapter 1 presents the context and background of the research by discussing the importance of physical activity, the prevalence of inactivity among adults and older adults from Black, Asian and racially minoritised groups and the scope of the study on investigating physical activity among adults and older adults from the Somali community in Bristol. This chapter also outlines the research aims, the research questions and a summary of the methodology.

Chapter 2 provides an overview of the literature informing the research by expanding on the key components of the research questions. The main topics covered in the literature review include NCDs, physical activity and health, health inequalities among racially minoritised groups, physical activity among racially minoritised groups, the Somali community – their history, culture, migration to the UK and socioeconomic status. The chapter also discusses the Bristol Somali community, which is the target population for this

study. The literature review aims to critically explore the inequalities in the levels of physical activity among adults and older adults from racially minoritised groups and the Somali community in particular.

Chapter 3 outlines the philosophical paradigm underpinning this research and the methodological approach used to address the research questions. This chapter provides a detailed overview of the research designs of study 1, study 2 and study 3 conducted as part of this mixed-methods research.

Chapter 4 presents a meta-ethnographic review of the barriers and facilitators of physical activity among adults and older adults aged 40+ from racially minoritised groups in the UK (study 1).

Chapter 5 reflects on the findings from the meta-ethnographic study and establishes the rationale for conducting a cross-sectional survey to investigate the experiences of physical activity, barriers and facilitators among adults and older adults aged 40+ from the Somali community (study 2). This chapter also details the conceptual framework and methods informing the design of the survey. The chapter concludes by presenting the findings from the survey and discussing the importance of the survey findings.

Chapter 6 outlines the rationale, methods and findings of the qualitative study of the experiences of physical activity among adults and older adults aged 40+ from the Somali community in Bristol (study 3).

Chapter 7 presents a synthesis and integrates the key findings from study 1, study 2 and study 3 as outlined in chapters 4, 5 and 6 into recommendations. This chapter also presents a personal reflection of the research process, the challenges encountered and the personal development journey of the researcher.

Each chapter of this thesis begins with an introduction outlining the summary of the chapter and key content covered within each chapter. An outline of the thesis is presented in figure 1.1.

Chapter 1

Introduction

Chapter 2

Literature review

Chapter 3

Methodology

Chapter 4

Study 1- Meta-ethnographic review

Chapter 5

Study 2- Cross-sectional survey

Chapter 6

Study 3- Qualitative study

Chapter 7

Discussion and conclusion
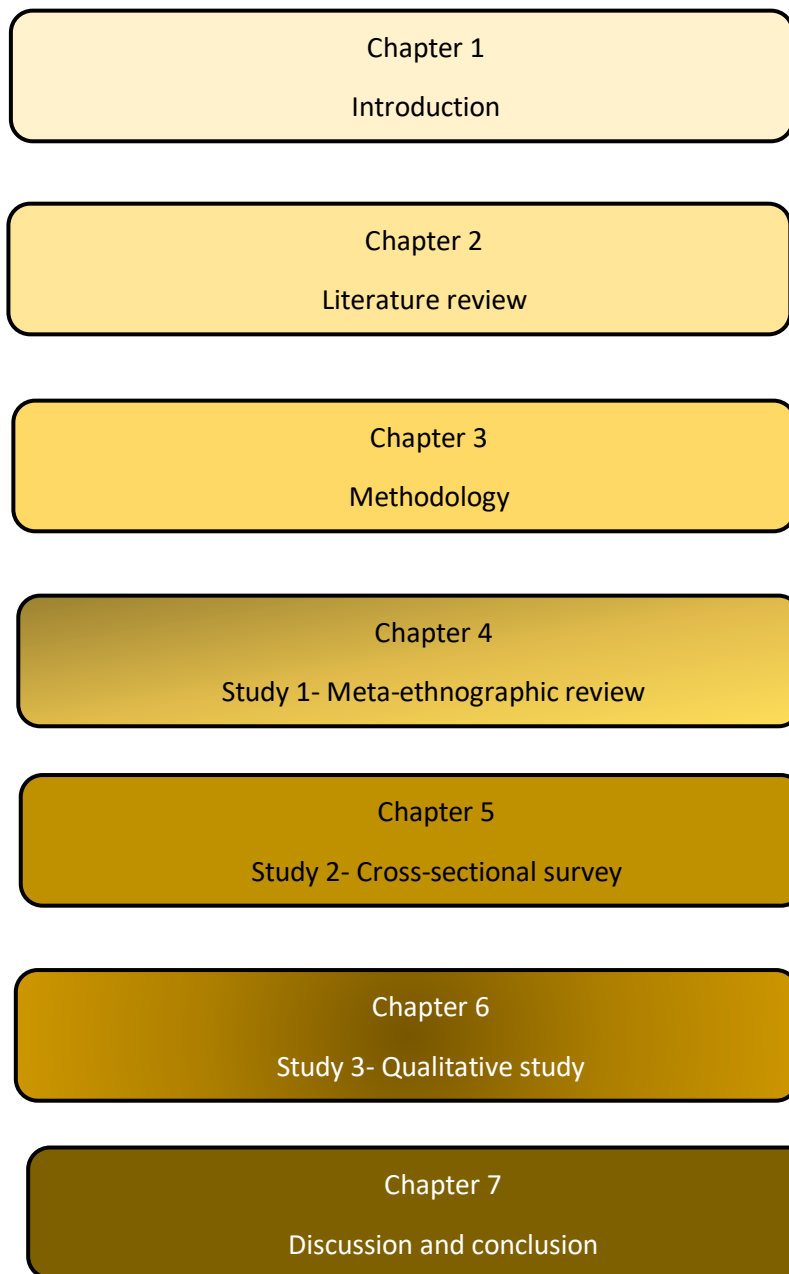
Figure 1.1 Outline of the thesis

CHAPTER TWO: LITERATURE REVIEW

2.1 Chapter overview

This chapter presents a robust discussion of existing literature on physical activity among racially minoritised groups in the UK. The chapter will begin by discussing the rising trend of NCDs globally and nationally and will discuss physical activity as a key risk factor for NCDs. The benefits of physical activity for adults and older adults will be extensively discussed, along with a discussion on the state of the evidence for physical activity among adults and older adults from racially minoritised communities. There will also be a discussion of the Somali community – their history, culture and health-related behaviour. Finally, the chapter will discuss the setting of this study (adults and older adults from the Somali community in Bristol, United Kingdom).

Peer-reviewed literature from various databases (Medline, CINAHL Plus, PubMed, ASSIA, Biomed Central, EMBASE, PsycINFO, Google Scholar) were thoroughly searched to produce a robust and comprehensive literature review. Grey literature was also searched for relevant reports, fact sheets and media releases from reputable national and international organisations.

2.2 The importance of Non-Communicable Diseases

The twenty-first century has witnessed significant shifts in the patterns of urbanisation, with over 74% of people from developed countries living in urban areas (United Nations, 2008). Global advancements in urbanisation and industrialisation contribute to economic growth but have well-known impacts on NCDs (Kuddus, Tynan and McBryde, 2020).

NCDs, also known as chronic diseases, are a leading cause of global morbidity and mortality (WHO, 2021b). NCDs were initially erroneously considered 'disease(s) of affluence' due to their high prevalence in high-income countries; however, this claim has been invalidated by data showing an increasing prevalence of NCDs across both developed and developing countries and social classes (Novotny, 2005). Additionally, poverty has been closely linked with NCDs (WHO, 2021b), which further invalidates the disease of affluence theory.

NCDs account for over 40 million global deaths per year, with cardiovascular diseases, cancer, chronic respiratory diseases and diabetes accounting for 80% of this figure (WHO, 2021b). Low- and middle-income countries (LMICs) bear a higher burden of the impact of NCDs, with 77% of global deaths occurring in these countries (WHO, 2021b). Several factors have been linked to the disproportionately higher burden of NCDs in the LMIC context, and these include poverty, rapid urbanisation, poor surveillance and monitoring systems, increased motorisation, high levels of pollution and inadequate healthcare systems (WHO, 2021b; Gouda *et al.,* 2019).

Given the continued drive towards urbanisation and the high prevalence of unhealthy behaviours, NCDs will most likely dominate the global health agenda for the foreseeable future (Cheema *et al.,* 2014). The rapid acceleration of NCDs has been fuelled by changing demographic patterns, in which people live longer but with disabilities and chronic diseases (Cheema *et al.,* 2014). There has been a 44% reduction in maternal mortality between 1990 and 2015 (WHO, 2016a) and an increase in the average life expectancy by five years between 2000 and 2015 (WHO, 2016b). The global population of people aged 60 and above is rising at a fast pace and is expected to double by 2050. The number of older people globally is expected to surpass the number of children by the year 2045 (International Longevity Centre, 2011). This has real implications for preventing and managing chronic conditions, which are more prevalent among older adults.

NCDs result in profound economic loss resulting from increased healthcare spending, productivity loss and prolonged disability (Muka *et al.,* 2015). By 2030, the cumulative economic loss arising from NCDs is expected to reach $47 trillion globally (Chand, 2012). At an individual level, NCDs can lead to reduced income and early retirement, which can lead to poverty. At the societal level, the burden of NCDs can put pressure on social care and welfare support, and this could result in absenteeism from school or work, decreased productivity and employee turnover (WHO, 2021b).

Data from the Centers for Disease Control suggest that about 85% of Americans aged 65 years and above have at least one chronic condition, while 60% have two or more chronic conditions (Centers for Disease Control and Prevention, 2017). NCDs are the leading cause of death and disability in the USA, with heart disease, cancer, chronic lower respiratory diseases, stroke, Alzheimer's disease and diabetes accounting for most of these deaths.

Chronic diseases and mental health conditions account for 90% of the $3.8 trillion annual healthcare expenditure in the USA (Centers for Disease Control and Prevention, 2017).

In Europe, diabetes, cardiovascular diseases, cancer, chronic respiratory diseases and mental disorders account for 86% of deaths and 77% of the burden of NCDs in the region. Among the six WHO regions of the world, the European region is the most affected by NCDs (WHO, 2014a). NCDs result in substantial economic costs of around €115 billion per annum, equivalent to 0.85 of the annual Gross Domestic Product (GDP) in Europe (European Commission, 2021). The population of older adults aged 65 and above in Europe is expected to increase from 87.5 million in 2010 to 152.6 million in 2060 (Council of European Union, 2013). Likewise, the population of those aged 80+ years is expected to almost triple from 23.7 million in 2010 to 62.4 million in 2060 (Council of European Union, 2013). This has enormous implications for the prevention, control and management of comorbidities, as people aged 65 and above are more likely to experience more than one form of NCD, resulting in increased healthcare and economic costs (Council of European Union, 2013).

The United Kingdom suffers a great deal from the burden of NCDs. NCDs are responsible for 89% of deaths in the UK (The Kings Fund, 2020). People with chronic diseases account for 50% of all General practitioner (GP) appointments and 70% of inpatient bed days in England (Department of Health, 2012). About 15 million people in England are estimated to be living with one or more chronic conditions (Department of Health, 2012). About 5.4 million people are being treated for asthma in England as of 2021 (Asthma UK, 2021). In addition, nearly one million people living in the UK have been diagnosed with Chronic Obstructive Pulmonary Disease (COPD), and an estimated two million cases are thought to be undiagnosed (Hall and Mindel, 2011; Association of Public Health Observatories, 2008). Since the 1970s, there has been a threefold increase in the incidence of cancers in the UK (Cancer Research UK, 2012), and, with an ageing population, a further increase is almost unavoidable (Department of Health, Macmillan Cancer Support and NHS Improvement, 2010). The economic cost of diabetes is predicted to reach £39.8 billion, and the direct cost to the NHS could rise from the current estimate of £9 billion to £17 billion by 2035 (Hex *et al.,* 2012). The health and economic impacts of NCDs described above underscore the importance of prevention and control of risk factors.

Budreviciute *et al.* (2020) classified the risk factors for NCDs as self-management, genetic factors, socio-demographic factors, healthcare systems and environmental factors. NCDs are also strongly associated with metabolic risk factors, which are factors that contribute to metabolic changes in an individual, which in turn increase the risk of NCDs (WHO, 2021b). The most important metabolic risk factors are elevated blood pressure, which accounts for 19% of global deaths, followed by obesity and raised blood glucose levels (WHO, 2021b). The risk factors for NCDs can also be classified as modifiable or non-modifiable factors (WHO, 2021b). While the non-modifiable risk factors, including biological factors and genetics, cannot be easily altered, modifiable risk factors are those that can be changed, and they account for nearly 80% of the most common forms of NCDs (WHO, 2021b). Modifiable risk factors include factors that can be influenced by changes in lifestyle and behaviour, such as diet, physical activity, tobacco use and alcohol consumption. (Beaglehole *et al.,* 2011). Air pollution has also been recognised as an emerging risk factor for several NCDs, including cardiovascular and respiratory conditions (Peters *et al.,* 2019). Social and structural factors, such as the quality of the physical and built environment and socioeconomic conditions, also play a crucial role in influencing lifestyle and health-related behaviours (Owen *et al.,* 2014).

A recent systematic review conducted to identify and investigate the impact of the most significant risk factors for five types of NCDs – cancers, coronary heart disease, stroke, diabetes mellitus and dementia – found that adopting a healthy diet could reduce the risk for all NCDs by 4% to 36% (Peters *et al.,* 2019). Similarly, the authors of the study also reported that physical activity could result in a risk reduction of between 13% and 45% across all five NCDs (Peters *et al.,* 2019). The study also reported that smoking could increase the risk of developing any of the five conditions by between 9% and 63% (Peters *et al.,* 2019). Other studies have reported that reducing the behavioural/modifiable risk factors for NCDs – tobacco use, unhealthy diet and physical inactivity – could prevent about 80% of type 2 diabetes, 80% of ischemic heart diseases and stroke and 40% of cancers globally (Cheema *et al.,* 2014; Habib and Saha, 2010).

2.3 Physical inactivity: A significant risk factor for NCDs

The benefits of physical activity have been well established for over a century, yet a quarter of the global adult population is insufficiently active (WHO, 2018). Physical inactivity remains a global health issue responsible for nearly five million deaths worldwide (WHO, 2018; British Heart Foundation, 2017). Rated as the 4th leading risk factor for mortality, physical inactivity accounts for 10% of the global burden of disease from colon cancer, 10% of breast cancer, 7% of type 2 diabetes and 6% of coronary heart disease (Lee *et al.,* 2012). Lee *et al*. (2012) reported that physical inactivity could be attributed to over five million of the 57 million global deaths in 2008. Reducing the prevalence of inactivity by 10% or 25% could result in over 500,000 and over one million averted mortalities per year, respectively (Lee *et al.,* 2012). Figure 2.1 shows a summary of some of the vital health benefits of physical activity, as illustrated by Public Health England (2019).
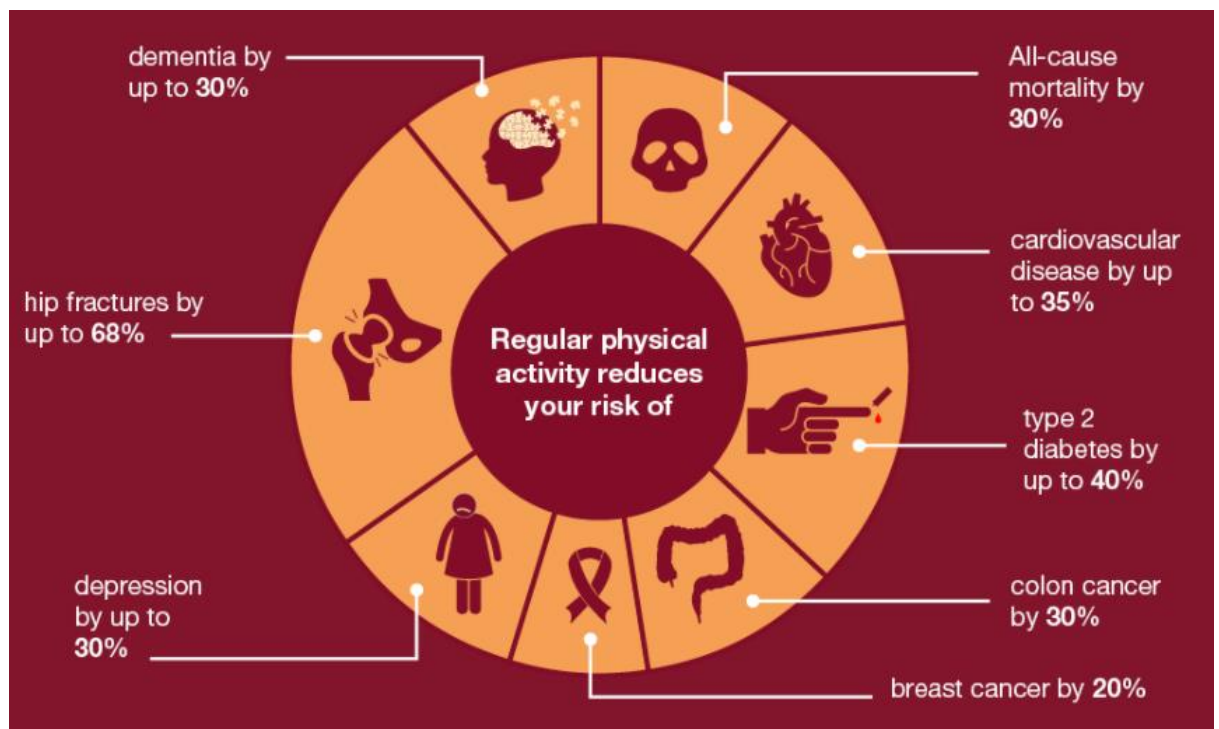
Figure 2.1 Summary of the key health benefits of physical activity (Public Health England, 2019)

Other wider social benefits of physical activity include improved sleep, self-efficacy, stress management, improved learning attainment and social interaction, amongst others (Public Health England, 2020). Although findings from studies on the wider benefits of physical

activity are mixed, with some reporting inconclusive results, the evidence on the effectiveness and cost-effectiveness of physical activity for the prevention and management of a range of NCDs is strong (Geidl *et al.,* 2020). Health promotion interventions targeted at raising levels of physical activity have been shown to be effective and highly cost-effective (Abu-Omar *et al.,* 2017).

The economic costs of physical inactivity in Europe are estimated to be €80.4 billion per year, equivalent to 6.2% of health spending across all European nations (NCD Alliance, 2016). This estimate is projected to increase to €125 billion by 2030 if no urgent intervention is implemented to reverse the current trend (NCD Alliance, 2016). In the USA, the direct cost of physical inactivity in 2000 was over $90 billion; this figure is also predicted to rise to $191 billion by 2030 (NCD Alliance, 2016). LMICs bear a disproportionately higher burden of physical inactivity and associated NCDs due to unhealthy lifestyles and sedentary living. However, other factors, such as violence and war, poor air quality and lack of suitable space for physical activity, have been reported as contributory factors to low levels of physical activity in the LMIC context (WHO, 2019; Adeloye *et al.,* 2017).

In the UK, around 20 million adults are not sufficiently active, and this amounts to nearly 40% of the adult population (British Heart Foundation, 2017). Physical inactivity is responsible for one in six deaths in the UK (Public Health England, 2019). Physical inactivity and sedentary living is estimated to cost the UK economy around £7.4 billion per year, and this includes nearly £1 billion in costs to the NHS (Public Health England, 2019). The levels of inactivity are higher among women, who are 42% more likely to be classed as insufficiently active compared with 34% of men in this category (Public Health England, 2019).

2.4 The relationship between physical activity and the built environment

The relationship between health and place dates back over a century (Bonnefoy, 2007). There is a wealth of evidence showing that the social and physical characteristics of neighbourhoods can have significant impacts on health in later life (Chaudhury *et al.,* 2016; Beard and Petitot, 2010). For instance, several studies have reported associations between elements of neighbourhood design and the risk of chronic diseases, mental wellbeing and behavioural outcomes, such as walking and cycling (Chaudhury *et al.,* 2016; Beard and Petitot, 2010; White, Wójcicki and McAuley, 2009).

Studies have also consistently reported positive impacts of living in a compact and connected neighbourhood on improved social interactions and improved physical activity levels via less structured forms of physical activity (Carver, Timperio and Crawford, 2008). Several other aspects of the neighbourhood environment, including perceived safety of the neighbourhood, availability of infrastructure to support physical activity and quality of the neighbourhood, have been identified as determinants of physical activity (Salvo *et al*., 2018, Wendel-Vos *et al.,* 2007). However, findings from studies investigating the impact of such features are not always consistent (Carver, Timperio and Crawford, 2008). For instance, a cross-sectional study investigating correlates of physical activity among women from low-income backgrounds and racially minoritised women age 20-50 years found that in some of the rural sites of the study, women who reported poor street lighting were more likely to meet physical activity recommendations than those who reported good street lighting. However, in some of the urban settings, such neighbourhood safety features were positive determinants of meeting physical activity recommendations (Eyler *et al.,*2003a; Eyler *et al.,* 2003b)

In the same manner, some studies have reported positive associations between neighbourhood safety and increased leisure-time walking (Giles-Corti and Donovan, 2002), while others did not find any associations (Hallal *et al.,* 2010; Kamphuis *et al.,* 2009; Ball *et al.,* 2007; Pikora *et al.,* 2006). One possible explanation for the inconsistency in the findings across these studies is the use of a composite measure that combines various safety components into one safety variable. Kramer *et al.* (2013) noted that such a combination could obscure the effects of individual variables. Another consideration is the difference between perceived safety and objective safety (recorded crime and nuisance). Perceived safety goes beyond the level of crime in an area and often includes a broader consideration of the social and physical environment (Putrik *et al.,* 2019). Findings from Giles-Corti and Donovan (2002) and Bailey *et al*. (2014) suggest that perceived neighbourhood safety is a strong determinant of physical activity, even after adjusting for objective markers such as neighbourhood crime.

Another important aspect of the neighbourhood environment is the infrastructure to support physical activity. Studies have reported strong associations between the availability of walking and cycling infrastructure and physical activity (Ogilvie *et al.,* 2007). The joint use of cycle and pedestrian lanes, often referred to as shared paths, has been

linked with safety concerns (Hatfield and Prabhakharan, 2016). Studies investigating the impact of lane demarcation for pedestrian and cycle lanes have reported mixed findings, but there are indications that such demarcation promotes walking and cycling (Hatfield and Prabhakharan, 2016; Verma *et al.,* 2016).

Overall, the existing evidence base linking the built environment and physical activity shows that despite the volume of research on this topic, there are some questions about the reliability and quality of the evidence base (Bird *et al.,* 2018). A qualitative study conducted in the USA to explore factors which influence levels of physical activity among women from low-income backgrounds and racially minoritised women aged 20-50 years found limited evidence on the effectiveness of environmental interventions in changing attitudes towards physical activity (Eyler *et al.,* 2002a; Eyler *et al.,* 2002b). Although the findings from this focus group study may not be generalisable to the UK context due differences in the demography studied, particularly as people from South Asian backgrounds who form a majority of the UK racially minoritised community were not included, the study makes a case for considering ways of improving the efficacy of environmental interventions to promote physical activity (Eyler *et al.,* 2002a; Eyler *et al.,* 2002b).

The over-reliance on self-reported data on exposure to green space and levels of physical activity means that there is tendency to either over-estimate or under-estimate data. In the study by Curry and Thompson (2014b), participants self-reported lower levels of physical activity via a validated physical activity survey tool compared with objectively measured data. There is also the issue of the validity and reliability of physical activity survey tools for people from racially minoritised groups. It is not always clear if people from racially minoritised groups are represented in validity and reliability studies of physical activity tools. For instance, in one of the survey tools, the EPIC-Norfolk physical activity questionnaire validity and reliability study, the authors were unable to establish that there was a reasonable level of diversity in the study population (Wareham *et al.,* 2002). Babakus and Thompson (2012) also identified a lack of standardised measures for physical activity among racially minoritised groups as a barrier to making comparisons across findings from various studies. It is therefore important to ensure that future studies investigating the links between the built-environment and health pay attention to issues like diversity and representativeness of the sample, employ reliable tools for data collection and are upfront about limitations in the study design including confounding variables.

2.5 Physical activity for adults and older adults

Older adults (≥60 years) account for over ten million of the UK population, and this corresponds to about 18.5% of the total UK population. By 2050, the population of older adults in the UK is expected to rise to 19 million (Cracknell, 2010). The rising population of older adults in the UK and worldwide underscores the importance of promoting active living. The current physical activity guidelines in the UK recommend that adults aged 19–64 should engage in at least 150 minutes of moderate-intensity physical activity per week or 75 minutes of high-intensity physical activity per week (Department of Health and Social Care, 2019). This is particularly important in preparing for later life.

Studies have shown that some older adults perceive physical activity to only be beneficial to the younger population (Schutzer and Graves, 2004; Burbank *et al.,* 2002); however, there is compelling evidence that the requirement for physical activity does not end in later life (Bherer, Erickson and Liu-Ambrose, 2013; Public Health Agency of Canada, 2011). Findings from longitudinal studies conducted among older adults demonstrate that engaging in regular physical activity can improve their capability to perform daily tasks (i.e. functional ability) (Cadore *et al.,* 2013; Blair and Wei, 2000) and cognitive ability (Bherer, Erickson and Liu-Ambrose*,* 2013). Physical activity has also been linked to the prevention of several risk factors and adverse conditions, including osteoporosis (McKenna and Ludwig*,* 2008), falls and fear of falling (Reid and Foster, 2016; Canning *et al.,* 2015), hip fractures (Feskanich, Flint and Willet*,* 2014; Lai *et al.,* 2013) and depression (Reid and Foster, 2016; Mammen and Faulkner, 2013). Several studies have reported associations between physical inactivity and loss of mobility and independence in later life (Franco *et al.,* 2015; Takagi, Nishida and Fujita, 2015; Horne, 2013).

Findings from a prospective cohort study conducted among over 400,000 adults and older adults who were followed for an average of eight years suggested that every additional 15 minutes of daily physical activity beyond the minimum amount of 15 minutes a day reduced all-cause mortality by 4% (Wen *et al.,* 2011).

In spite of the innumerable health and wellbeing benefits of physical activity to older adults, their participation and engagement are low (WHO, 2019). Self-reported data from the 2011 Active People Survey in the UK found that older adults are less physically active. Their participation in one form of physical activity (excluding walking) is about half of the

engagement rate among 30 to 44-year-olds (Department for Culture, Media and Sports, 2011). Objective accelerometer data from Health Survey for England also reported similar findings (British Heart Foundation, 2015). Compared to 83% of 18 to 24-year-olds who meet the physical activity recommendations, only 55% of people aged 55 to 74 and only 30% of those aged 75+ meet the UK physical activity recommendation (British Heart Foundation, 2015). The prevalence of physical inactivity is much higher among older adults and people from socially disadvantaged groups (Olanrewaju *et al.,* 2016).

2.5.1   Correlates of Physical Activity Among Older Adults

Evidently, there is an urgent need to address physical inactivity among people preparing for later life. The sharp decline in participation in physical activity in later adult life has been attributed to a few factors, including lack of knowledge of the benefit of physical activity, lack of access to facilities for physical activity, the layout of the built environment, lack of time and lack of resources (Hartley and Yeowell*,* 2015; Victor, 2014). While some positive determinants of physical activity including being of a younger age and being in good health have proved to be fairly consistent across studies conducted within the last two decades (Burton *et al.,* 1999; Eyler *et al.,* 2003; Kelly *et al.,* 2016;), others cannot be generalised outside the context of the study in which they were identified. For instance, King *et al*. (2000) identified that the presence of hills was positively associated with increased physical activity among older women. In contrast, Bethancourt *et al*. (2014) contended that the presence of hills is a barrier to participation in physical activity. These findings emphasise the danger of accepting inferences about perceived environmental barriers and facilitators of physical activity from individual cross-sectional studies that are context-specific. The barriers to physical activity vary considerably between and within different subgroups of adults and older adults (Wolin *et al.,* 2010).

A literature review conducted by the Women's Cardiovascular Health Network Project in the United States reported that social support was a positive determinant of physical activity among women Eyler *et al.* (2002c). However, a follow-on cross-sectional study by the same authors to investigate correlates of physical activity among women from low-income groups or racially minoritised women across rural and urban settings in the US, reported inconsistent findings on the role of social supports on levels of physical activity across various communities (Eyler *et al.,* 2003a; Eyler *et al.,* 2003b).

An umbrella review of 40 systematic review studies across OECD countries investigating the barriers and facilitators of physical activity among people aged 55 and above reported that social factors including support from family and friends and caring responsibilities were important determinants of physical activity (Olanrewaju *et al.,* 2016). The findings from Olanrewaju *et al*. (2016) also suggest that key barriers to physical activity include health status, lifestyle factors and attitudes towards physical activity, but the extent to which these factors are important depends on the population being studied.

Promoting active living and independence in preparation for later life should be a public health priority. In the UK, initiatives such as the NHS Health Checks for 40- to 74-year-olds exist to promote active ageing (NHS Health Check Programme, 2016). Other nationwide programmes, including Couch to 5K, Active 10 and the NHS diabetes prevention programme, were also developed to raise awareness about the importance of physical activity and improve physical activity levels among the general public (Public Health England, 2021a).

In 2014, the Everybody Active, Everyday national physical activity framework was published by Public Health England (2021a). This framework recognised the importance of creating active environments and changing the social norms to promote active societies (Public Health England, 2021a). Social marketing and advertising were the key drivers of the framework's goal to create active societies, and this seemed to raise awareness of the importance of physical activity (Public Health England, 2021a). A five-year review of the Everybody Active, Everyday framework suggests that the creation of media campaigns, such as 'This Girl Can', 'Active 10' and 'We are undefeatable', has helped with addressing inequalities by shifting the focus away from sports and exercise to behaviour change and active living (Public Health England, 2021a). This claim does not appear to be well supported by existing evidence. A report from the British Medical Association (BMA) suggests that, compared with the 23% national average, 34% of adults living in the most deprived areas of England were classified as inactive (BMA, 2019). This report also highlights that people with disabilities and long-term conditions were twice as likely to be inactive than counterparts without a disability. Findings from an evidence-based guidance on Inequalities in Physical Activity published by Public Health England (2021b) also showed high levels of inequalities among adults from Muslim and Hindu backgrounds (Public Health

England, 2021b). Clearly, there is a need to understand the reasons for these inequalities and identify effective strategies to address them.

2.6 Health inequalities among racially minoritised groups

The UK population is estimated to comprise over nine million people from racially minoritised backgrounds, and this corresponds to 14.4% of the total UK population (House of Commons Library, 2020). Racially minoritised groups are one of the fastest-growing demographic groups in the UK (Office for National Statistics, 2018a). The data comparing the UK's population demography between 2001 and 2011 show a reduction in the percentage of individuals identified as White British from 87.4% to 80.05%, while the percentage of people identified as Black African doubled from 0.8% to 1.8% within the same period (Office for National Statistics, 2018a). The actual population of people from racially minoritised backgrounds in the UK might be more than the estimated amount, as the data underpinning most projections is based on the 2011 census.

People from racially minoritised groups are not equally represented across the entire nation. Areas such as London has as much as 40% of its population from Black, Asian and other racially minoritised groups, while racially minoritised groups represent less than 3% of the Northern Island population (House of Commons Library, 2020).

People from racially minoritised groups experience poorer health outcomes than the general UK population (Emadian and Thompson, 2017; Stevenson and Rao, 2014). Health inequalities among racially minoritised groups in the UK follow a life course, with evidence suggesting that maternal mortality is four times higher among Black people (Office for National Statistics, 2020a). Though rapidly declining across all ethnic groups, infant mortality is highest among babies born into Black or Pakistani groups. Inequalities in childhood obesity levels have also been observed, with Black and Asian children accounting for a higher prevalence of childhood obesity (Marmot *et al.,* 2020). Studies have reported a comparatively higher prevalence of diabetes, cardiovascular disease and mental health issues among adults and older adults from racially minoritised groups relative to the general population. For instance, Tillin *et al*. (2010) estimate that about 50% of people of South Asian, African and Afro-Caribbean descent will develop diabetes by the age of 80. Other studies (Khunti *et al.,* 2013; Agyemang, Humphry and Bhopal*,* 2012; Wolfe *et al.,* 2002) have estimated that Africans/Afro-Caribbeans and South Asians are 2.5 times and

1.5 times more likely to develop stroke, respectively than the general UK population. A survey conducted in Bristol showed that life satisfaction was lower among racially minoritised people (63.3%) and in most racially minoritised communities compared with non-racially minoritised groups (73.4%) (Mundy and Bray, 2016). These findings show that the evidence of health inequalities among racially minoritised groups reported over 20 years ago in the National Survey for Minority Ethnic Groups (Nazroo, 1997) and more recently via the Health Survey for England (Sprotson and Mindell, 2006) has remained consistent.

Health inequalities among racially minoritised groups is closely linked to social and wider determinants of health, including social class, racism/discrimination, the built environment, education and employment opportunities (Marmot *et al.,* 2020; Otu, 2020). Structural racism in employment, housing and the criminal justice system has been identified as a key issue among racially minoritised groups in the UK, leading to adverse physical and mental health (Otu, 2020). People from racially minoritised groups are more likely to be in lower-paying jobs, and the rate of poverty among racially minoritised communities in the UK is double the rate of White groups (Marmot *et al.,* 2020; Weekes-Bernard, 2020). Higher poverty rates contribute to unhealthy lifestyles, such as inadequate nutrition, stress and lack of physical activity (Otu, 2020). Low levels of physical activity, particularly among racially minoritised groups, have been associated with a disproportionately higher level of health inequalities (Koshoedo, Simkhada and Van Teijlingen, 2009).

Roe, Aspinall and Ward Thompson (2016) recently conducted a study to investigate the disparities in health among diverse ethnic groups associated with the use of urban green space in England. The authors found that age and level of physical activity were significant predictors of health among the whole population. However, Afro-Caribbean people aged 65 and above reported the poorest health compared with other groups within the sample population. The study also found that physical activity levels were lowest among the Afro-Caribbean population. The authors recommended further studies to investigate and understand the role of socio-environmental factors, such as culture, gender and environment, on physical activity (Roe, Aspinall and Ward Thompson, 2016).

2.7 Physical activity among older adults from racially minoritised groups

The population of Black Africans living in the UK is small but growing at an ever-increasing rate. The figures from the 2011 census show that about 1.9 million of the 63 million people that live in the UK identified themselves as Black/African (Office for National Statistics, 2018b). Black ethnic groups are the third-largest ethnic groups in the UK, with a proportion of 3.3% of the UK's population (Office for National Statistics, 2018a).

Despite 2020 being marked by border closures and travel restrictions worldwide, an estimated 622,000 people migrated to the UK in mid-2020 (Office for National Statistics, 2020b). Migrants accounted for an estimated 14% of the UK population in 2019. Although this figure includes EU migrants, non-EU migrants account for the majority of the migrant population (Office for National Statistics, 2020b).

The age structure of racially minoritised communities in the UK is relatively younger than the general population. However, there is a growing population of adults and older adults from racially minoritised groups due to migration. Around 8% of people aged 60 and above in England and Wales are from racially minoritised groups (Office for National Statistics, 2018b). Historic migration accounts for the majority population of this figure.

Physical inactivity is a major public health issue among adults and older adults from racially minoritised groups in the UK. The rising prevalence of physical inactivity among racially minoritised communities could be attributed to extrinsic and intrinsic factors. Some of these extrinsic factors (e.g. motorisation, poor air quality) and intrinsic factors (e.g. lack of time and lack of motivation) are not peculiar to racially minoritised communities (WHO, 2019). However, people from racially minoritised communities tend to experience additional sociocultural barriers, including feelings of exclusion and stigmatisation (Roe, Aspinall and Ward Thompson, 2016; Such *et al.,* 2016; Higgins, 2008). Sedentary culture and traditions prevalent in a migrant's home country are also thought to contribute to inactivity among racially minoritised people who have migrated to the UK (Such *et al.,* 2016). It has been argued that migration from low-income countries to Western countries could westernise people's lifestyles, attitudes and behaviours, yet some traditional sociocultural and religious values remain unchanged among racially minoritised communities (Castaneda-Gameros, Redwood and Thompson, 2018; Such *et al.,* 2016).

Reversing the trend of low participation in physical activity among racially minoritised groups remains an integral part of the UK government's effort to address widespread health inequalities. Strategies such as 'Equally well' (Scottish Government, 2008) and 'At least five a week' (Department of Health, 2004) were designed to address some of these issues. However, the success of existing policies in promoting participation in physical activity among older adults from racially minoritised groups has not been evidenced by current physical activity trends. Knowledge of the barriers and facilitators of physical activity among adults and older adults from racially minoritised groups in the UK is fundamental to designing interventions and policies to promote physical activity (Koshoedo *et al.,* 2015).

Previous reviews have examined the barriers to participating in physical activity among older adults (Franco *et al.,* 2015). However, there is limited evidence on the barriers among adults and older adults from racially minoritised groups. Wolin *et al*. (2010) reported substantial differences in cultural perceptions of physical activity and barriers to engaging in physical activity among racially diverse groups. A Cochrane review of interventions aimed at improving sports participation in the general population reported a lack of evidence on the effectiveness of interventions implemented to promote healthy physical activity among ethnically diverse groups (Priest *et al.,* 2008).

Koshoedo *et al*. (2009) conducted a narrative review to investigate the barriers to engaging racially minoritised groups in physical activity in the UK. The authors reported insufficient evidence, and they linked this to the lack of evidence in the field or some limitations of their search strategy. A follow-up qualitative-evidence synthesis by Koshoedo *et al.* (2015) investigated the complex interplay of barriers to physical activity among people from racially minoritised groups aged 16 to 65 years in the UK. The authors identified issues around perceptions, cultural expectations, personal barriers and access to facilities as barriers to physical activity. This review, which included studies conducted between 1990 and 2012, employed a more robust search approach and assessed the methodological rigour of included studies. However, the inclusion criteria of the review comprised a wide age range and cannot be said to represent the views of people approaching later life. The authors of the review recommended the need for future research to consider sub-analysis by age. The study's authors were unable to explore opportunities to improve physical activity, as their focus was on barriers to uptake of physical activity.

Studies from other countries, such as the USA, have also reported similar concerns. For instance, the study by Henderson and Ainsworth (2003) was conducted to investigate the perceptions of physical activity among African American and American Indian women. The authors identified lack of social support as a key barrier to engaging in physical activity. The authors of this study interviewed 56 women from the target group and concluded that behavioural choices of individuals from racially minoritised groups in the USA seemed to be influenced by a combination of environmental, personal and cultural factors (Henderson and Ainsworth, 2003). Other studies conducted in the USA

As discussed in section 2.5.1, other American studies have reported similar barriers and facilitators. In the study by Eyler et al. (2003), the findings on the role of culture seemed to vary across different communities of racially minoritised people, with some communities reporting no association while others reported a significant association. The participants in the study were identified as African American, Latina, and White women from low-income backgrounds across rural and urban areas (Eyler et al., 2003a; Eyler et al., 2003b). The variation in findings suggests that the determinants vary strongly across type of settlement and across communities. This underscores the importance of investigating the determinants of physical activity within a distinct community rather than across multiple racial communities.

In addition, caution should be taken in interpreting the results of studies conducted outside of the UK, as the findings may not always be generalisable across racially minoritised groups. There might be considerable differences in the experiences of racially minoritised populations across different countries due to differences in migration history, identity and cultural beliefs. For instance, Dawson, Sundquist and Johansson (2005) reported that the length of time since immigration was a determinant of levels of physical activity among immigrant groups. While this might not be applicable to native indigenous populations who are perhaphs mostly affected by historical trauma from colonisation, other groups such as immigrants arriving the UK are likely to experience changes in their lifestyle which may vary over time as the length of time since migration increases.

An examination of existing evidence on the experiences, barriers, and facilitators of physical activity among older adults from racially minoritised groups suggests that there is far less evidence in the UK than in the USA (August and Sorkin, 2011). A mixed-methods

systematic review of levels of physical activity among women from South Asian backgrounds in the UK reported low levels of physical activity and this was linked to cultural and structural barriers while religion, and awareness about the benefits of physical activity and target amount were identified as facilitators (Babakus and Thompson, 2012). This study identified 26 quantitative studies and 12 qualitative studies of physical activity among South Asian women in the UK. This shows a growing amount of research on this community. However, there is far fewer empirical evidence among other racially minoritised groups in the UK including those from Black African communities.

2.8 The Somali community

2.8.1 Somalia

Somalia, officially referred to as the Federal Republic of Somalia, is the most easternmost country in mainland Africa (Abdullahi, 2001). Somalia is bounded by the Gulf of Aden to the north, Djibouti to the northwest, Ethiopia to the west, Kenya to the southwest, and the Indian Ocean to the east – figure 2.2. The country's capital, Mogadishu, is located north of the equator on the Indian Ocean. Somalia occupies an important geopolitical position between sub-Saharan Africa and countries in the Middle East (United Arab Emirates, Saudi Arabia) and southwest Asia (Sri Lanka) (Abdullahi, 2001).

The population of the country is estimated to be about 16 million. Although the country's population is relatively modest, decades of political divisions have marred its growth and stability (Guha-Sapir and Ratnayake, 2009). Like most African countries, Somalia has a history of colonialism – having been initially colonised by Britain and Italy in the early 19th century (Fagioli-Ndlovu, 2015). In the late 1980s, Egypt also occupied and seized part of the territory, but their hold over the province was short-lived, as the British and French forces pushed the Egyptians out of the land, paving the way for the French to establish a territory there (Fagioli-Ndlovu, 2015). Ethiopia also invaded Somalia in 1987 and claimed a portion of the land. Somalia gained independence from colonial rule in 1960 to form the United Republic of Somalia (Fagioli-Ndlovu, 2015). Between 1960 and 1969, Somalia's northern and southern regions were united under one government, but the unity was marred by a military coup, dictatorship and politically driven communal clashes. These events led to a series of cold and civil wars between 1988 and 1991. In more recent times, the country has also been faced with major terrorist attacks (Fagioli-Ndlovu, 2015).

Somalia operates a federal parliamentary system of governance, with the president as the head of the government and the prime minister appointed by the president to oversee cabinet activities (Fagioli-Ndlovu, 2015). The struggle for power and control over the region and the breakdown of the government in 1991 led to the declaration of two independent, autonomous states: the Republic of Somaliland in the north and the region of Puntland in the northeast (Guha-Sapir and Ratnayake, 2009). Although both self-proclaimed autonomous states formed their governments in 1991 for the former and 1998 for the latter, these factions are still unrecognised by the international community (Guha-Sapir and Ratnayake, 2009).

The word 'Somali' broadly refers to inhabitants of Somalia and people of Somali ethnic origin (Abdullahi, 2001). Islam is the predominant religion in Somalia, and the Somali language is the most widely spoken language (Guha-Sapir and Ratnayake, 2009). Culturally, Somalis appear to be homogenous in terms of religion and language; however, they are segregated into various clans and clan confederations (Abdullahi, 2001). These clans and clan confederations have been historically linked to political ambitions (Abdullahi, 2001). About two-thirds of the economy is based on agriculture, with nomadic farming considered the most dominant occupation. However, livestock farming in recent years has been threatened by droughts, famine and civil wars within the region (Guha-Sapir and Ratnayake, 2009).

The country is ranked as the second-poorest country in the world after Burundi based on the World Bank's 2020 Gross National Income data (World Bank, 2020). Nearly seven of ten Somalis are estimated to be living in poverty, with nine out of ten households lacking in at least one or more basic necessities of life, such as water, sanitation, education, electricity or access to income (Guha-Sapir and Ratnayake, 2009; Menkhaus, 2007). The life expectancy in Somalia is around 55 years for men and 58 years for women (Fagioli-Ndlovu, 2015). Several factors could be responsible for the low life expectancy in the region, including the spread of communicable diseases, lack of health infrastructure and the impact of persistent violence in the region (Menkhaus, 2007). The health infrastructure of the country is mainly inadequate. International relief organisations such as United Nations Children's Fund (UNICEF) and Médecins Sans Frontiers have been playing a significant role in providing essential health and wellbeing services that the government should have

offered, but the efforts of these organisations are constantly hindered by persistent violence in the region (Guha-Sapir and Ratnayake, 2009; Menkhaus, 2007).
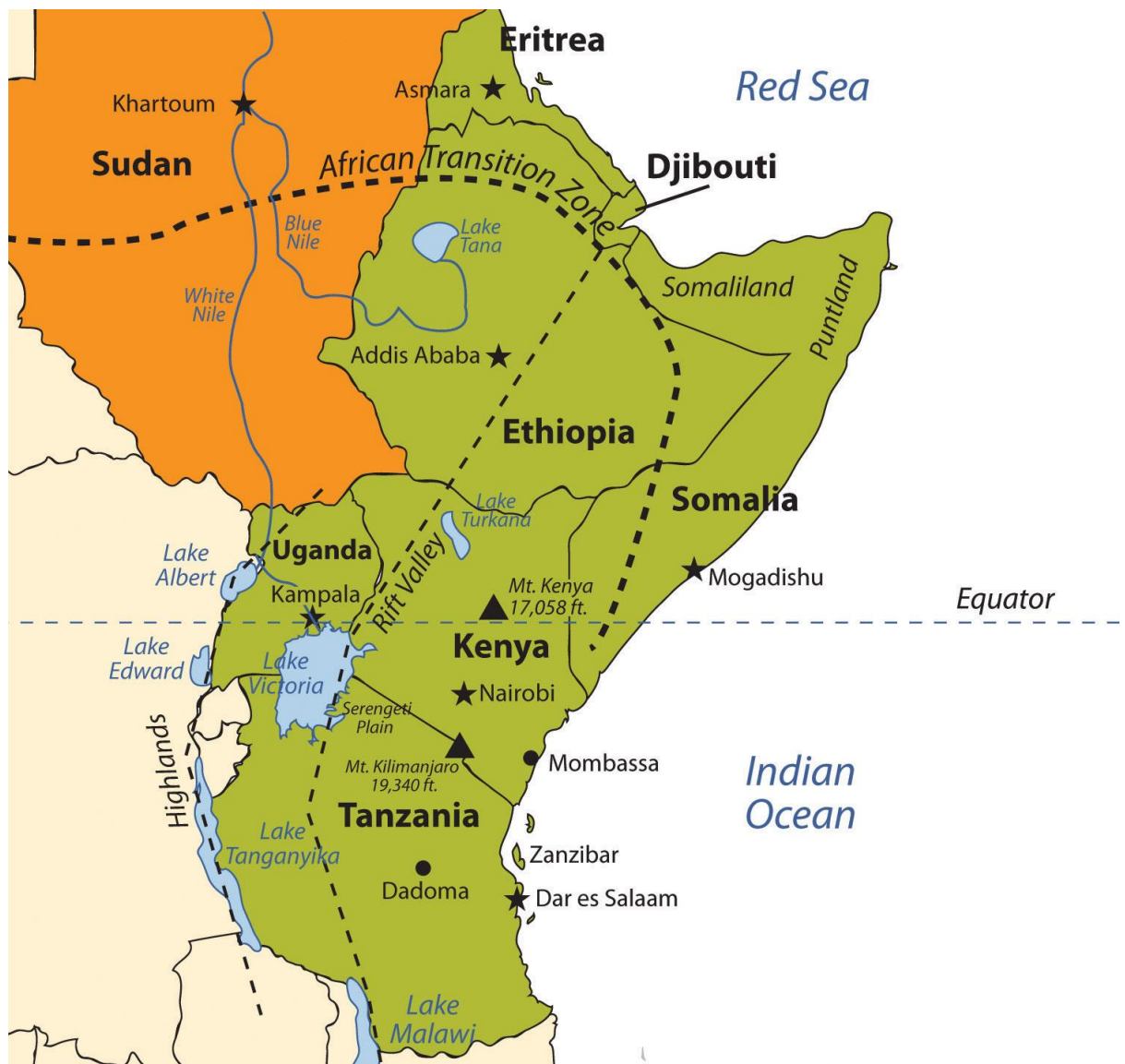
Figure 2.2 Map of East Africa showing Somalia

2.8.2   Migration to the UK

Somalis have been present in various European cities for many generations, but there has been a rapid increase in the population of Somali immigrants in Europe within the last two decades (Fagioli-Ndlovu, 2015). Fagioli-Ndlovu (2015) describes three waves of Somali migration into Europe. The first wave occurred during the colonial era. It was characterised as one in which the British and Italian colonial armies recruited Somali seamen to various destinations within and outside Europe. The second wave, which took place shortly after Somalia gained its independence in the 1960s, was characterised by the migration of Somali

elites and professionals primarily to the Gulf and oil-rich countries for employment opportunities. During this period, families of Somali soldiers migrated from Somalia to join the male Somalis in Europe. The third wave occurred during and after the civil unrest in Somalia, which began in the late 1980s. The root cause of migration during this third wave can be traced to a variety of adverse events ranging from political unrest, war and famine in Somalia (Menkhaus, 2007). These events profoundly affected the nation. Famine is considered to have contributed to over 300,000 deaths, while the civil, economic and political unrest was linked to the migration of over one million Somalis to neighbouring countries, including Kenya, Ethiopia and Yemen (Menkhaus, 2007). Those with access to resources found their way to Europe, Canada and the USA as asylum seekers. The adverse events also led to the displacement of over 300,000 Somalis who remained in Somalia (Menkhaus, 2007).

A report on present-day Somalis in Europe identifies three categories of Somalis living in European cities: refugees and asylum seekers who immigrated from Somalia as a result of the civil unrest; migrant Somalis who migrated from one European country to another; and people of Somali origin who were born in Europe (Open Society Foundation, 2015). The majority of the UK's Somali population comprises refugees and asylum seekers and their families, who have been arriving in the UK since the 1990s (Griffiths, 2002). Immigrants from the Somali community constitute the sixth-highest proportion of migrants (Office for National Statistics, 2013). Compared to the rest of Europe, the UK is believed to have the highest number of migrants from Somalia (United Nations Development Programme, 2009). An estimated 114,000 Somali-born immigrants live in the UK (Office for National Statistics, 2013). A report from the Office for National Statistics (2013) showed that about 250,000 Somalis reside in the UK. However, the actual population may be well above this figure, with reports indicating that there could be between 200,000 to 500,000 Somali-born immigrants in the UK (Communities and Local Government, 2009; APS, 2011).

London is the most popular destination for Somali migrants in the UK, and this is possibly due to a perceived abundance of unskilled/menial jobs for migrants (Fagioli-Ndlovu, 2015; Griffiths, 2002). London is also attractive for Somalis due to the already established community presence of Somalis in the city (Griffiths, 2002). Nearly 80% of Somali-born migrants are estimated to be living in London. There are also well-established Somali communities in Leicester, Sheffield, Cardiff, Birmingham, Bristol and Manchester

(Communities and Local Government, 2009). Although the Somali immigrants in the UK tend to live in clusters, forming distinct communities, they are not always homogenous, in fact, historical divisions and fragmentation as a result of clan segregation remain evident (Abdullahi, 2001). For instance, there are well over 100 Somali refugee community organisations in London alone (Griffiths, 2002). Reports about clan disparity have often been misinterpreted and used to 'label' the community as 'invisible' or 'hard to reach' (Griffiths, 2002).

2.8.3   Socioeconomic conditions of Somalis in the UK

The Somali community in the UK is reported to be one of the racially minoritised groups most affected by social and economic disadvantage (Robinson and Reeve, 2006). Among the migrant community in the UK, Somali-born migrants have the lowest employment rate (Fagioli-Ndlovu, 2015; Evans and Page, 2012). In terms of education, nearly half of Somali migrants in the UK have no formal educational qualifications, and only 3% have a higher education qualification (Fagioli-Ndlovu, 2015). Lack of educational qualification is thought to be partially responsible for the high levels of unemployment experienced among the Somali community, but unemployment is also exacerbated by structural racism and discrimination, a key issue experienced by members of this community (Fagioli-Ndlovu, 2015). The Somali group ranks highest among racially minoritised groups claiming benefits for unemployment support (Khan, 2008). There are also disparities in levels of education across genders, with Somali women reporting lower levels of education and lower English literacy than Somali men. Somali women also tend to be in lower-paid jobs than Somali men, although the picture is not significantly better for Somali men, who are reported to work extra-long shifts (Open Society Foundation, 2015; Communities and Local Government, 2009).

Somalis in the UK live within the most deprived areas of their cities. Overcrowding, poor housing and lack of access to facilities and services have been reported as vital socioeconomic issues affecting the Somali community in the UK (Fagioli-Ndlovu, 2015; Open Society Foundation, 2015; Communities and Local Government, 2009). Somalis are more likely to live in rented housing than to be homeowners. It is estimated that 95% of Somali-born adults in the UK live in rental housing, with 80% in social rental housing (Open Society Foundation, 2015).

2.8.4 Health inequalities among the Somali community

Health inequalities are inextricably linked to socioeconomic disparities. Given the high levels of socioeconomic inequalities among the Somali community in the UK, it is unsurprising that the Somali community is disproportionately affected by health inequalities. There are reports of high levels of obesity, high prevalence of smoking, type 2 diabetes and mental health issues among the Somali community in the UK (Jabłonowski, Abdi and Abdi, 2013, Gardner *et al.,* 2010; Straus, McEwen and Croker, 2007), and this is reflective of the situation in other European cities (Guerin, Elmi and Corrigan, 2007). A study conducted among the Somali community in New Zealand reported a higher prevalence of overweight and obesity in the Somali community (71.4%) than the general New Zealand population (49.3%) (Guerin, Elmi and Corrigan, 2007). Several studies conducted in the UK have reported inequalities in access to health services among members of the Somali community (Gardner *et al.,* 2010; Communities and Local Government, 2009). A recent qualitative study conducted to investigate the experiences of health and social care services among the Somali community in Birmingham uncovered essential issues affecting the health and wellbeing of the Somali community, including distrust in the health service, gaps in their knowledge about the healthcare system in the UK and language barriers (Healthwatch Birmingham, 2020).

People from the Somali community in the UK also experienced more adverse outcomes from the COVID-19 pandemic than those from non-racially minoritised groups (Public Health England, 2020). Somalis in the UK are also likely to have suffered more economically damaging impacts due to the lockdown. The vast majority of adults from the Somali community are unskilled workers (Fagioli-Ndlovu, 2015; Evans and Page, 2012), and unskilled workers experienced hardship from loss of employment due to the stay-at-home order (Otu, 2020). Thus, in addition to the negative economic impact, the COVID-19 lockdown could have further reduced the limited opportunities for physical activity within the Somali community.

Some of the key issues affecting this population's health and wellbeing include low health literacy, the effect of migration from Somalia and barriers to access and use of services (Healthwatch Birmingham, 2020; Open Society Foundation, 2015). Low health literacy has been linked to language barriers and levels of education (Healthwatch Birmingham, 2020);

however, clinicians have a role to play in creating awareness about healthy living and risk factors. Findings from a study investigating the experiences of health professionals in the management of type 2 diabetes among racially minoritised women from Muslim backgrounds suggest that health professionals are often reluctant to discuss healthy lifestyle changes with women from Muslim backgrounds (Grace *et al.,* 2008). The reluctance was reported to be linked to the health professionals' assumption of fatalistic beliefs within the community. Adequate training of health professionals to equip them with the skills and abilities to initiate such conversations would be beneficial (Grace *et al.,* 2008).

Migration from Somalia has been shown to affect healthy lifestyles profoundly. A qualitative study of Somali migrants in Australia revealed significant changes in dietary habits upon arrival in Australia. Some of the notable changes included increased consumption of processed foods and fast food (Burns, 2004). Culture and traditions could be plausible explanations for unhealthy dietary practices. For instance, McEwen, Straus and Croker (2009) undertook a focus-group study to investigate dietary beliefs and practices among the UK Somali community in London. This study involved 62 Somali adults who reported inadequate levels of fruit and vegetable consumption. This was linked to cultural beliefs that consumption of fruits and vegetables is associated with poverty, while consumption of meat is associated with affluence. Such views could persist even after migration to the UK, leading to the adoption of unhealthy food practices (McEwen, Straus and Croker, 2009).

Although there are limited studies investigating the barriers to access to and use of primary health services among the Somali community in Bristol, there are strong indications that a lack of awareness of services contributes to the gaps. A survey of the smoking prevalence of Somali migrants in the UK reported low awareness of smoking cessation services despite the high prevalence of smoking within the community (Straus, McEwen and Croker, 2007) Findings from this study suggest that there is scope to improve the reach, coverage and access of health services across a more diverse group of service users.

Majority of the studies conducted to investigate health inequalities among people from the Somali community have mainly employed qualitative designs (Healthwatch Birmingham, 2020; McEwen, Strauss and Crocker, 2009; Burns, 2004) This may be due to the need to elaborate on the nature of health issues experienced. There are also a few cross-sectional

studies (Strauss, McEwen and Crocker, 2007), a handful of reviews (Fagioli-Ndlovu, 2014; Evans and Page, 2012), but hardly any mixed-methods study. A mixed methods study on physical activity that combines a quantitative and qualitative element would help determine the extent of inequalities as well as expand on the experiences, attitudes and barriers to physical activity among members of the Somali community.

2.9 Study context: The Bristol Somali community

2.9.1   Bristol population profile

Bristol is one of the most rapidly growing cities in England, with an estimated population of around 460,000 people (Bristol City Council, 2018). Bristol is the largest unitary authority in the West of England by population but the smallest by geography. Bristol is also regarded as the economic and cultural hub of the West of England (Quartet Community Foundation, 2014). The city is situated in the southwest region of England, bordered by Gloucestershire to the north and Somerset to the south (figure 2.3) (Quartet Community Foundation, 2014). Bristol is the eighth-largest city in England and has a relatively young profile, with a median age of 32.7 compared with the national average of 39.9 years in England and Wales (Bristol City Council, 2018). Bristol's population is estimated to have grown by 11.5% since 2007, which is higher than the national average of 8%. The population of Bristol is projected to increase by 9.2% to 498,100 by 2026 (Bristol City Council, 2018).

Bristol is a diverse city with residents from over 187 countries (Bristol City Council, 2018). Around 16% and 28% of the adult and child populations are from racially minoritised communities, respectively (Bristol City Council, 2018). The racially minoritised population in Bristol is mainly clustered around the inner city region and eastern region. As much as 31% of the population of Bristol inner city are from racially minoritised backgrounds (Bristol City Council, 2018). A survey of Bristol's demographic data conducted in 2011 revealed that around 15% of people living in Bristol were born outside the UK. Poland was the most prevalent country of birth of non-UK–born residents, followed by Somalia (Bristol City Council, 2014). This probably explains why English, Polish and Somali are the top three languages spoken in Bristol (Bristol City Council, 2014).
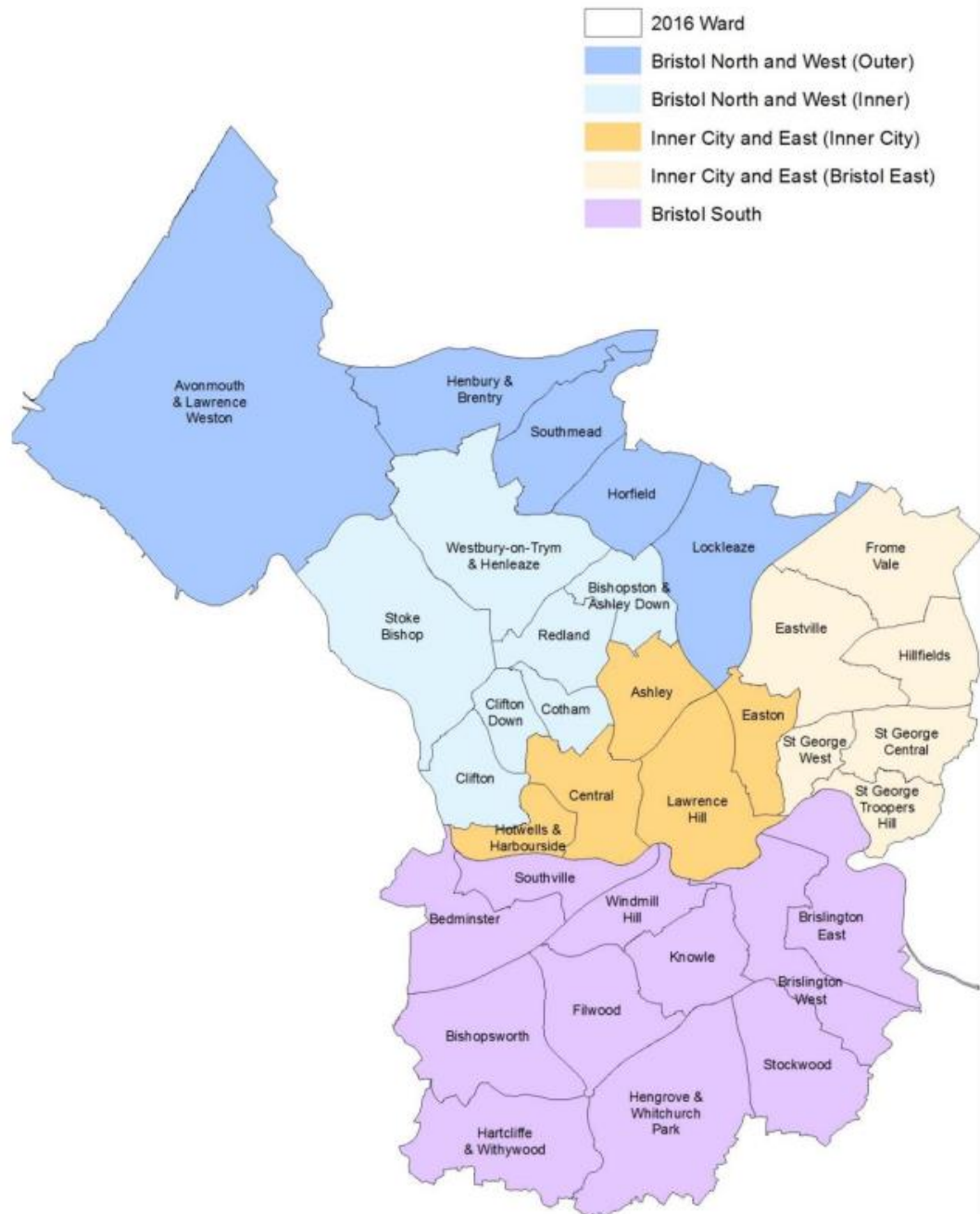
Figure 2.3 Map of Bristol; source: Bristol City Council (2018)

2.9.2 Bristol health profile

Bristol is one of the 20% most deprived unitary authorities in England, with about 23% of children living in low-income households (Public Health England, 2017). Bristol has 42 lower super output areas (LSOAs) in the most deprived 10% in England (Bristol City Council, 2019). Although there has been an increase in the life expectancy in Bristol in the last ten years, with an overall increase in 1.9 years for men, who are expected to live up to 78.8 years, and 1.7 years for women, who are expected to live up to 82.8 years, the life expectancy for men remains below the national average (Bristol City Council, 2018). There are also important

disparities in the life expectancy figures by the level of deprivation. Between 2014 and 2016, the gap in life expectancy between the most deprived 10% and the least deprived 10% in Bristol was 7.4 years for females and 9.5 years for males (Bristol City Council, 2018).

Compared to the other large cities in the UK, Bristol has lower levels of deprivation and has moved from being the 55th most deprived local authority in 2015 to the 60th most deprived local authority in 2019 (Bristol City Council, 2020). However, there have been few changes in the pattern of deprivation of Bristol, with some prominent 'hotspots' of deprivation in the inner city and eastern region (Bristol City Council, 2019).

There are stark inequalities in the socioeconomic and health profiles of residents of Bristol by ethnicity (Bristol City Council, 2018). People living in the most deprived areas of Bristol are more likely to experience poorer mental health, higher prevalence of smoking and higher levels of physical inactivity than those in less deprived areas (Mundy and Bray, 2016). Fear of crime and antisocial behaviours has also been reported as a crucial issue linked to high levels of deprivation in Bristol (Bristol City Council, 2018). People from racially minoritised groups make up the highest proportion of people struggling financially in Bristol. Fewer children from Black or Black British (46%) backgrounds in Bristol achieve the expected academic goals compared to White children (64%) (Bristol City Council, 2018).

2.9.3   The Somali community in Bristol

The Somalis are the second-largest migrant group in Bristol after the Polish community (Bristol City Council, 2014). It is estimated that at least 10,000 Somalians currently live in Bristol (Bristol City Council, 2014). However, there are indications that this number could be as much as 20,000. The Somali community is a rapidly growing community in Bristol, with a high birth rate of 5.1% of all births in the city. Bristol is the fourth-highest city of birth of Somalis in the UK (Bristol City Council, 2020).

The Somali community in Bristol is mainly clustered around the central and eastern parts of the city, mainly in Barton Hill, St George, Lawrence Hill, Ashley and Easton. The map below shows the area of residence of Somali schoolchildren attending Bristol local authority schools (figure 2.4). It is important to note that not all people who identify as members of the Somali community in Bristol come from Somalia. Indeed, there are people from different geographical areas in East Africa, including Ethiopia, Yemen and Djibouti,

who consider themselves to be members of the Somali community in Bristol and share a similar culture, language and religious practices (Bristol Ageing Better, 2019).

Although it is claimed that the Somali community in Bristol is not as divided by tribalism and geopolitical clans as those living in other areas of the UK, including Liverpool and London (Robinson, Dave and Cole, 2003), this does not imply that the Somali community in Bristol are a homogenous group. A report on Somali tribalism in Bristol suggests that this issue has still permeated into the Bristol Somali community. There are perceptions of superiority by certain community members depending on the tribe one is associated with (Bristol Museum, 2021). Therefore, Robinson, Dave and Cole (2003) conclude that clans and tribes might not reflect the modern-day reality in Bristol, as there might have also been a change in the geopolitical diversity of the Somali community in Bristol following the publication of this report in 2003.
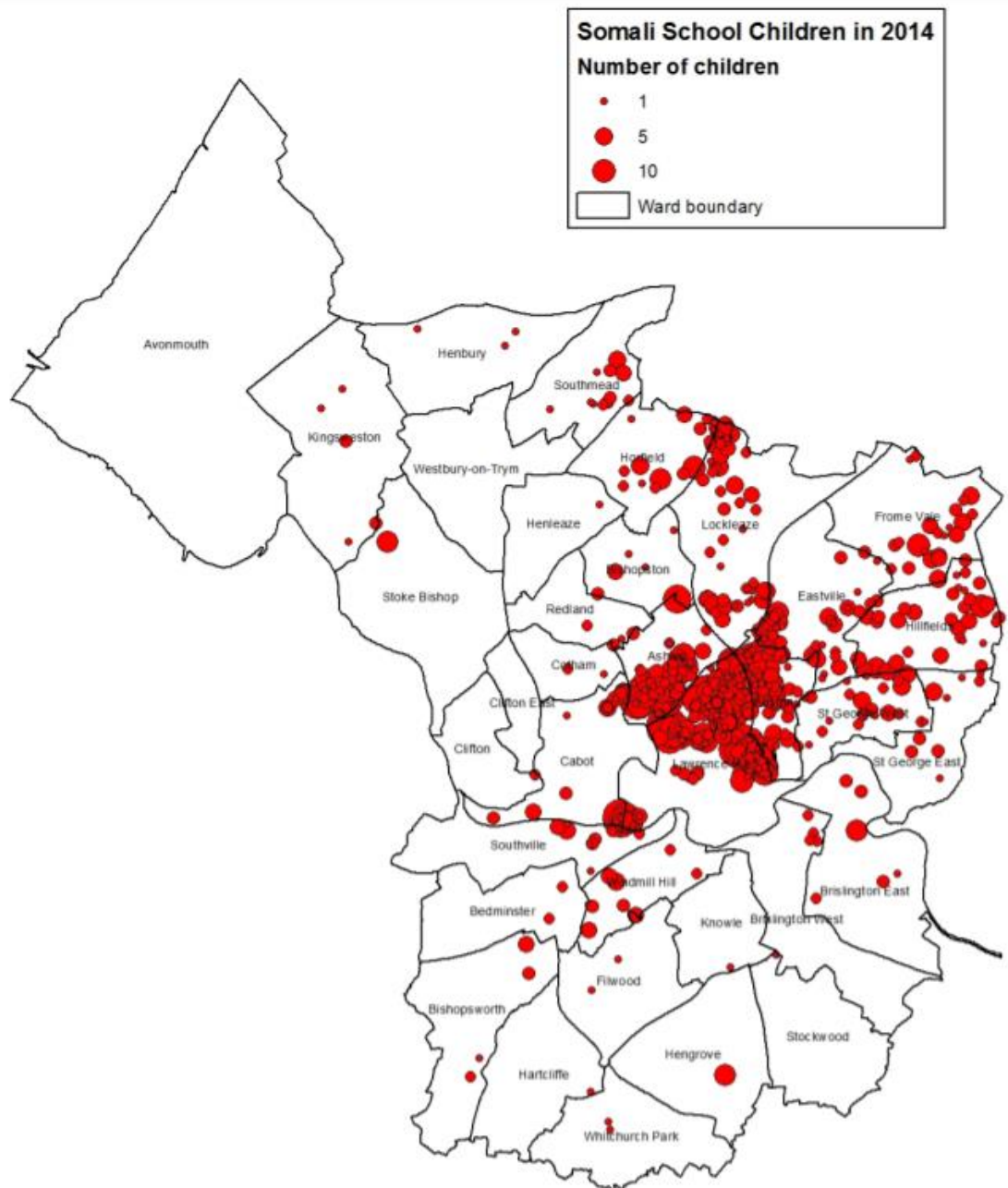
Figure 2.4 Map of Bristol showing where Somali schoolchildren live; source: Bristol School Census, Bristol City Council (2014).

Culturally, men in the Somali community carry the economic burden of the family, while women are required to engage in daily chores, including cleaning, cooking and childcare (Bristol City Council, 2019). Morey and Eagle (2011), in their study of diet among racially minoritised groups, reported that it is not culturally 'ordained' for Somali men to cook. The expectation that women are homemakers and should be responsible for executing household chores and tasks is prevalent among racially minoritised societies (Darr, Astin and Atkin, 2008; Khanam and Costarelli, 2008). Grandparents and older Somali women are

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expected to live in their sons' houses and look after their grandchildren (Bristol Ageing Better, 2019).

The Somali community in Bristol encounters numerous health-related challenges linked to lifestyle and migration (Hall, 2012). There are reports of a high prevalence of diabetes, high blood pressure and tuberculosis among the Bristol Somali community (Jabłonowsk, Abdi and Abdi, 2013). People from Somali backgrounds experience dramatic changes in lifestyle following immigration, some of which might be responsible for the high rate of sedentary living observed, especially among women and older adults (Porter, 2002). Kinzie *et al*. (2008) reported that the prevalence of diabetes and hypertension among Somalians is rising. The evidence linking diabetes and high blood pressure with poor diet and inadequate physical activity is advanced (Cleven *et al.,* 2020; Figueira *et al.,* 2014). Although very little is known about levels of physical activity among the Somali community in Bristol, a report on dietary behaviours of people from racially minoritised groups in Bristol alludes to a high salt intake, high consumption of processed foods and low consumption of fruits and vegetables (Morey and Eagle, 2011). This is congruent with findings from McEwen, Straus and Croker (2009), which reported low levels of fruit and vegetable consumption among the Somali community in London.

Tuberculosis, another prevalent condition among the Somali community in Bristol, is also linked with living conditions, particularly overcrowding, malnutrition and hygiene practices. Overcrowding is a key environmental issue affecting the Somali community (Robinson, Dave and Cole, 2003). Many of the households in which people from the Somali community live are severely overcrowded, and this negatively impacts the health and wellbeing of residents of such accommodations (Jabłonowski, Abdi and Abdi, 2013; Robinson, Dave and Cole, 2003).

Female genital mutilation (FGM) is also a key issue affecting the Somali community in Bristol (Karlsen *et al.,* 2019), as with the wider UK Somali community. Several studies have been conducted to highlight the scale of this issue (Larsson *et al.,* 2018; Moxey and Jones, 2016), and for a long time, the issue of FGM among the Somali community has fuelled negative media narratives about the community.

Mental health issues are also a common problem reported among the Bristol Somali community (Bristol Ageing Better, 2019). An ethnographic study conducted among Somalis

in Bristol identified stress and mental health as key issues affecting wellbeing (Jabłonowski, Abdi and Abdi, 2013). This issue has been linked to unemployment, low income and working long hours (Jabłonowski, Abdi and Abdi, 2013). High levels of stigma about mental health issues often make people from the community unwilling to recognise the issue and unable to access help. However, there are also concerns that the mental health services are not culturally appropriate, and this is considered to be a barrier to the use of such services (Bristol Ageing Better, 2019). Whilst physical activity has been shown to play a secondary role in managing stress and delaying the onset of mental health issues (Ströhle, 2009), there is very limited evidence of engagement in physical activity among the Somali community in Bristol.

Culturally, swimming is a form of activity that seems to appeal to people from the Somali community due to the abundance of beaches, lakes and rivers for swimming in Somalia (Bristol Ageing Better, 2019). However, studies on barriers to physical activity among people from Muslim backgrounds from racially minoritised groups have identified numerous concerns about the lack of culturally appropriate facilities to encourage swimming among Muslim women. As the Somali community is a majority Muslim community, they are more likely to experience such barriers. As a traditionally nomadic community, walking is also considered a natural form of exercise in Somalia. Therefore, people may retain this form of lifestyle upon migration to the UK, but a report from Bristol Ageing Better (2019) identified low levels of engagement with outdoor activities among Somali women in Bristol. Considering that the climate and weather in Somalia are very different from the UK climate, there are indications that walking may be unattractive, especially in colder winter months. Very little is known about the cultural acceptability of various other forms of physical activity within the Somali community in Bristol. It is important to understand such issues to design culturally appropriate interventions.

2.9 Summary of literature review

In summary, the literature review has established the public health importance of physical activity by highlighting its links to NCDs. The chapter also discusses health inequalities and inequalities in the levels of physical activity among people from racially minoritised communities. The chapter finally provides a robust discussion on the history, socio-

demographic characteristics, profile and context of the target population of this study, the Somali community.

CHAPTER THREE: METHODOLOGY

3.1 Chapter overview

This chapter outlines the theoretical basis for this research and discusses the methods employed to investigate the barriers and facilitators of physical activity among adults and older adults from the Somali community in Bristol.

The chapter begins by providing an overview of the importance of a research paradigm. It further elaborates on pragmatism, its historical evolution and fundamental principles. The chapter also presents an argument for adopting a mixed-methods research design underpinned by the philosophical assumptions of pragmatism. This is followed by a critical discussion of the features and characteristics of mixed-methods study design. The chapter concludes by presenting an introduction to the phases involved in this research and an overview of the methods employed for each phase.

3.2 Philosophical paradigm

Although the theoretical assumptions and philosophical paradigms underlying most research are implicit, these assumptions influence how research is conducted (Creswell, 2014). A research paradigm represents the ontological, epistemological and axiological position of the researcher (Creswell, 2014). A research paradigm can be described as a philosophical orientation and belief about reality and the nature of research used to address the research problem. A research paradigm may stem from the discipline of the researcher, previous research exposure, experience or guidance from other learned researchers (Creswell, 2014). Research paradigm can also be referred to as the world view (Creswell, 2007), 'broadly conceived research methodology' (Neuman, 2013) or theoretical framework (Lincoln, Lynham and Guba, 2011). Guba (1990) defined a world view as the basic set of principles and beliefs that guides action. The idea of research paradigm is believed to be associated with Thomas Kuhn's (1963) writing in the book entitled *The Structure of Scientific Revolutions*. Since then, several divisive interpretations have led to further clarification by Kuhn that paradigms are shared beliefs, values and assumptions among a research community. This research will adopt the term 'research paradigm' to refer to a world view or theoretical framework (Creswell, 2014).

Although there are debates about paradigm superiority among scholars with opposing research paradigms, it is fair to say that there is a consensus that research should be guided by a research paradigm. This is echoed by Creswell and Plano Clark (2011), who argued that good research should be underpinned by a world view, theoretical framework or research paradigm (Creswell and Plano Clark, 2011). Exceptions to this school of thought are the a-paradigmatic researchers who downplay the importance of research paradigms in real-world studies. A-paradigmatic researchers believe that research paradigms are abstractions with no importance to real-world studies in applied fields. Whilst the a-paradigmatic view has appeared to gain some popularity among a sect of applied researchers, others have cautioned that the ideals of a-paradigmatic researchers promote less rigorous and robust research design (Rallis and Rossman, 2003).

3.2.1   Pragmatism

There are several categories of research paradigms; the most widely acknowledged ones include post-positivism, constructivism, interpretivism and pragmatism (Creswell and Plano Clark, 2011). Paradigms differ in their perception of reality (ontology), perception of knowledge (epistemology), understanding and choice of method (methodology) and perception of the researcher's role and values (axiology). The theoretical framework adopted for this research is pragmatism. Pragmatism is a philosophical movement that recognises the value of subjective and objective knowledge in addressing complex research problems by focusing on 'what works' (Rossman and Rallis, 2003). Unlike other paradigms, pragmatists emphasise the research questions and consequences of the research rather than the methods used (Creswell and Plano Clark, 2011).

Ontologically, pragmatism differs considerably from the post-positivist view of a singular reality and the constructivist view of multiple realities. The ontological position of pragmatism is that reality can be subject to negotiation, renegotiation and debate in the light of its usefulness in new, unpredicted circumstances (Creswell and Plano Clark, 2011; Rossman and Rallis, 2003). This view asserts that reality can be viewed from one or more perspectives. Pragmatists believe that by engaging in both inductive and deductive reasoning, the researcher is able to present multiple perspectives of reality in order to address a research problem.

Therefore, the widely acclaimed slogan of pragmatism is 'practicality', i.e. the collection of data by what works to address a research problem (Creswell and Plano Clark, 2011). The adoption of multi-stance perspectives on reality and the method of enquiry in real-world research implies that the researcher is able to subjectively and objectively investigate research using multiple methods of data collection. However, the inclusion of subjective and objective data forms the basis of the much-discussed 'paradigm wars' by purists who argue that subjective (qualitative) and objective (quantitative) data stem from incompatible epistemological positions and that research must be conducted within a monolithic paradigm or framework (Rossman and Rallis, 2003; Tashakkori and Teddlie, 1998). This criticism appears to stem from a woolly understanding and application of research paradigms. Pragmatists have questioned the traditionally accepted view of a metaphysical paradigm as a shallow understanding of Kuhn's use of the term (Morgan, 2007). The metaphysical conceptualisation results in conceptual problems, such as the incompatibility discourse. Research paradigms are essentially 'shared beliefs among a community of researchers' (Morgan, 2007, p. 53). Therefore, a shared belief among pragmatists is that the focus of any research should be on addressing the research question by what works, and researchers should have the freedom to choose and combine the most suitable methods of addressing the problem (Creswell, 2014).

Another criticism of pragmatism is that it fails to acknowledge that all research includes both subjective and objective elements and that the notion that quantitative and qualitative methods are representative of objectivity and subjectivity is a misrepresentation of research (Symonds and Gorard, 2008). This criticism distorts the central argument of pragmatism and mixed-methods research, which is that the evolution of complex research problems calls for solutions beyond that which can be provided by a purely quantitative or qualitative approach (Creswell and Plano Clark, 2011). Neuman and Benz (1998) assert that quantitative and qualitative approaches are neither rigid nor distinct categories and should not be perceived as such but as ends on a continuum. However, it is essential to note that a study tends to be more quantitative than qualitative or vice versa (Creswell, 2014). Therefore, a major strength of pragmatism is the practicality of data collection by 'what works' in a specific context to address the research problem (Creswell, 2007). In addition, pragmatists are at liberty to intuitively select and combine the

most appropriate methods of addressing a research problem while recognising that the best method for addressing a research problem may be purely quantitative or qualitative.

The term pragmatism, which can be traced to several American philosophers and academic sceptics, was derived from the Latin word 'Pragmaticus' and the Greek word 'Pragmatikos', which both mean 'deed' (Shields, 1998). The phrase 'pragmatic point of view' was attributed to the writings of Kant (1724–1804) (Kant, 2006). However, the philosophical doctrine of pragmatism is said to have originated from the writings of Charles Saunders Peirce (1839–1914) (Shields, 1998). According to Peirce, pragmatism is concerned with the experiential condition and application of empirical concepts based on the real world (Ormerod, 2006). Peirce acknowledged the importance of scientific enquiry while recognising the complexity of real-world research. His early study on the triadic scheme emphasised the relationship between observation, meaning and science (Frank, 2004).

Although Peirce is often credited for laying the foundation for the subsequent development of pragmatism as a philosophical theory, his work was not particularly influential at the time (Rossman and Rallis, 2003). Other philosophers, including George Mead, William James and John Dewey, all contributed to the development of the philosophical movement of pragmatism (Tashakkori and Teddlie, 2011). William James described pragmatism as a shift from abstractions, closed systems and pretended absolute towards concreteness, facts, action and power (James, 1978). John Dewey is thought to have made the most significant contribution to the development and application of pragmatism to real-world issues in politics, education, global peace and women's suffrage (Williams, 2017; Casil, 2005). Dewey perceived research enquiry as a self-correcting process that should be subject to revisions and modification in the light of new and emerging experiences. His argument on pragmatism was clear – abstract principles cannot influence real-world actions. Therefore, the focus of any enquiry should be on solving the research problem. Dewey is also cited for laying the foundation of social constructivism in education. Despite his achievement in other fields, Dewey's pragmatic approach to religion, ethics and aesthetics remains his most influential contribution (Tashakkori and Teddlie, 2011).

The contributions of the early pragmatists described above marked the early historical period of pragmatism (1860–1930). However, the financial depression of the 1930s in America and the First World War forced pragmatism out of universities' curricula until the

arrival of the second historical period, often termed the neo-pragmatic period in the early 1960s (Rossman and Rallis, 2003). The second historical period, which began around the late twentieth century, led to a new way of applying pragmatism to philosophy, science and life. This period was influenced by philosophers and critical thinkers, including Abraham Kaplan, Richard Rorty and Cornel West (Rossman and Rallis, 2003). These writers reconceptualised and redefined the principles of early pragmatists by broadening the application of pragmatism to social research. A significant difference between both historical periods of pragmatism is that the neo-pragmatic period stressed the value of identifying richer modes of enquiry outside the well-established scientific methods (Tashakkori and Teddlie, 1998). In spite of the differences between the two historical periods, the fundamental principle that new knowledge can be gained through several methods of enquiry remains unchanged.

In more recent times, there has been increased recognition of the value of pragmatism as a philosophy and method of research. Pragmatism has been viewed as an escape from the narrow bindings of empiricism (Kaplan, 1964). Pragmatism provides the basis for employing a mixed-methods approach to social science enquiry. In relation to this research, the problem of physical inactivity among older adults from racially minoritised groups, particularly in the Somali community, is a complex research issue that must be viewed from multiple lenses. This makes pragmatism an ideal paradigm for this research. The pragmatic research paradigm offers the researcher an opportunity to objectively and subjectively investigate the knowledge of physical activity and attitudes towards participation in physical activity among this group. A pragmatic research design also presents a chance to explore the experiences of physical activity among the target group.

3.3 Research design

This research was conceptualised as having three interconnected research stages: a meta-ethnographic stage, a quantitative design stage, and a qualitative research stage

(figure3.1).
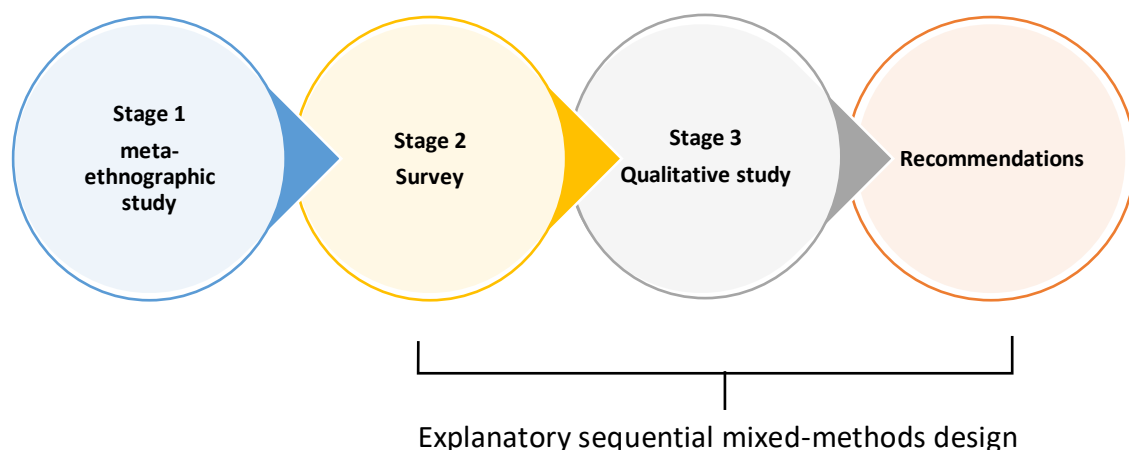
Figure 3.1 Study design plan

Although the research stages are reported independently for simplicity, the research process was iterative. Findings from the first stage of the research informed the direction of the second stage, which subsequently informed the design of the third stage of the research. The empirical findings from the first three stages contributed to the development of evidence-based recommendations.

3.3.1   Overview of Stage 1

The first stage of this research involved a meta-ethnographic study of the knowledge of and attitudes towards physical activity among adults and older adults from racially minoritised groups in the UK. This phase was considered highly important to explore available research on this topic and identify any gaps. Findings from this phase also served to strengthen the overall rationale for this research and informed the design and development of subsequent phases. The decision to review only qualitative studies was anchored in the importance of gaining an in-depth knowledge of the experiences of adults and older adults from racially minoritised communities towards physical activity. Additionally, a preliminary literature review found very few quantitative studies investigating the experiences of older adults from racially minoritised communities towards physical activity. This is not surprising, as qualitative research is the most preferred method for exploring the experiences of participants about a phenomenon (Barbour, 2013). The study by Babakus and Thompson (2012) reviewed both qualitative and quantitative evidence on physical activity among people from South Asian groups. The

authors identified 15 quantitative studies conducted in the UK. However, most of these studies only examined and compared levels of physical activity without looking into contextual factors that influence physical activity levels (Babakus and Thompson, 2012). Traditionally, systematic reviews focus solely on peer-reviewed literature with a strong emphasis on randomised, controlled trials. However, this approach has been heavily criticised for failing to consider evidence from qualitative studies and other non-experimental quantitative studies (Pope, Mays and Popay, 2007). Since a key goal of this research is to understand the experiences and perceptions of physical activity, a synthesis of qualitative studies exploring these issues was considered appropriate.

Qualitative evidence synthesis is increasingly becoming recognised as an important source of evidence in the social sciences and healthcare policy and practice (Tong *et al.,* 2012; Ring *et al.,* 2010). Qualitative evidence synthesis emerged from a recognition that interventions and policies in healthcare should be based on a thorough assessment of a broad range of robust and credible evidence beyond the traditional systematic review of quantitative studies (Barnett-Page and Thomas, 2009). Qualitative evidence synthesis provides an opportunity to review multiple perspectives about a research topic and generate a new theoretical understanding of a research area that goes beyond what is contained in any single study (Caroll, 2017; Tong *et al.,* 2012). Qualitative evidence synthesis is pivotal for identifying research gaps (Tong *et al.,* 2012) and providing valuable insights into the factors responsible for the success or failure of an intervention (Atkins *et al.,* 2008). Although the value of qualitative evidence synthesis cannot be overemphasised, the nature of qualitative studies and the challenges it poses for evidence synthesis are worth considering. Unlike quantitative studies, which are concerned with making generalisable inferences from analysing objective data, qualitative studies are instead concerned with providing a deeper understanding of social phenomena experienced and lived by a group of people (Barbour and Barbour, 2003). Thus, aggregating findings from multiple qualitative studies could result in the loss of the explanatory context. Leung (2015) and Atkins *et al*. (2008) warned that analysis and interpretation of qualitative research are highly context-dependent, and attempts to aggregate findings from multiple qualitative studies could decontextualise the research. While these are helpful considerations, qualitative evidence synthesis has proved to be a valuable research method for evidence-based practice (Tong *et al.,* 2012).

Another challenge for qualitative evidence synthesis is the differing philosophical beliefs that hinge on different study designs within the interpretivist paradigm (Atkins *et al.,* 2008). There have also been concerns about the importance of checking the validity of included studies and the value of quality appraisal for qualitative evidence synthesis (Garside, 2014). Barbour and Barbour (2003) cautioned against superimposing the templates and checklists for quantitative systematic reviews on qualitative evidence synthesis. The point emphasised by Barbour and Barbour (2003) does not imply that qualitative evidence reviews should not pay attention to quality assessment and critical appraisal, but rather that greater attention should be paid to the relevance of the study in relation to the theory being developed. This implies that decisions to exclude studies should prioritise the study's relevance to the review questions over quality-assessment rating.

Several forms of qualitative evidence synthesis have been reported in the literature, including meta-ethnography (Noblit and Hare, 1988), meta-narrative review (Greenhalg *et al.,* 2005), critical interpretive analysis (Dixon-Woods *et al.,* 2006) and thematic synthesis (Thomas and Harden, 2008). These forms differ in their epistemological assumptions about knowledge and reality. Meta-narrative reviews and critical interpretive analysis share a subjective idealist view of reality (Barnett-Page and Thomas, 2009). This assumes that shared reality is dependent on human construction. For instance, critical interpretive analysis focuses on developing highly interpretive explanations that may not be reproducible by a different research group. Meta-ethnography, however, is hinged on objective idealism and a belief in a collectively shared reality that may be reproducible (Barnett-Page and Thomas, 2009).

The various forms of qualitative evidence synthesis also differ with respect to the quality appraisal of included studies (Barnett-Page and Thomas, 2009). Thematic narrative synthesis and thematic synthesis share a critical realist approach and have well-established criteria for quality assessment and validity and reliability assessment; grounded theory and meta-ethnography show less commitment to quality assessment (Barnett-Page and Thomas, 2009). Noblit and Hare's (1988) original description of quality relates to the quality of metaphors identified in the data. However, in more recent meta-ethnographic studies, the Critical Appraisal Skills Programme (CASP) tool has been adapted for quality appraisals (Tong *et al.,* 2012).

Meta-ethnography is one of the most established forms of qualitative evidence synthesis and underpins the development of more recent forms of qualitative evidence synthesis, including critical interpretive analysis and thematic synthesis (Tong *et al.,* 2012). Meta-ethnography is a comprehensive and robust method of collating relevant qualitative research and comparing and analysing findings from qualitative data, leading to the construction of new interpretations (Atkins *et al.,* 2008). This method was developed by Noblit and Hare (1988) to synthesise findings from ethnographic studies. However, it is widely applied in synthesising various forms of qualitative research. Meta-ethnography enables the generation of robust interpretative analysis of a phenomenon extending beyond individual accounts and reveals analogies between different accounts whilst preserving the meanings of the accounts (Bearman and Dawson, 2013; Noblit and Hare, 1988). This research adopts Noblit and Hare's (1988) seven-stage process of conducting a meta-ethnographic study.

A search strategy was developed from existing literature. A pilot search was conducted to test this strategy on MEDLINE. Following the successful completion of the pilot, a full search was initiated on six electronic databases. This was followed by a grey literature search using Google and Google Scholar. The reference list of existing research was reviewed to identify further studies. Then, studies were screened by titles, abstracts, and full text to determine their relevance to the research question. A data extraction template was created to record important information from each study. Finally, data analysis was conducted via Noblit and Hare's (1988) reciprocal translational analysis. Studies were synthesised, and findings were expressed narratively and as conceptual maps. Chapter 4 presents a more extensive discussion of the meta-ethnographic study conducted as part of this research.

3.3.2   Overview of explanatory sequential mixed-methods design

The second and third stages were designed using a mixed-method approach. Despite the seemingly unending paradigm wars, mixed-methods research has gained increasing recognition as a legitimate form of enquiry in social science, particularly in education, health and sociology (Creswell, 2014; Rossman and Rallis, 2003). Mixed-methods research is not an entirely new form of enquiry, as its origin can be traced back to Campbell and Frisk's use of multiple quantitative methods in 1959 (Creswell, 2014). Multiple research methods were embraced as a means of neutralising the inherent bias and weakness of a

single method. However, it was not until the early 1990s that a combination of qualitative and quantitative forms of enquiry was used to address a specific research problem (Creswell, 2014). It is the combination of both forms of data in a single research study that marks the point of departure from multiple methods to mixed-methods research. The central assumption of mixed-methods research is that combining quantitative and qualitative research design provides a more complete understanding of the research problem (Creswell, 2014). Therefore, mixed-methods research enables researchers to use both qualitative and quantitative forms of data to comprehensively address questions that cannot be answered by a singular approach (Rossman and Rallis, 2003). Mixed-methods research, also described as 'the third methodological movement', is characterised by methodological eclecticism (Tashakkori and Teddlie, 2011). This approach selects and integrates the most suitable form of qualitative and quantitative methods. The practice of methodological eclecticism suggests that the researcher is a 'connoisseur of methods', capable of knowledgeably and intuitively choosing the most appropriate technique to answer a research question (Tashakkori and Teddlie, 2011).

One of the crucial characteristics of mixed-methods research is the centrality of the research question (Creswell and Plano Clark, 2011; Tashakkori and Teddlie, 2011). This involves moving beyond intractable philosophical debates toward selecting the most suitable methods to address a specific research problem (Tashakkori and Teddlie, 2011), implying that the research question ultimately determines the choice of methods to be used. Although mixed-methods research can be underpinned by various research paradigms, including critical realism, critical theory and pragmatism, pragmatism remains the most widely used theoretical underpinning for mixed-methods research in the social sciences (Creswell and Plano Clark, 2011; Tashakkori and Teddlie, 2011). This is primarily due to the resonance between the principles of mixed-methods research and pragmatism. The link between pragmatism and mixed-methods research has been extensively discussed in the literature (Morgan, 2014; Tashakkori and Teddlie, 2011). Pragmatism supports the integration of both qualitative and quantitative research to address a research problem (Creswell, 2014). The focus of pragmatism is on how best to address the research problem. Hence, the research problem is considered more important than the methods. Like mixed-methods research, pragmatism is also characterised by an avoidance of metaphysical debates (Frankenberry, 1991).

There have, however, been debates that mixed-methods research should be underpinned by multiple paradigms. This argument, put forward by dialectic researchers, has been refuted by most mixed-methods researchers, who advocate using a single paradigm or the so-called 'alternative paradigm' (Tashakkori and Teddlie, 2011).

Several research designs and analytic processes could be employed in conducting mixed-methods research. Creswell (2014) proposes three typologies of mixed-methods research: convergent parallel mixed-methods, explanatory sequential mixed-methods and exploratory sequential mixed-methods. The convergent mixed-methods design involves the collection of both forms of data at the same time. In contrast, the sequential design involves the collection of a single form of data to inform the design of the subsequent data-collection phase. This research adopts the Creswell (2014) explanatory sequential research design.

Explanatory sequential mixed-methods research involves the collection and analysis of quantitative data to inform the design of the qualitative phase (Creswell, 2014). It is called 'explanatory sequential' because the findings from the quantitative phase are expounded and further explained by the qualitative phase. There are two variants of the explanatory sequential mixed-methods design: the follow-up variant and the participant selection variant. The former places more emphasis on the interpretation of the quantitative and qualitative findings, while the latter places emphasis on the selection of participants for the qualitative study (Creswell and Plano Clark, 2011). Since the focus of this research is not on theoretical sampling but on understanding the barriers and facilitators of physical activity among the target group, the follow-up variant was adopted.

Visual representations play an essential role in simplifying the process and mechanism of conducting mixed-methods research (Creswell and Plano Clark, 2011; Tashakkori and Teddlie, 2011). Diagrams and visuals enable the incorporation of evolving processes and research outcomes (Tashakkori and Teddlie, 2011). Morse (1991) developed a notational system comprised of the plus symbol (+) to depict methods that occur simultaneously (at the same time) and arrows ($\rightarrow$) to depict methods occurring in sequence. This notational system has been further developed to provide a more diagrammatic expression of the process of conducting mixed-methods research. The diagrammatic expression of the explanatory sequential mixed-methods research by Creswell (2014) can be seen below in

figure 3.2. This model has been adapted and developed in figure 3.3 to simplify the process involved in this research study.

As shown in figure 3.3, the first phase of the explanatory sequential design involved a quantitative survey. This survey was designed as a cross-sectional study to investigate the knowledge, experience, attitude and barriers of physical activity among adults and older adults from the Somali community in Bristol.

Following the quantitative data-collection analysis and interpretation phase, the qualitative arm of the study was designed. This phase involved in-depth interviews with adults and older adults from the Somali community in Bristol to explore some of the barriers identified in the survey and to reflect on the experiences of participants toward physical activity.

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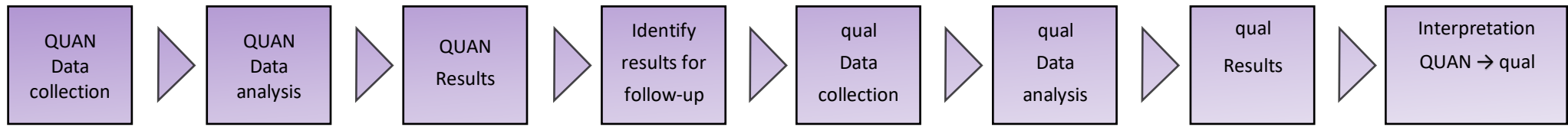
Figure 3.2 Explanatory sequential mixed-methods design: Follow-up explanations model adapted from Creswell (2007)

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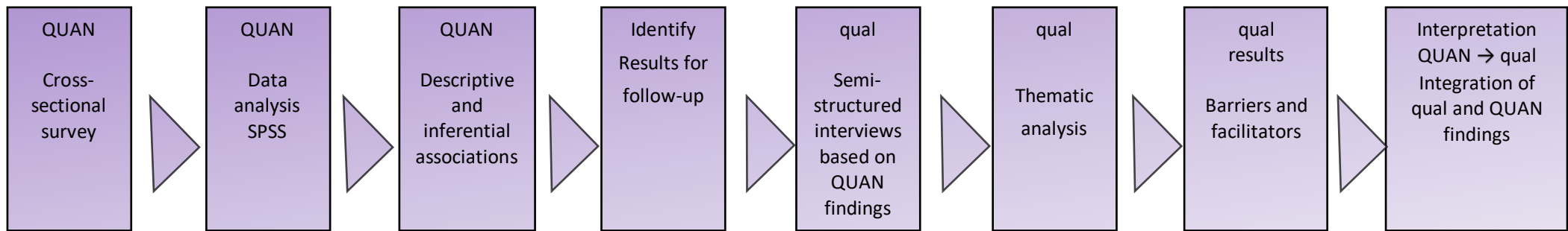
Figure 3.3 Application of Creswell (2007) explanatory sequential mixed-methods design to study design

3.3.3 Overview of Stage 2: Conceptual framework

As described above, the second stage of this research involved a survey to investigate the levels of physical activity, the perception of physical activity and the attitudes towards physical activity among adults and older adults from the Somali community in Bristol. The survey questions are underpinned by a behaviour change framework. Behaviour change theories or frameworks were designed to aid the understanding of factors influencing people's behaviour (Munro *et al.,* 2007). Behaviour change theories are helpful in answering questions related to why people adopt specific behaviours, what factors should be considered in developing an intervention, how interventions should be designed and what mechanisms should be used to evaluate interventions (Rimer and Glanz, 2005). These theories can be broadly categorised as explanatory theories and change theories. Explanatory theories predict behavioural patterns and provide insight into why a behaviour exists. Explanatory theories can also offer a framework to identify modifiable factors of behaviour. Such factors may include knowledge, attitude, practices and support mechanisms (Rimer and Glanz, 2005). Some well-established explanatory theories in behavioural psychology include social cognitive theory, health belief model and theory of planned behaviour. Change theories, however, enable the development of interventions for behaviour change. Change theories are helpful for planning, implementing, and evaluating behaviour change interventions (Rimer and Glanz, 2005).

Although theories are relatively underused and underreported, they are essential considerations for successful behaviour-change interventions (Rimer and Glanz, 2005). It is, however, difficult to ascertain whether research and interventions explicitly based on theory application are more successful than those that are not. Evidence from existing research presents a mixed picture. There are reported cases of a positive association between theory application and research outcome (Taylor, Conner and Lawton, 2011; Glanz and Bishop, 2010); others, like Gardner *et al.* (2010), have found no impact of theory on the research outcome. There have also been cases where negative associations have been reported (Bhattarai *et al.,* 2013; Ammerman *et al.,* 2002). This mixed picture can, in part, be explained by a poor application of theories (Davis *et al.,* 2015). Michie and Prestwitch (2010) reviewed how theories were applied to theory-based intervention studies. The authors used a 19-item theory coding scheme to evaluate the application of theories in research projects. The findings from this review showed that only about 10% of

the selected theory-based intervention studies investigated the links between theoretical constructs and behaviour change. Some researchers have argued further that the appropriateness of behaviour change theories to interventions is equally as important as the application (Davis *et al.,* 2015). The literature is nearly saturated with behaviour change theories of similar constructs and peculiar limitations, making it difficult to predict the most suitable theory when designing an intervention. This is further compounded by a lack of guidance on appropriate theories for different kinds of interventions (Michie, 2008).

Moreover, given the broad application of behaviour change theories to various health-related issues, it is difficult to understand the most effective theories for specific interventions (Davis *et al.,* 2015). Behaviour change theories are incapable of providing a universal explanation of behaviour patterns. This is mainly due to the complexity of behaviour change and the uniqueness of behavioural patterns. However, theories promote an understanding of health behaviour (Munro *et al.,* 2007). The limitations of individualistic behaviour change theories, such as the theory of planned behaviour and trans-theoretical models, have been well established (Kelly and Barker, 2016). This strengthens the argument for theories that incorporate elements of the wider determinants of health. Habits and behaviour do not occur in a social vacuum. They are formed by interaction with the social environment. Therefore, any attempts to influence change must consider the broader socioeconomic and political determinants of health, which may act independently on individual choices (Kelly and Barker, 2016).

The conceptual framework for the survey was informed by the COM-B model of behaviour change. The COM-B model of behaviour change is a valuable tool for understanding how and why people adopt certain behaviours (Michie *et al.,* 2014a). This model asserts that behaviour is a product of the interaction between an individual's *capability* to accomplish the behaviour, the *opportunity* and the *motivation* to achieve the behaviour. The COM-B model was developed as part of an intervention development framework incorporating 19 behaviour change frameworks. This model draws its unique strength from a recognition of the importance of the wider determinants of health in relation to behaviour change.

The survey was initially designed as a paper survey and disseminated via various Somali fora and events. An online version of the survey was later created and cascaded through existing Somali social media networks in Bristol. The survey was completed by 140

members of the Somali community. Data entry for the paper survey was completed by the researcher on SPSS version 24, and data analysis was performed using the same software. Further details on the survey methods are reported in chapter 5.

3.3.4   Overview of Stage 3

The third phase of this research involved a qualitative study to provide a more in-depth understanding of the experiences, barriers and potential facilitators of physical activity identified in the survey. Qualitative studies help to explore and understand concepts, events, behaviours and attitudes (Strauss and Corbin, 1998; Silverman, 2011). Qualitative studies derive a key strength in their ability to study events in their real-life setting (Barbour, 2013). This study was initially designed as a focus-group discussion using a semi-structured guide developed based on findings from the first two stages. However, this was changed to individual interviews following discussions with members of the Somali community and stakeholders involved in the public engagement process. The main issue raised by the stakeholders was in terms of the appropriateness and cultural acceptability of discussing some potentially personal issues relating to perceived religious/cultural barriers and pre-existing conditions. A focus group was perceived to potentially impact the openness and honesty of participants, especially if they were in a focus group with people they did not feel comfortable around. The Somali community in Bristol is a close community with strong cultural ties and values. However, not all of these values are shared equally by members of the community, and a focus group involving people with divergent views could escalate existing controversy. Interviews were also considered more practical in terms of aligning with the availability of participants.

Therefore, this research employed semi-structured interviews to understand the experience of physical activity among adults and older adults from the Somali community in Bristol. A total of ten interviews (five males and five females) were conducted.

The sampling for this study was purposive and comprised of adults and older adults (male and female) aged ≥40 years from the Somali population in Bristol. The researcher asked selected survey participants whether they would be available further to explore some of the issues raised in the survey. The snowballing technique was used to identify more participants that could contribute to the enquiry. The semi-structured format of the interviews allowed the participants to have control and converse at a pace that suited them

(Barbour, 2013). This also helped the researcher build a rapport with the participants and enabled participants to feel comfortable to talk openly about their experiences of physical activity. Sessions were audiotaped and transcribed in English. Transcripts and quotes used in the research report were anonymised so that participants could not be recognised. Data analysis was conducted via thematic analysis method while the NVivo software was used to organise and prepare the data for analysis. Further details on the methods of stage 3, including the findings, are presented in chapter 6 of this thesis.

3.4 Ethics and confidentiality

Research ethics encompass the principles, practices and standards that bind research (McMillan and Weyers, 2007). This research study adhered to the highest standard of ethical practice. An application for ethical review and approval was submitted for Stage 2 and Stage 3 of this project to the Faculty Research Ethics Committee (FREC) at the University of the West of England (UWE). The objective of the FREC is to ensure that the welfare and rights of participants involved in research studies are protected. Although it was anticipated that the project would be low risk, a risk assessment form was completed for both studies involving human participants. Based on this checklist, the studies were deemed low risk. The principles of informed consent, anonymity and confidentiality were adhered to throughout the research. A data management plan was drafted by the researcher and agreed upon by the supervisor. This plan detailed how data would be collected and stored in accordance with the university's guidance on data management. Further details about ethics and data management for Stage 2 and Stage 3 are reported in chapters 5 and 6 of this thesis, respectively.

Confidentiality is an essential aspect of any well-designed research (Wiles *et al.,* 2008). Researchers have an ethical obligation to ensure that the confidentiality of research participants remains uncompromised (Equalities and Human Rights Commission, 2011; Kaiser, 2009). This research adhered to the values of confidentiality in the design, analysis and interpretation of findings. First, the questionnaire was purposefully designed not to request any sensitive information, such as the participant's medical history. Second, some of the demographic variables requested were categorised, making it impossible to single out a respondent based on their answer to a demographic question. Respondents were also provided with an option to select 'prefer not to say' to any potentially compromising

questions relating to their gender and age. This ensured that participants were not forced to disclose information against their wishes.

The web link was anonymised to ensure the confidentiality of the electronic survey, implying that the data collected could not be traced to any individual. In terms of data analysis and interpretation, data from the paper survey was stored in a secure cabinet, which only the researcher could access. The data from the online survey was exported to SPSS and saved on a OneDrive folder which was only accessible to the researcher.

Concerning the interviews, confidentiality was perceived to be even more challenging with the use of interpreters, who were members of the Somali community in Bristol. The measures taken to ensure confidentiality were adhered to, including recruiting interpreters with strong research experience and knowledge of confidentiality. In addition, the researcher set up a meeting with the interpreters before the commencement of data collection to discuss the importance of confidentiality and its requirement for this study. Furthermore, care was taken to ensure that the interview probes did not ask for any sensitive information. Interviewees were also reminded of their right to withdraw some or all of their data from the study if needed. Further details about the recruitment of interpreters can be found in section 6.4.2.1

3.5 Public engagement

Public involvement is described as research carried out 'with' or 'by' members of the public rather than 'to, for, or about them' (INVOLVE, 2012). Evidence suggests that public involvement can impact the relevance, quality and impact of research (Entwistle *et al.,* 1998; Dawson *et al.,* 2020). Public involvement may occur at different levels, namely, consultation, collaboration or user-led (Dawson *et al.,* 2020). Although there was no budget to recruit public contributors to the project, the researcher ensured that the research process was shaped by the contribution and expertise of members of the Somali community and people with relevant insights about the community. This aligns with public consultation as a means of public involvement (Dawson *et al.,* 2020).

3.5.1 Pre-application

Prior to the application to undertake this doctoral research, the researcher held informal meetings with a member of the Somali community who works as the health improvement manager at Bristol City Council to seek their opinion about the proposed research idea and the potential relevance of the research on policy and practice at the local level within the Council. The public contributor provided guidance on the scope of the project, highlighting the importance of conducting interviews alongside the quantitative study. This reinforced the decision to undertake a mixed-methods study.

3.5.2 Public involvement in the research design

The researcher established networks with key gatekeepers within the Somali community, including a Somali researcher and the pioneer of a female-only Somali basketball group in the St George area of Bristol. These two members of the Somali community provided helpful insights into the design of the questionnaire and recruitment strategy. One of the key insights offered by the public contributors was the definition of adults and older adults, as previously discussed in chapter 1. As discussed previously in this chapter, the public contributors also proposed follow-up interviews instead of focus groups, which were initially designed for the qualitative arm of the study.

3.5.3 Public involvement during the research

The researcher attended a number of events organised by members of the Somali community during the process of data collection. Although the primary purpose of attending these events was to recruit potential survey participants, the researcher was given an opportunity to present an overview of the project and preliminary findings via a poster presentation at a Bristol Somali Careers Fair on 30 March 2019. This event provided an opportunity to consult with members of the Somali community, who provided positive feedback on the relevance of the research.

CHAPTER FOUR: A META-ETHNOGRAPHIC STUDY

4.1 Chapter overview

This chapter discusses the rationale for conducting a systematic review of qualitative studies to assess the available evidence on the experiences of physical activity among adults and older adults from racially minoritised groups in the UK. The chapter provides an account of the reviews' methods and findings and concludes with a discussion of the implications.

This chapter has been published in Preventive Medicine Reports, and sections of the publication (Ige-Elegbede et al., 2019) are used in the thesis. The researcher conceptualised the study design, conducted the database search, data extraction, data analysis and reported on the findings reported in this chapter. The supervisors of the thesis who are also co-authors provided feedback on drafts of the publication.

4.2 Introduction

There is very limited review-level evidence investigating the barriers and opportunities for participation in physical activity among adults and older adults from racially minoritised backgrounds in the UK. A thorough assessment of existing literature is needed to identify and collate credible evidence on the experience, barriers, and facilitators of physical activity among adults and older adults from racially minoritised groups in the UK. This kind of evidence is essential, not only because the racially minoritised population in the UK is growing at an ever-increasing rate, but also because racially minoritised groups in the UK experience higher levels of health inequalities and are often under-researched. Addressing physical inactivity amongst adults and older adults from racially minoritised groups in the UK is an important public health priority.

Therefore, this review aims to investigate the barriers and opportunities for physical activity among adults and older adults aged 40 and above from racially minoritised backgrounds in the UK. This systematic review differentiates itself from existing reviews by examining the barriers and exploring the opportunities for improving physical activity across a defined subset of racially minoritised populations in the UK.

4.3 Methods

This study is nested in an interpretivist paradigm of meta-ethnography. Interpretivism is a branch of epistemology that seeks to understand reality through subjective meanings (Atkins *et al.,* 2008). Meta-ethnography adopts an interpretivist's world view by comparing and analysing qualitative data, leading to the construction of new interpretations (Atkins *et al.,* 2008). Originally developed by Noblit and Hare (1988) to synthesise ethnographic studies, this method has been widely adopted to synthesise various forms of qualitative research. Meta-ethnography enables the generation of powerful interpretative analysis of a phenomenon that extends beyond an individual account to reveal analogies between different accounts whilst preserving the meaning of the accounts (Bearman and Dawson, 2013; Noblit and Hare, 1988). As such, meta-ethnography is widely applied to produce a new conceptual understanding of complex public health issues (Campbell *et al.,* 2012). Noblit and Hare (1988) proposed a framework comprised of seven important phases to conduct meta-ethnography. This framework has been criticised for failing to provide clear guidance on the assessment of rigour and quality appraisal (Finfgeld-Connet and Johnson, 2013). However, there are measures for quality assessment of qualitative studies that can be applied in meta-ethnographic studies (Toye *et al.,* 2013). Thus, this review will adopt the framework suggested in Noblit and Hare (1988) and include an assessment of rigour to supplement the framework.

4.3.1.   Phase 1: Getting started

This phase entails identifying an area of intellectual interest to be informed by qualitative research. A key characteristic of this phase is having a well-defined research question (Pope, May and Popay, 2007). The research idea for this study was developed on the backdrop of the need to review and understand the barriers of physical activity among adults and older adults from racially minoritised groups in the UK.

This study employed the Population Intervention Comparison Outcome and Study (PICOS) design theoretical framework (Richardson *et al.,* 1995) to develop the research question and search strategy (table 4.1 below).

Review question

What is the current state of evidence on the barriers and facilitators of physical activity among adults and older adults (aged 40+) from racially minoritised backgrounds in the UK

Table 4.1 Development of review concepts using the PICOS framework

Concept	Intellectual interest
Population	Community-living adults aged 40+ from Black and racially minoritised groups
Intervention/exposure	Participation or engagement in any form of physical activity or exercise (walking, cycling and exercise)
Comparison	The interpretative paradigm employed by this study precludes the concept of a comparison group
Outcomes	Experiences, barriers, facilitators of physical activity
Studies	Studies with qualitative methods, including thematic analysis, case study, discourse analysis, ethnography, participant observation, grounded theory, narrative, focus groups and interviews

4.3.2.   Phase 2: Deciding what is relevant to initial interest

Phase 2 essentially involves providing scope for the review. This entails justifying the studies that should be included/excluded from the review based on their relevance. Unlike other forms of review, meta-ethnography places an important emphasis on the relevance of included studies and, hence, has a more focused scope (Bearman and Dawson, 2013).

To be selected for inclusion in this research, studies were required to meet the following inclusion criteria: (1) Include participants identified as being Black or from racially minoritised groups, aged 40 and above, living in the community; (2) be published in English between January 2007 and July 2017, with full text in a peer-reviewed journal or nationally recognised stakeholder website; (3) only journal articles and relevant grey literature from the UK were included, as this research seeks to identify the state of existing evidence in the UK and identify any gaps. Table 4.2 provides a detailed account of the inclusion and exclusion criteria applied.   The decision to review studies conducted between 2007 and 2017 was made to identify the most current evidence and this also coincides with the

periods when the physical activity guidelines were updated, first in 2004 and then in 2011 (Nobles *et al.,* 2020).

Table 4.2 Inclusion and exclusion criteria

Concept	Inclusion criteria	Exclusion criteria
Population	Studies including community-living racially minoritised groups aged 40 and above	Studies with no racially minoritised groups White minority groups Studies conducted among African Americans
Exposure	Engagement in any form of physical activity or exercise (walking, cycling and exercise)	
Outcomes	Experiences, barriers, facilitators of physical activity	Studies with no evidence on physical activity participation, barriers or facilitators
Studies	Studies with qualitative methods, including thematic analysis, case study, discourse analysis, ethnography, participant observation, grounded theory, narrative, focus groups and interviews Studies published in English between January 2007 and July 2017 Qualitative or mixed-methods studies	Systematic literature reviews Quantitative studies Studies published in languages other than English Studies published before January 2007 or after July 2017
Location	Studies conducted in the UK	Studies conducted outside the UK

A structured search for published literature was conducted on six electronic databases (MEDLINE, PsycINFO, Cumulative Index to Nursing and Allied Health Literature, Applied Social Sciences Index and Abstracts, Cochrane Database of Systematic Reviews and Allied and Complementary Medicine) from January 2007 to July 2017. Hand searching of reference lists of publications was performed in addition to website search of reputable national and international organisations including the World Health Organisation, British Heart Foundation, Public Health England, and Sports England, to identify grey literature. Table 4.3 shows the search strategy used on MEDLINE

Table 4.3: MEDLINE Search Strategy

Population1	Exposure	Outcome
"older people" OR "older adults" OR ageing OR aging OR elderly OR "elderly care" OR geriatric OR "geriatric assessment" OR older OR senior or baby adj2 boomer	Physical activity OR exercise OR walking OR cycling OR running OR active travel OR Moderate-vigorous physical activity OR MVPA OR sports OR dancing OR bicycling OR yoga OR swimming OR	Experience* Or barrier* OR facilitator* OR determinant* OR evidence OR correlates or enablers OR participation
Population 2 Black* OR African or Minority* or BME		

4.4 Data extraction and quality assessment

The characteristics of respondents and study details from each study included in the review were extracted to create a comprehensive summary table. Where possible, the views expressed by the respondents interviewed in the original studies (first-order constructs) were differentiated from the interpretations made by the authors (second-order constructs). An additional column was created to include any third-order interpretation of findings. This enabled the identification of similar metaphors and concepts used to develop a reciprocal translational analysis (RTA) by constant comparison of metaphors and

concepts. Data extraction was conducted by the researcher. RTA involves putting together the key themes from each study and translating the themes into the context of the other studies (Noblit and Hare, 1988). The CASP tool for qualitative studies was used to rate the methodological quality of each included study (CASP, 2017). Although there are other quality assessment tools, including the quality framework (Long *et al.,* 2020) and Mays and Pope's (2000) basic quality criteria, the CASP tools is most preferred for being a good measure of assessing transparency (Long *et al.,* 2020). The CASP tool is also the most widely used tool for qualitative studies, although it has been criticised for being too generic and less reliable to assess research conduct (Long *et al.,* 2020). Each review was rated from 0 to 10, with those scoring five or below classified as low quality; scores between six and eight were categorised as moderate, while studies scoring between nine and ten were deemed high quality. Findings from all studies were included in the results.

4.4.1   Phase 3: Reading the studies

Noblit and Hare (1988) recommend the frequent reading of studies combined with the identification of the key metaphors and concepts emerging from the data. The studies included in this review were read multiple times in order for the researcher to be well-acquainted with the interpretative metaphors. Moreover, the data extraction process further elucidated the key concepts and metaphors emerging from the studies.

A data extraction form was created on Microsoft Excel to extract relevant data from the studies. Details including the name of the author(s), year of publication, aim(s) and location of study, demographics of participants, exposure of interest, methods of data collection, results and limitations of the research were all extracted for each study. Data extraction was conducted by the researcher, while a second reviewer and supervisor of the thesis, extracted data from a sample of papers to assess consistency

4.5 Results

The search database returned 1,036 studies, including two additional studies identified through hand searching of reference lists. A total of 718 studies were screened by titles after duplicates were removed. On applying the inclusion and exclusion criteria to the abstract screening, a selection of 17 studies was considered eligible for full-text screening.

Following the full-text screening, nine studies were further excluded for failing to meet one or more of the inclusion criteria. Two additional studies were identified through hand-searching of reference lists and added to the eight studies deemed eligible for inclusion. Further details are included in figure 4.1. These studies were published between 2007 and 2015.

Considering the characteristics of studies included in the review, semi-structured interviews were the most widely used data collection method (n = 6). Two studies combined semi-structured interviews with a focus group. One study conducted an in-depth interview. Another study used only focus-group discussion for data collection. None of the studies was deemed to be of high quality; however, nine were of moderate quality, and only one study was considered to be of low quality.

Five studies investigated knowledge and attitudes towards the prevention and management of diseases, such as type 2 diabetes (Grace *et al.,* 2008; Keval, 2009; Sriskantharajah and Kai, 2007), CHD (Darr, Astin and Atkin, 2008; Sriskantharajah and Kia, 2007), osteoporosis (McKenna and Ludwig, 2008). Two studies investigated attitudes and beliefs towards physical activity, ageing and wellbeing (Victor, 2014; Khanam and Costarelli, 2008). Two other studies investigated the effectiveness of physical activity interventions and factors influencing adherence to physical activity (Hartley and Yeowell, 2015; Snape and Binks, 2008). One study explored the role of health professionals in promoting exercise and physical activity (Mckenna and Ludwig, 2008). In terms of ethnicity, nine out of ten studies included South Asian adults and older adults, mainly Bangladeshis, Pakistanis and Indians. One study included the Afro-Caribbean population (Hartley and Yeowell, 2015). Three studies investigated physical activity among racially minoritised women (Darr, Astin and Atkin, 2008; Khanam and Costarelli, 2008; Mckenna and Ludwig, 2008). None of the studies explored the barriers and opportunities among adults and older adults from Black/African communities. Further characteristics of included studies are described in table 4.3 below.
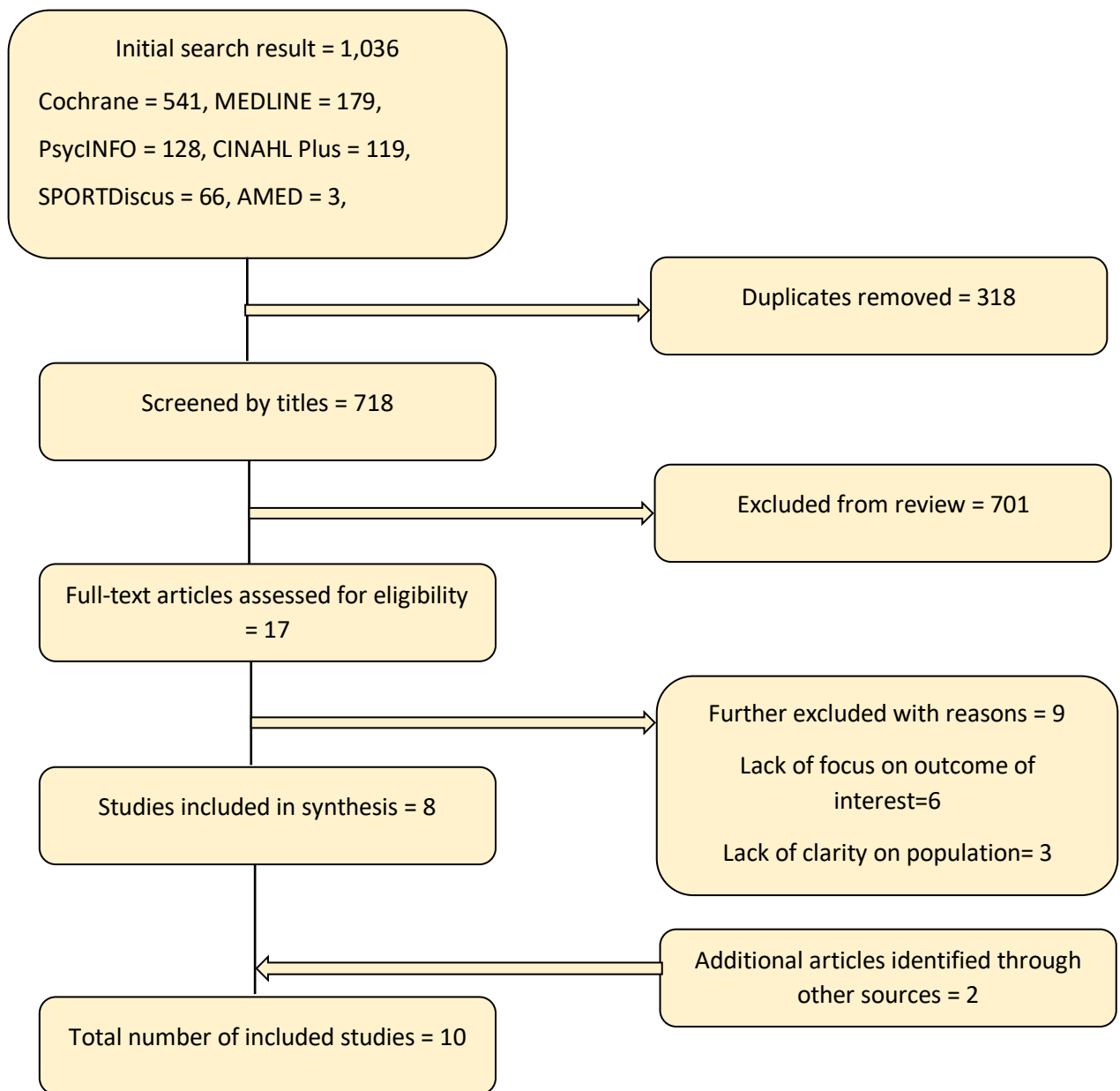
Figure 4.1 Flowchart of the meta-ethnography selection process

Initial search result = 1,036

Cochrane = 541, MEDLINE = 179,

PsycINFO = 128, CINAHL Plus = 119,

SPORTDiscus = 66, AMED = 3,

Duplicates removed = 318

Screened by titles = 718

Excluded from review = 701

Full-text articles assessed for eligibility = 17

Further excluded with reasons = 9

Lack of focus on outcome of interest=6

Lack of clarity on population= 3

Studies included in synthesis = 8

Additional articles identified through other sources = 2

Total number of included studies = 10

Table 4.4 Characteristics of included studies (N=10)

Author, year	Location	Study design	Study objectives	Population			Intervention/Exposure	Data collection	CASP Score
				Ethnicity	Age, gender	Sample size			
Sriskantharajah and Kai, 2007	Nottingham, UK	Exploratory qualitative study	To explore influences on and attitudes towards physical activity among South Asian women with CHD and diabetes to inform secondary prevention practices	South Asian – Indian, Pakistani, Bangladeshi, Sri-Lankan, East African, Asian	Mean age of women = 52 years Over 80% of them were between 41 and 70 years	15 women with CHD or non-insulin-dependent diabetes from 3 general practices. 7/15 women were Muslim, 3 were Sikh, and 5 were Hindus. 11/14 women had acquired some form of formal education	Experience of physical activity and related illness (CHD and diabetes)	1 to 2 hours semi-structured interviews	7

Study	Location	Design	Aim	Population	Participants	Sample	Findings	Methods	Quality
Grace *et al.,* 2008	London, UK	Qualitative study	To investigate lay beliefs and attitudes, religious teachings and professional perceptions regarding type 2 diabetes prevention in the Bangladeshi community	South Asian – Bangladeshi	First- and second-generation Bangladeshi adults, religious leaders and Islamic scholars	Lay people = 37 Islamic scholars and religious leaders = 14 Health professionals = 19 women and 1 man Individual interviews = 2 men and 6 women	<u>Lay people</u> attitudes, values and beliefs towards prevention of type 2 diabetes <u>Islamic scholars and religious leaders</u> Opportunities for diabetes prevention through Islamic teaching and practice <u>Health professionals</u> Attitudes and experiences working with the Bangladeshi community	Focus-group discussion and semi-structured interviews	8
Snape and Binks, 2008	Blackburn, UK	Case study	An evaluation of a health-based intervention to increase participation in physical activity within a South Asian community in Blackburn	South Asian Muslim women	Women aged 50 and above	Two sets of focus-group discussions were conducted for women aged 50 and above (N = 15)	Uptake of physical activity programmes, such as tai chi, aerobics, yoga, men's and women's circuit training developed in the Blackburn North Healthy Living Centre – a local community	Semi-structured interviews and focus group	4

McKenna and Ludwig, 2008	Southeast England	Qualitative study	To compare the experiences of osteoporotic Caucasian and South Asian women from Southeast England	Caucasian and South Asian women	Participants were aged 43 to 82 years, diagnosed with osteoporosis for 8 months to 40 years	21 women	Experience of osteoporosis	20–120 minutes of semi-structured interviews	7
Khanam and Costarelli, 2008	East London, UK	Survey based on an interview-guided questionnaire	To investigate the attitudes and beliefs held by UK Bangladeshi women on health and exercise and explore possible ways of increasing levels of physical activity in this group	Bangladeshi	Women aged 30 to 60 years were referred to a gym by their GP to improve their health following diagnosis of type 2 diabetes, obesity, high blood pressure and metabolic syndrome	25 Muslim first-generation Bangladeshi women	Attitude and belief towards health and exercise	Interview-guided questionnaire administered by a Muslim Bangladeshi female interviewer	8

					(40% were obese, and the remaining 60% were overweight)				
Darr, Astin and Atkin, 2008	West Yorkshire, UK	Qualitative study – in-depth semi-structured interviews	To examine and compare the illness beliefs of South Asian and European patients with CHDs about causal attributions and lifestyle change 1 year after hospital admission	White and South Asian	Age range = 40 to 83 years	36 men and 29 women from Pakistani-Muslim (20), Indian Sikh (12), Indian Hindu (13) and European (20)origin	Beliefs about causal attributions of CHD and lifestyle changes	Semi-structured interviews	7

| Keval, 2009 | Midlands and southeast England | Qualitative study – grounded theory | To explore the experience of diabetes among South Asian Hindu Gujarati-speaking people | South Asian | Age range = 40 years to 88 years | 8 women and 10 men. 17 of them had type 2 diabetes, and 1 person had type 1 | Experience of diabetes and management | 40 to 100 minutes semi-structured interviews | 8 |
| Horne *et al.*, 2010 | Northwest England | Qualitative – Ethnographic approach | To explore the influence of primary healthcare professionals in increasing exercise and physical activity among 60–70-year-old White and South Asian community dwellers | White and South Asians | Participants were aged 60 to 70 years | 127 older adults (46 South Asian and 81 White) | Role of primary health professionals in increasing physical activity | 15 focus groups lasting between 1 to 2 hours and 40 in-depth interviews lasting between 30 to 90 minutes | 7 |

Victor, 2014	England	Qualitative – interview	To explore how older Bangladeshi and Pakistani adults talk about physical activity in their daily lives	Older Bangladeshi and Pakistani adults	Participants were aged 50 and above. Participants had lived in the UK for a mean period of 20 years	Interviews were conducted with a total of 109 participants (59 Pakistani and 50 Bangladeshi)	Meaning of physical activity in daily lives	Interviews of between 25 minutes and 1 hour	6
Hartley and Yeowell, 2015	Northwest England	A qualitative-exploratory approach using focus group	To gain an understanding of what influences long-term adherence to community physical activity groups	African Caribbean and the general population	Participants were aged 65 to 90 years	18 participants: 6 Afro-Caribbean and 12 White	Perception of adherence to community exercise groups	60- to 90-minute focus-group discussions	8

4.5.1   Phase 4: Determining how studies are related

In identifying the relationship between studies, Noblit and Hare (1988) propose that studies must be 'put together' by creating a list of key concepts for each study and comparing this across all studies. The tabulated data-extraction sheet enabled the identification of second-order concepts from each study. This was then compiled to create a summary table of second-order concepts (table 4.4).

Table 4.5 Summary of second-order concepts from studies included in the review

Concepts	Sriskantharajah and Kai, 2007	Darr, Astin and Atkin, 2008	Grace et al., 2008	Khanam and Costarelli, 2008	McKenna and Ludwig, 2008	Snape and Binks, 2008	Keval, 2009	Horne et al., 2010	Victor, 2014	Hartley and Yeowell, 2015
Barriers										
Fatalism		✓	✓	✓						
Social roles and expectations of women	✓		✓	✓		✓				
Inadequate advice and support from health professionals	✓	✓	✓	✓	✓			✓		
Lack of support from members of social circle	✓	✓	✓	✓						
Cultural inappropriateness of exercise due to modesty concerns		✓	✓	✓		✓				
Inadequate facilities/space for exercise	✓	✓	✓						✓	✓
Perceived harm threshold of physical activity	✓	✓			✓			✓		
Language barrier	✓		✓		✓					

Lifestyle changes and sedentary living				✓		✓	✓	
Structural and practical constraints, e.g. time, money		✓	✓	✓			✓	✓	✓
Being a minority								✓
Exercise seen as part of job	✓						✓	
Presence of other comorbidities	✓	✓						
Cultural connotation of Western sports as alien	✓	✓	✓	✓	✓	✓		
Discomfort with exercising in public	✓	✓		✓				
Poor health literacy			✓	✓				
Association of obesity with fertility				✓				
Facilitators								
Awareness of the benefit of physical activity	✓		✓	✓			✓	
Opportunity to improve health and wellbeing	✓		✓					✓
Opportunity for social interaction and support								✓

Support from health professionals	✓			✓	
Provision of suitable space for physical activity	✓			✓	
Having a range of culturally sanctioned activities	✓	✓	✓		✓
Community engagement		✓	✓		✓
Advice and support from religious leaders	✓				
Advice and support from family, peers and others	✓			✓	
Financial incentive					✓
Ensuring privacy and maintaining security	✓	✓		✓	

4.5.2   Phase 5: Translating studies into one another

The process of constantly comparing findings requires a clear distinction between first-, second- and third-order constructs. First-order constructs refer to the original view of the participants in the included studies, whilst second-order constructs are interpretations of first-order narratives by the original authors of the study. Third-order constructs refer to the interpretation of the reviewer (Malpass *et al.,* 2009). Bitton *et al*. (2002) argue that second-order constructs are essentially the building blocks for synthesis, leading to the development of third-order constructs. The process of completing phases 3 and 4 (reading the studies and determining how the studies are related) showed that the findings were primarily reciprocal, not refutational, and could be developed to express a line of argument (table 4.5).

4.5.3   Phase 6: Synthesising translations

Synthesis of studies in meta-ethnography involves a constant comparison of translations from each study to determine the overarching concepts and translations (Pope, Mays and Popay*,* 2007; Noblit and Hare, 1988). This often involves matching, merging or adapting concepts from other studies (Pope, Mays and Popay*,* 2007). These phases are essential, as meta-ethnography aims to produce a robust interpretative analysis that extends beyond the individual accounts of the studies.

Table 4.6 Synthesis: First-, second- and third-order constructs

First-order construct	Second-order construct	Third-order construct	Theme
'I only go for the exercise to lose the weight and make my body better. Lose the weight and make me good looking, you know?'	Weight loss, maintaining independence and socialising was perceived as the main benefit of physical activity; some understanding of the benefit of exercise to improve and limit illness (Sriskantharajah and Kai, 2007)	Understanding of the health and wellbeing benefits of physical activity can increase motivation to engage in exercise.	**Awareness of links between physical activity and health**
'I said to myself; I'm not going to be physically incapacitated…I want to, as long as I live, I want to be independent and fit…and I don't want to be dependent physically on anybody. I hate that.'	Preventative health promotion (Horne et al., 2010)		
(Sriskantharajah and Kai, 2007)	Lay understanding of diabetes; living a healthy life; responsibility for diabetes prevention (Grace *et al.,* 2008)		
	Health literacy (Khanam and Costarelli, 2008)		
	Links between physical activity and health (Keval, 2009)		
	Positive health and wellbeing (Hartley and Yeowell, 2015)		

Perceived health benefit (Victor, 2014)

'It [illness] comes from Allah [God]…whatever's going to happen, but then you should still be careful, shouldn't you?…Allah will do whatever he wants to do…' (Darr, Astin and Atkin, 2008)	Role of fate (Darr, Astin and Atkin, 2008) Fatalism (Grace *et al.,* 2008) Being overweight/obese is not a problem (Khanam and Costarelli, 2008)	The notion that participants have been predestined to experience disease or that diseases should be accepted as one's fate constituted a barrier to a healthy lifestyle.	**Religion and religious fatalism**
'He [health professional] just says…just do more exercise; that's it…the doctors and the health advisors, they don't give you the proper information. They don't push you…it would help…if [we] had people telling [us] how to do exercise.' (Sriskantharajah and Kai, 2007). *'There is encouragement if you had a problem to get over it, but there is no encouragement if you haven't had a*	Insufficient guidance from health professionals about suitable activities; perceived harm threshold limits activity. (Sriskantharajah and Kai, 2007) Women sensed doctors' uncertainty about physical activity and women's osteoporosis experience (McKenna and Ludwig, 2008) Advice and support – physician advice and support; information needs;	Respondents were disappointed by the lack of support from health professionals and the inadequacy of information received. However, health professionals were cautious of crossing cultural and religious red tape, especially in relation to fatalism.	**Interaction and engagement with health professionals**

problem not to get a problem.' (Horne *et al.,* 2010).	exercise on prescription (Horne *et al.,* 2010) Recommended walking distance (Darr, Astin and Atkin, 2008) Support from health professionals (Victor, 2014) Fatalism (Grace *et al.*, 2008)	The relationship between health professionals and older adults was also affected by language barriers.	
'They will say, "Look how funny he looks – the old man has already married off his children, and now he is riding bicycles and running". Even though some people have a desire to either swim or ride a bicycle, they abort the idea due to fear of public scandal.' (Grace *et al.,* 2008). *'It wasn't my people…when I looked around, all I could see is White faces, I was the only Black one.'* (Hartley and Yeowell, 2015).	Exercise beyond daily work is seen as selfish (Sriskantharajah and Kai, 2007) Support from others (Horne *et al.,* 2010) Social roles and expectations (Grace *et al.,* 2008) Lack of motivation from family (Khanam and Costarelli, 2008) Having no one to accompany them (Darr, Astin and Atkin, 2008)	Women identified their primary duty as being homemakers and received very little support to undertake extra activities such as exercise. Some forms of exercise posed a threat to the modesty of women Both males and females perceived that exercise in public (especially when	**Cultural expectations and social responsibilities**

'We are constantly on our feet cleaning after our children and keeping the house presentable.'

(Khanam and Costarelli, 2008).

Opportunity for culturally-sanctioned exercise (Keval, 2009)

Minority group (Hartley and Yeowell, 2015)

Allowing women to wear their everyday dress (Snape and Binks, 2008)

Informal norms and sanctions (Victor, 2014)

Discomfort with exercising in public (Sriskantharajah and Kai, 2007)

performed alone) is culturally inappropriate.

'Some women like, but myself, I feel shame. I don't want to go swimming because man's sitting down watching women...I don't like it at all.' (Sriskantharajah and Kai, 2007).

Dislike for the gym (Khanam and Costarelli, 2008)

Perceived cultural homogeneity between the centre and the neighbourhood; consultation with the local community on the design of provision; the cultural connotation of sports and sporting context (Snape and Binks, 2008)

The need for a safe and suitable place for exercise was echoed across both genders.

A suitable environment for physical activity

Requirement for gender-specific spaces (Victor, 2014)	
Variability in weather conditions; Lack of time (Darr, Astin and Atkin, 2008)	Not being able to communicate in English was a barrier to participating in any form of formal exercise class. This barrier also often affected the relationship with health professionals.
Constrained by not being able to speak English (Sriskantharajah and Kai, 2007)	
Inability to speak English (Khanam and Costarelli, 2008)	
Structural and practical challenges to healthy lifestyles; health and English literacy (Grace *et al.,* 2008)	Examples of other practical challenges included poor weather and lack of time.
Exercise is seen as part of one's job (Victor, 2014)	

Practical challenges

4.5.4   Stage 7: Expressing the synthesis

Noblit and Hare (1998) recommend that the reporting of a meta-ethnographic study should be driven by a concern to inform practice. Logic models, maps and other forms of art are valuable tools to convey findings of academic research to other non-academic professions, including policymakers. The main findings from the research are discussed under the appropriate headings below. Logic maps were used to show the relationship between factors that impact physical activity participation among adults and older adults.

Awareness of links between physical activity and health

Seven studies discussed this theme (Hartley and Yeowell, 2015; Victor, 2014; Keval, 2009; Grace *et al.,* 2008; Khanam and Costarelli, 2008; Snape and Binks, 2008; Sriskantharajah and Kai, 2007). Three of these studies reported that the link between physical activity and health was well-understood by many of the respondents (Keval, 2009; Grace *et al.,* 2008; Sriskantharajah and Kai, 2007). The benefits of physical activity identified by respondents included improved general wellbeing (Hartley and Yeowell, 2015), weight loss (Grace *et al*., 2008; Sriskantharajah and Kai, 2007), improved mental health (Hartley and Yeowell, 2015; Grace *et al.,* 2008), prevention and management of chronic conditions, such as type 2 diabetes (Keval, 2009; Sriskantharajah and Kai, 2007).

One of the participants in the study by Sriskantharajah and Kai (2007) said:

'I only go for the exercise to lose the weight and make my body better….'

Some South Asian respondents with type 2 diabetes identified links between lack of physical activity and the development of type 2 diabetes (Keval, 2009). Some of the respondents over 60 years reported that they engaged in physical activity to maintain mobility and independence. People with a family history of chronic conditions were self-motivated to take up physical activity as a means to limit the progression of their condition (Sriskantharajah and Kai, 2007).

Out of the several reasons identified for engaging in physical activity, the most commonly reported reason was to lose weight (Grace *et al.,* 2008; Sriskantharajah and Kai, 2007).

However, not all studies identified weight loss as being appropriate. Some South Asian Muslim women regarded physical activity negatively due to perceived sexual connotations that physical activity makes one more attractive (Snape and Binks, 2008). Khanam and Costarelli (2008) reported that despite being overweight or obese, all participants engaged in physical activity only when referred by their GP as an alternative or additional treatment for health symptoms. These women were also less likely to associate obesity with a lack of physical activity and shared a common view that being overweight connotes attractiveness, fertility or wealth (Khanam and Costarelli, 2008).

Moreover, some male respondents felt that they got enough physical activity from working for long hours (as a taxi driver or shop owner) (Victor, 2014). This view was also shared by women who felt that active living was invariably linked to their identity as 'homemakers' (Sriskantharajah and Kai, 2007) and that physical activity beyond daily work was a neglect of their duties (Snape and Binks, 2008; Sriskantharajah and Kai, 2007).

Religion and religious fatalism

Religion and religious norms were perceived as both barriers and potential facilitators; three studies identified this theme (Darr, Astin and Atkin, 2008; Grace *et al.,* 2008; Khanam and Costarelli, 2008). Islamic leaders and some South Asian Muslim participants identified a resonance between Islamic teachings and the need to lead a physically active lifestyle (Grace *et al.,* 2008). Walking was generally perceived to be an appropriate form of physical activity, as it did not contradict Islamic teachings and values. However, some respondents believed that observing the five-times daily prayer of Muslims, Namaz, was adequate exercise.

However, religious fatalism was identified as a barrier to healthy living among some of the older Muslim women. For example, some Pakistani Muslim respondents with CHD held fatalistic religious beliefs about their condition (Darr, Astin and Atkin, 2008; Khanam and Costarelli, 2008).

One of the participants in the study by Darr, Astin and Atkin (2008) said:

'It [illness] comes from Allah [God]…whatever's going to happen…Allah will do whatever he wants to do…'

Fatalism can be described as having a submissive attitude to events owing to a belief that such events are inevitable and predestined. This view was held by some of the first-generation South Asian respondents in two of the included studies (Darr, Astin and Atkin, 2008; Grace *et al.,* 2008). However, religious leaders were keen to educate lay respondents that such views were a misinterpretation of Islamic teachings (Grace *et al.,* 2008).

Interaction and engagement with health professionals

The influence of health professionals on decisions regarding physical activity featured in six of the included studies; (Victor, 2014; Horne *et al.,* 2010; Grace *et al.,* 2008; Khanam and Costarelli, 2008; McKenna and Ludwig, 2008; Sriskantharajah and Kai, 2007). Although health professionals were identified as a key source of information, respondents included in this review reported that the information received from health professionals was inadequate and not clearly communicated (Grace *et al.,* 2008; McKenna and Ludwig, 2008; Sriskantharajah and Kai, 2007). Patients with CHD or diabetes were simply told by their GP 'to just do more exercise' (Darr, Astin and Atkin, 2008; Sriskantharajah and Kai, 2007). The lack of information on recommended levels of physical activity deterred many older adults from outdoor walking as a result of not knowing the appropriate distance to cover (Darr, Astin and Atkin, 2008). Anxiety about exceeding the 'body's limit' of physical activity was fuelled by a lack of knowledge on what sort of activity was appropriate and safe (Horne *et al.,* 2010; Sriskantharajah and Kai, 2007).

One of the participants in the study by Horne *et al.* (2010) said that *'There is encouragement if you had a problem to get over it, but there is no encouragement if you haven't had a problem….'*

A study involving older South Asian women with osteoporosis reported a reluctance of GPs to discuss physical activity and that discussions during consultations were centred on medication use (McKenna and Ludwig, 2008). The women felt that GPs were not confident to discuss and recommend physical activity in relation to their illness. Health professionals interviewed alongside older adults from the Bangladeshi community identified that their unwillingness to discuss lifestyle-related issues was partly due to their own perception of religious fatalism among racially minoritised communities and their limited understanding of cultural and religious beliefs (Grace *et al.,* 2008).

Cultural expectations and social responsibilities

Nine studies examined this theme (Hartley and Yeowell, 2015; Victor, 2014; Horne *et al.,* 2010; Keval, 2009; Darr, Astin and Atkin, 2008; Grace *et al.,* 2008; Khanam and Costarelli, 2008; Snape and Binks, 2008; Sriskantharajah and Kai, 2007).

Prioritisation of family duties was seen as an integral responsibility of a woman and part of her identity. This view was unequivocally shared by both men and women of South Asian communities (Grace *et al.,* 2008; Snape and Binks, 2008; Sriskantharajah and Kai, 2007). Studies included in this review identified that South Asian women are expected to stay at home, dress modestly and prioritise family duties over independence and social freedom. Physical activity was, thus, regarded as an impediment to fulfilling these duties. Women who engaged in exercise beyond housework were at risk of being labelled a 'bad' housewife or mother (Sriskantharajah and Kai, 2007). One of the included studies identified that older South Asian women perceived exercise as damaging to their reputation and family honour (Snape and Binks, 2008).

Mixed-sex physical activity or exercise was considered highly inappropriate, as respondents noted that it compromised their values of modesty. Although some South Asian women indicated that female-only activities were acceptable, others were concerned that cameras and the presence of male workers within the facilities were a hindrance to modesty (Snape and Binks, 2008; Sriskantharajah and Kai, 2007). This was particularly the case with swimming, where women identified that even female-only sessions did not necessarily preserve modesty, given the presence of cameras and/or male lifeguards (Snape and Binks, 2008).

While discussing examples of culturally sanctioned activities, some Bangladeshi women identified that slow walking was generally acceptable, whilst brisk walking and running in public were not culturally appropriate for Muslim women (Grace *et al.,* 2008; Khanam and Costarelli, 2008). Sporting activities performed with special clothing at the gymnasium were identified as deviant from what is culturally acceptable and was likely to be met with social sanctions, such as gossip and mockery (Grace *et al.,* 2008). Some examples of culturally sanctioned exercise identified by some South Asian Hindus included attending classes held at temples or community centres and accessing daily yoga sessions online or broadcast from India via satellite TV (Keval, 2009).

Practical challenges

Practical challenges, including lack of time, were widely cited as a key constraint to engaging in physical activity in five studies (Victor, 2014; Darr, Astin and Atkin, 2008; Grace *et al.,* 2008; Khanam and Costarelli, 2008; Sriskantharajah and Kai, 2007). The responsibility of taking care of the home and looking after the children did not afford women spare time for physical activity (Darr, Astin and Atkin, 2008; Khanam and Costarelli, 2008). A similar view was shared by male Pakistani and Bangladeshi adults aged 50 and above, who affirmed that working seven days a week did not afford them much time to engage in any form of physical activity (Victor, 2014).

Language barriers were also identified as a key concern for women, especially those participating in formal physical activity sessions. The inability to communicate in English was perceived as a significant deterrent to attending physical activity classes or walking in public areas (Grace *et al.,* 2008; Sriskantharajah and Kai, 2007). Lack of confidence was identified as a consequence of poor English literacy. Some South Asian Muslim women aged 50+, involved in an intervention to increase community physical activity participation reported that having gym instructors and exercise facility staff from the local community was a reason for engaging with the intervention. This encouraged people to engage in physical activity, as they could relate with the staff, and it helped to overcome language barriers (Snape and Binks, 2008).

Financial constraints were identified as another reason for not engaging in physical activity. The high cost of attending formal physical activity sessions was a barrier to attendance (Hartley and Yeowell, 2015; Grace *et al.,* 2008). Providing free exercise classes within walkable distance was, however, identified as an incentive to attend (Hartley and Yeowell, 2015).

Other factors, such as climate and lack of child care facilities, were identified as barriers to physical activity participation. These factors were interrelated; lack of money was associated with the inability to find affordable childcare, which meant that mothers would stay at home to look after their young ones.

A suitable environment for physical activity

A lack of suitable space for culturally appropriate physical activity was identified as a barrier to engaging in physical activity across four studies (Hartley and Yeowell, 2015; Victor, 2014; Grace *et al.,* 2008; Sriskantharajah and Kai, 2007). Some South Asian older women reported not knowing the safe walking routes or not having facilities within walkable distance. Some of the respondents in the included studies also expressed concerns about walking in unsafe neighbourhoods. People with poor English literacy felt more vulnerable when walking in public spaces (Sriskantharajah and Kai, 2007). As such, some women felt that the safest place to walk was in their homes, although overcrowding posed a practical challenge (Grace *et al.,* 2008).

Barriers and facilitators of physical activity participation among adults and older adults from racially minoritised groups

The synthesis of findings from included studies identified several barriers and facilitators of physical activity participation among racially minoritised older adults. The barriers and facilitators identified in this meta-ethnographic synthesis were mapped into a logic model based on the concepts of the Dahlgren and Whitehead (1991) model and are shown in figures 4.2 and 4.3.

The Dahlgren and Whitehead (1991) framework provide a useful tool to conceptualise the relationship between the individual, social and environmental factors relating to physical activity participation among adults and older adults from racially minoritised groups (figure 4.4).
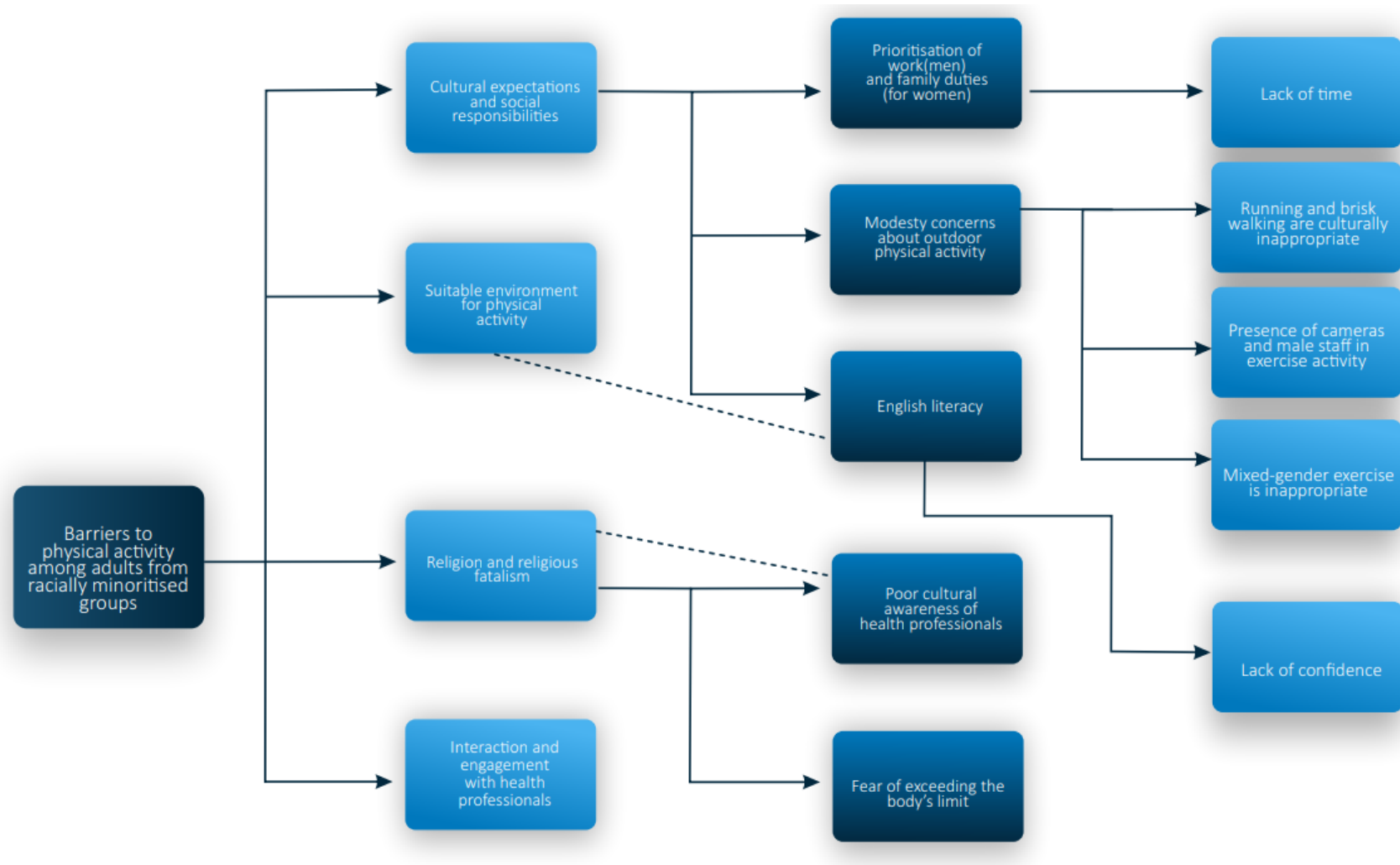
Figure 4.2 Barriers to physical activity
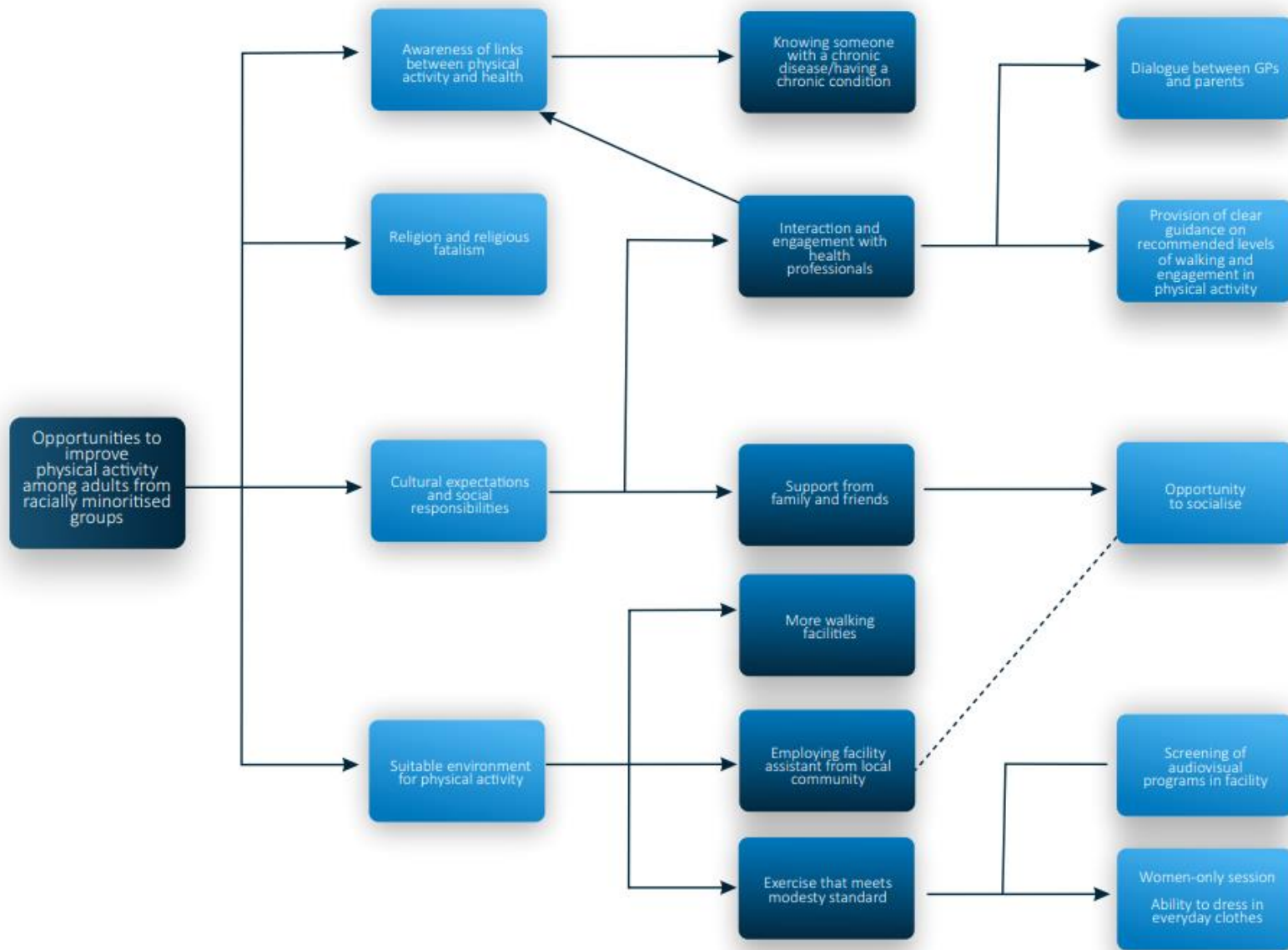
Figure 4.3 Opportunities for improving physical activity

Individual lifestyle factors	Social and community network	Socio-economic, cultural and environmental factors
Barriers		
Lack of time Not being fluent in English was a barrier to engaging in structured exercise class or walking for physical activity in public Poor health literacy	Religion and religious fatalism Poor interaction and engagement with health professionals can lead to misconceptions about physical activity and recommended levels	Difficulty in accessing safe and suitable walking path/exercise space within the local community Lack of money to pay for exercise class and travel to exercise facility Concerns about preserving values of modesty especially among women Women as homemakers: exercise perceived to be a distraction from the woman's role as a homemaker
Opportunities		
Clear understanding of the benefits of physical activity for health improvement and disease prevention	Religious leaders were perceived as a trusted source of support and information Support from friends and family to engage in physical activity Opportunity to socialise while participating in physical activity Developing trusted relationship between health professionals and older adults	Providing opportunity for women to dress in everyday clothing to attend exercise class Engaging the local community in the design of exercise facility Employing facility assistant able to communicate in local language

Figure 4.4 A logic map for barriers and facilitators of physical activity among adults and older adults from racially minoritised groups

4.6 Discussion

The translation of studies into each other allowed for the creation of a new interpretative context using a line-of-argument synthesis. The barriers and facilitators of physical activity among adults and older adults from racially minoritised groups were perceived to exist at an individual, social and community level and socioeconomic, cultural and environmental level. The Dahlgren and Whitehead (1991) wider determinants framework (figure 4.5) provides the theoretical underpinning for these conceptual levels.
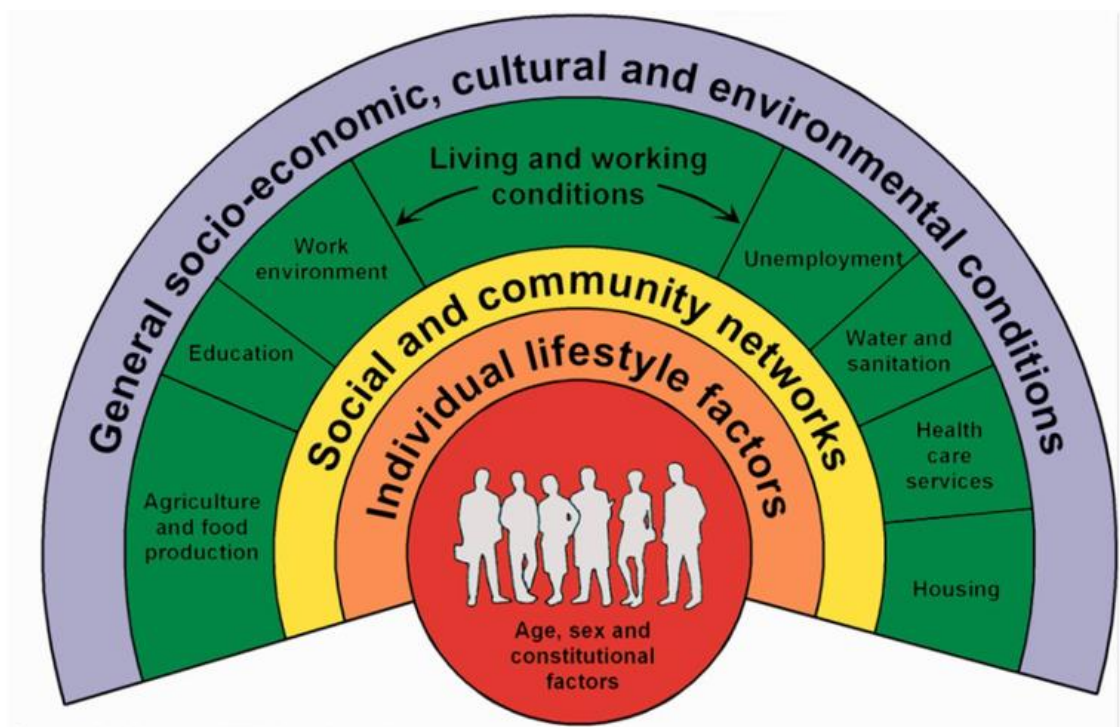
Figure 4.5 Dahlgren and Whitehead (1991). Social determinants of health

Findings from this study highlight that having a clear understanding of the health benefits of physical activity can support engagement and participation. However, several factors prevent adults and older adults from racially minoritised groups from meeting the physical activity recommendations.

Individual/lifestyle factors relating to work-life balance can be a barrier to physical activity. Most of the South Asian men in the review reported working extra-long hours to meet family and household demands. In addition to having no time, such people may be unwilling to attend physical activity classes with financial implications. This research also identified that language barrier could have a disempowering effect on an individual's

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confidence to engage in group physical activity. Older adults from South Asian communities have previously reported a lack of confidence due to poor English literacy as a barrier to physical activity in public spaces (Horne and Tierney, 2012), which has been associated with poor health outcomes (Fryer *et al.,* 2011). Engaging the services of trained sports facilitators from the local community who are able to communicate in the local language of facility attendees can increase attendance. However, Dawson, Sundquist and Johansson (2005) reported that levels of physical activity among women would gradually improve as the length of time since immigration increases. The authors postulated that communication skills, familiarisation with affordable services for physical activity and economic position could improve as immigrants become exposed to the new environment. It should, however, be noted that the majority of respondents, classed as immigrants in Dawson, Sundquist and Johansson (2005)*,* were born in several parts of Europe and migrated to Sweden; hence, their experiences may be different from immigrants from racially minoritised backgrounds.

Only three of the seven studies reporting on awareness of the benefits of physical activity highlighted that participants had a clear understanding. This implies that more effort is needed to engage local racially minoritised communities in discussions about the benefits of physical activity. Religious organisations, local health services and community networks can act as channels to relay information about physical activity and active living among racially minoritised communities. Findings from this review highlight the significant role Islamic religious leaders play in addressing issues around religious fatalism, which acts as a barrier to physical activity among first-generation South Asian Muslim women. This is particularly important as members of the Muslim community perceive Islamic religious leaders to be influential and trustworthy. Islamic leaders are, therefore in a position to act as champions to promote active living (Donnelly *et al.,* 2012).

Health professionals were also acknowledged as credible sources of information on physical activity. However, the recommendations from health professionals are often evaluated by the clarity of the information provided and their perceived trustworthiness.

This review also identified the importance of providing access to a culturally appropriate environment for physical activity. Most of the racially minoritised groups in the UK live in economically disadvantaged areas with inadequate physical activity facilities, unsafe walking paths and limited access to open green space (Platt, 2007). Recognising and valuing

the cultural differences between racially minoritised groups and non-racially minoritised groups requires creating the necessary space that preserves the values of modesty. This study found that engaging residents in the design of physical activity facilities within the community can create a sense of belonging among residents. The local authorities have a responsibility to work with exercise facility services to improve access to less costly options for physical activity (National Research Council, 2010). Providing access to safe and suitable places for exercise and family recreation can reduce inequalities in health and improve physical activity (Astell-Burt, Feng, and Kolt, 2014). Most of the racially minoritised groups in the UK live in deprived areas with limited access to open green space and generally unsafe walking paths (Platt, 2007). These are possible reasons why outdoor physical activity is considered inappropriate, especially for women.

This review identified research gaps in relation to the experiences of Africans living in the UK. Most of the studies included in this review explored the views of first- and second-generation South Asian adults. No studies to date have evaluated the experiences of older people of African descent. There is very little known about older adults of African descent. Sprotson and Mindell (2006) argued that the lack of literature on Black Africans and Caribbeans might result from the fact that the levels of physical activity among Africans is not different from the general population. However, considering the evidence that Black Africans have a higher risk of stroke, hypertension and obesity compared to any other ethnic group, the explanation by Sprotson and Mindell (2006) is unjustifiable. Roe, Aspinall and Ward Thompson (2016) investigated health disparities among diverse ethnic groups associated with the use of urban green space in England. They found that Afro-Caribbean people aged 65 and above reported the lowest level of physical activity and the poorest health status compared to other groups within the sample population. There is an argument for conducting further research to investigate physical activity patterns among the African population in the UK.

Strengths and limitations of the review

A key strength of this review is the rigour and transparency of the underpinning research methods. This review also identified a vital research gap to explore – the experiences of adults and older adults from African backgrounds.

One of the limitations of the review was the decision to include only studies conducted in the UK. This decision was reached due to the lack of UK-centric review evidence among adults and older adults from racially minoritised backgrounds (Bergdahl, 2019). The focus on the UK also highlights the lack of evidence and strengthens the argument for further research among racially minoritised groups in general.

In terms of methodological limitations, the use of a single reviewer to run the database and grey literature search is a key limitation. Although, the gold standard is to have more than one reviewer for each stage of the review process, the requirement for independence at PhD level meant that the researcher had to undertake the tasks independently. An independent reviewer however examined a selection of the papers during the data extraction phase to ensure consistency with the data extraction process. The researcher also ensured that decisions regarding the search, data extraction, quality appraisal and analysis were cascaded to the supervisors of the project.

It is also worth noting that although mixed-methods study were not intentionally excluded from the search, the design of the search strategy an emphasis on qualitative modifiers could have inadvertently led to an exclusion of qualitative studies during the search process.

The limitations inherent in the individual studies contained in the review are also worth considering as they can affect the reliability of the review. There is a lack of gender balance across participants included in most of the studies, with women being the more dominant gender. Also, the lack of clear consensus on what physical activity means and types of physical activity across studies can make it difficult to apply contextualise findings from the study.

Another issue to consider is the validity of qualitative synthesis. Some academic scholars question the validity of qualitative synthesis, arguing that any aggregation of qualitative synthesis destroys the theoretical integrity of studies included in the review. The findings from this review have shown the importance of qualitative evidence synthesis in identifying

best practices and research gaps. The success of public health interventions relies heavily on a strong evidence base, usually informed by a synthesis of existing studies (Pope, Mays and Popay, 2007).

4.6.1 Implications for policy and practice

- Findings from this study show the potential benefit of involving community groups and organisations, including religious organisations and community elders, in the design of physical activity interventions for racially minoritised communities.
- This review clearly identifies the need for support and training of health professionals to facilitate informed dialogue and conversations about recommended levels of physical activity for older adults from racially minoritised backgrounds.
- Findings from this study have also identified a shortage of evidence on the experiences of older adults of Black/African descent.

4.7 Conclusion

Interventions to improve participation in physical activity among older adults should be acceptable and accessible to those from racially minoritised groups. Adults and older adults from racially minoritised groups encounter more barriers to physical activity than their White counterparts. An understanding of these barriers and facilitators is a prerequisite to developing successful interventions to address low levels of physical activity among racially minoritised communities.

Findings from this study highlight the importance of engaging local racially minoritised residents in the design of exercise facilities within the community. This will ensure that cultural and social concerns are recognised and adequately addressed. This review has also been able to identify gaps in evidence around the barriers and enablers of older adults of African and Afro-Caribbean descent. Further research on the experiences of Black Africans towards physical activity is highly recommended.

CHAPTER FIVE: A CROSS-SECTIONAL SURVEY

A cross-sectional survey of barriers and facilitators of physical activity among adults and older adults from the Somali community in Bristol, United Kingdom

5.1 Chapter overview

This chapter discusses of the aims, objectives, methods and outcomes of the cross-sectional survey undertaken to investigate the barriers, facilitators and levels of physical activity among adults and older adults aged 40+ from the Somali community in Bristol.

5.2 Introduction

Findings from the meta-ethnographic study conducted to investigate the state of the evidence on physical activity participation among adults from racially minoritised communities in chapter 4 of this thesis revealed a number of valuable lessons. First, awareness of the benefits of physical activity might not necessarily translate into behaviour change. The uptake of physical activity was generally low despite claims of awareness of the links between physical activity and health. Behaviour change is a complex process often dependent on several intrinsic and extrinsic factors. The COM-B framework adopted for this study elucidates the conditions that could result in behaviour change (Michie, Atkins and West, 2014a). The first element of this model is capability, which relates to both physical and physiological capacity to engage in the activity or behaviour of interest. The physiological capability encompasses the knowledge and understanding of the chosen behaviour and its benefits (Michie *et al.,* 2014b). This can be likened to having a good understanding of the health and wellbeing benefits of physical activity. However, according to this model, capability alone is insufficient to produce behaviour change. Other factors, such as having the right opportunities and being sufficiently motivated, are equally important (Michie, Atkins and West, 2014a).

In the UK, several interventions have been designed based on the capability theory to improve understanding of the benefits of physical activity. A systematic review by van der Bij, Laurant and Wensing (2002) identified ten mainly UK-based interventions centred on raising awareness about the benefit of physical activity. The authors reported moderate

increases in short-term physical activity participation, but this was not sustained in the long term (van der Bij, Laurant and Wensing, 2002). A review of the effectiveness of counselling and educational intervention to improve physical activity participation reported that the evidence on this form of intervention is limited and inconclusive (Taylor *et al.,* 2004). Moreover, there have been reports that existing counselling and education interventions in the UK are not readily available and accessible to older adults from racially minoritised groups due to language and cultural barriers (Age UK, 2012).

Second, the relationship between health professionals and people from minority groups can impact the motivation to participate in physical activity (Ige-Elegbede *et al.,* 2019). Findings from studies included in the review showed that many adults and older adults were less motivated to participate in physical activity because their health professionals were reluctant to engage in discussions about their experiences of participating in physical activity, despite advising them to improve their levels of participation (Victor, 2014; Khanam and Costarelli, 2008). Health professionals play an essential role in engaging adults from minority groups with information that can improve their physiological capability and motivation for physical activity (Ige-Elegbede *et al.,* 2019). The reluctance of health professionals to discuss physical activity during consultations has been linked to their limited understanding of the culture and social norms of people from minority groups (Grace *et al.,* 2008).

Another important lesson from the review discussed in chapter 4 of this thesis is the nature of existing evidence and, in particular, the lack of evidence from sub-populations of the UK racially minoritised communities. The majority of the evidence informing debates and discussions on the barriers of physical activity among adults and older adults from racially minoritised groups in the UK comes from South Asian populations. Ten of the fourteen studies included in a systematic review by Koshoedo *et al*. (2015) to investigate the barriers to engaging people from racially minoritised communities in physical activity were from South Asian populations, while the remaining four studies included few racially minoritised people of African/Afro-Caribbean descent. Likewise, findings from chapter 4 showed a lack of evidence on the experiences of Black/Africans in physical activity research. The under-representation of people of African descent in studies examining the experiences of racially minoritised groups with physical activity has been widely acknowledged in existing literature (Such *et al.,* 2016; Koshoedo *et al*., 2015).

There is no known study examining the experiences of the Somali population towards physical activity in the UK. This study aims to conduct a cross-sectional survey to investigate the barriers and opportunities for physical activity among adults and older adults from the Somali community in Bristol, United Kingdom.

5.3 Research questions

1. What is the level of awareness of the importance of physical activity among adults and older adults aged 40+ from the Bristol Somali community in this study?

2. What are the barriers to physical activity among adults and older adults aged 40+ from the Bristol Somali community in this study?

3. What are the facilitators of physical activity among adults and older adults aged 40+ from the Bristol Somali community in this study?

4. What proportion of adults and older adults aged 40+ from the Somali community in this study meet the UK's recommended physical activity levels?

5.4 Methods

Rallis and Rossman (2003) define research methods as the strategies, tools and techniques used in generating and manipulating thoughtful, accurate and ethical data to address a specific research problem. According to Rallis and Rossman (2003), research methods encompass two distinct research activities: the collection of data and the analysis of data. The choice of research methods should be underpinned by the research aims and objectives (Huberman and Miles, 1994). The choice of methods in this present study was based on the aims of the study and the research questions listed above. This study aimed to investigate awareness of the health benefits of physical activity, levels of physical activity, barriers and facilitators of physical activity among adults and older adults (aged 40+) from the Somali community in Bristol. Therefore, a cross-sectional survey method was considered suitable for addressing the nature of enquiry of this current study. A cross-sectional survey is a type of observational study which allows the measurement of the frequency of one or more variables of interest in a targeted population at one point in time (Sedgwick, 2014; Grigoryan *et al.,* 2007). This type of survey is arguably a practical way of providing a '"snapshot" of the health experience of a population' (Grigoryan *et al.,* 2007). A vital strength of the cross-sectional study design is its ability to investigate the

associations between more than one exposure variable (e.g. socio-demographic factors) and one or more outcome variables (e.g. level of participation in physical activity).

The cross-sectional survey for this research was underpinned by the COM-B framework. The tool asserts that behaviour is borne out of a relationship between the capability to execute the behaviour, the opportunity that promotes the behaviour and the motivation to perform the behaviour (Michie *et al.,* 2014b). Figure 5.1 below illustrates the fundamental principles of the COM-B model and interactions between various elements of the COM-B model. Further details on the COM-B model can be found in the methodology chapter of this thesis (chapter 3).
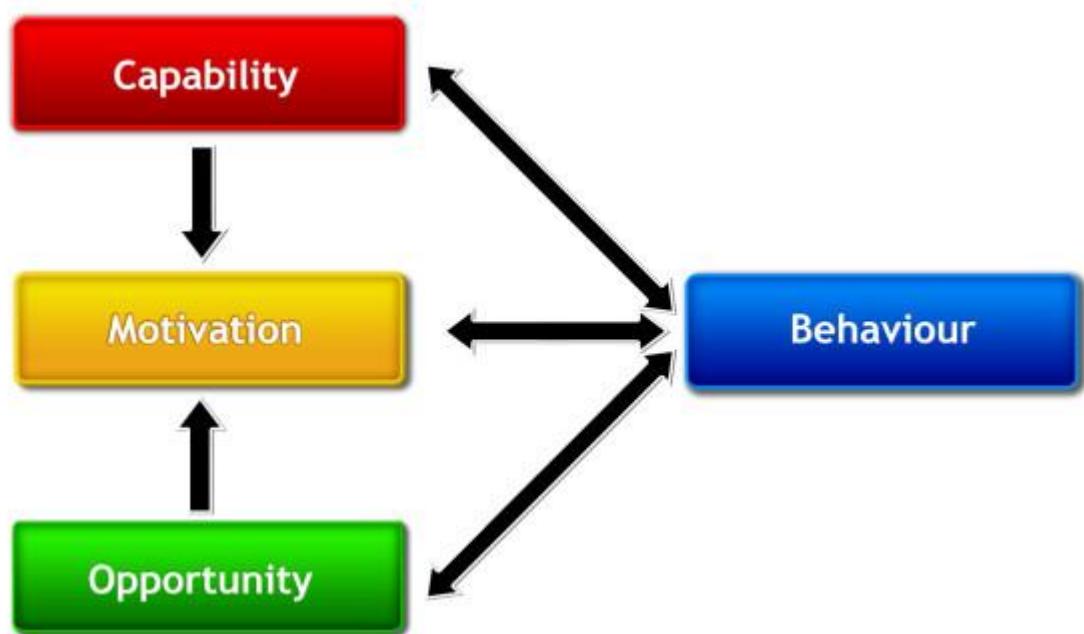
Figure 5.1 COM-B system of behaviour (Michie, Van Stralen and West, 2011)

5.4.1 Measurement tool

A literature review of various physical-activity survey instruments suitable for adults and older adults was performed to determine the most appropriate survey tool for this study. A total of ten physical-activity survey tools were identified from the review (table 5.1). A data extraction sheet was developed to collect information on the mode of administration

of the survey, the recall period for each survey tool, the target population of each tool, the average time taken to complete the survey, the number of questions, the validity of the survey and the alignment of each tool with the COM-B model. This information was subsequently evaluated to identify the most suitable tool for this research.

Findings from table 5.1 showed that none of the survey tools identified fully captured all the elements of the COM B model. However, they all measured the 'B' – behavioural element of the model. The capability, opportunities and motivations for physical activity remained largely uncaptured. The short form of the International Physical Activity Questionnaire (IPAQ) survey (IPAQ, 2005) was considered the most appropriate tool for determining the level of physical activity of respondents. This decision was reached due to its well-established validity and reliability (Lee *et al.,* 2011), its relatively short recall period, the flexibility of self-administration, the alignment of the target age group with the age group under consideration for this present study and its user-friendly nature. Although issues about the accuracy of IPAQ have been identified in Babakus and Thompson (2015), it is still one of the most widely used physical activity tool. IPAQ was also adapted for the Health Survey for England 2012 (Scholes *et al.,* 2016).

Therefore, additional survey questions on capability, opportunity and motivation for physical activity were adapted from existing physical-activity surveys (Wolin *et al.,* 2010; Craig, Mindell and Hirani, 2009; Craig *et al.,* 2003) (table 5.2). Seven questions were adapted from the Health Survey for England (2007). These questions comprised a Likert scale to assess knowledge of the health benefits of physical activity, a series of multiple-choice questions to investigate the capacity to undertake physical activity (capability) and the barriers and facilitators for engaging in physical activity (opportunity and motivation). An additional question investigating the physiological capability for physical activity was adapted from Crombie *et al*. (2004). The Transport and Physical Activity Questionnaire (T-PAQ) (Ogilvie *et al.,* 2012) was adapted to assess the influence of environmental variables (opportunities) and automatic motivations for engaging in physical activity. These questions were specifically chosen to complement the IPAQ survey in providing a complete picture of all of the elements of the COM-B model.

Table 5.1 Existing physical-activity instruments and their characteristics

Tool	Recall period	Administration	Population	Average completion time	Number of questions	Validity	Capability	Opportunity	Motivation
Community Health Activities Model Programmes for Seniors	4 weeks	Self-administered	Older adults	15 mins	41	Y	N	N	N
IPAQ (short/ long)	7 days	Self-administered/ Telephone	Young and middle-aged adults to older adults (15 to 69 years)	Missing	7- short, 27- long	Y	N	N	N
Global Physical Activity Questionnaire	1 week	Face to face by a trained interviewer	General	5 mins	16	Y	N	N	N
New Zealand Physical	7 days	Face to face by a trained interviewer	Adults	5 mins	8	Y	N	N	N

Activity Questionnaire									
Harvard Alumni Activity Questionnaire		Self-administered	Young and older adults	10 mins	8	Y	N	N	N
Minnesota Leisure-Time Physical Activity Questionnaire	Variable	Trained interviewer	Middle-aged adults	20 minutes	63	Y	N	N	N
Stanford 7-day PAR	7 days	Interviewer		15 minutes	8	Y	N	N	N
Physical Activity Scale for the Elderly PASE	7 days		65 years and above	5 minutes	10+	Y	N	N	Y
Yale Physical Activity Survey	Unclear	Interviewer	Older adults 60 and above	20 minutes	Unclear	Y	N	N	N

Questions on demographic variables were included in addition to a question on general health from the Short Form 36 (SF-36) tool (Ware and Sherbourne, 1992). Sixteen questions were included in the survey, including the IPAQ survey questions. Table 5.2 shows a list of the survey tools adapted to develop the questionnaire and the mapping of survey questions to the COM-B framework.

Table 5.2 Mapping of the survey to the COM-B model

ELEMENT OF COM-B	QUESTIONS	SOURCE
CAPABILITY		
Physical	Q1, Q6, Q7	Health Survey for England 2007 (National Statistics, 2007)
Psychological	Q1, Q2, Q3, Q4	Crombie *et al*. (2004), Health Survey for England 2007 (National Statistics, 2007)
	Demographic question on health status	SF-36 (Ware and Sherbourne, 1992)
OPPORTUNITY		
Social	Q5, Q6, Q7	Health Survey for England 2007 (National Statistics, 2007)
Physical/Environmental	Q6, Q9	Health Survey for England 2007 (National Statistics, 2007), TPAQ questionnaire (Ogilvie *et al.,* 2012)
MOTIVATION		
Automatic	Q6, Q9	Health Survey for England 2007 (National Statistics, 2007), TPAQ questionnaire (Ogilvie *et al.,* 2012).
Reflective	Q7	Health Survey for England 2007 (National Statistics, 2007), TPAQ questionnaire (Ogilvie *et al.,* 2012).
BEHAVIOUR	Q10–Q16	IPAQ Short (IPAQ, 2005)

The mapping of the survey questions to the COM-B model (table 5.2) proved helpful in revealing some gaps which were not extensively covered by the survey. One of such is the impact of religion and the role of environmental factors. Although the latter was partly addressed by adapting a Likert scale question from the TPAQ survey to examine the perceived influence of the built and natural environment on participation in physical activity, both areas were flagged as necessary for the qualitative phase of the research.

5.4.2 Piloting

A pilot study was conducted in January 2018 among 18 male adults and older adults (≥40) from the Somali community. The participants of the pilot study were handpicked through the personal contacts of the researcher. The pilot data collection occurred on 20 January 2018 at a Somali football event at City Academy Bristol. The pilot provided an opportunity to note the time taken to complete the survey, test the acceptability of the questionnaire, assess understanding of the questions and address necessary revisions. Data from the pilot study were subjected to the Cronbach alpha test to calculate the internal consistency of the Likert scale sections (1, 2 and 10 of the questionnaire). This is in line with recommendations from Tavakol and Dennick (2011) that the internal consistency of a questionnaire with multiple concepts should be calculated for each concept. The Cronbach alpha values were calculated as 0.60, 0.88 and 0.56, respectively, showing a reasonable level of internal consistency.

The average time taken to complete the survey was 13 minutes, and this was perceived to be appropriate by a majority of the respondents. All but one of the respondents self-completed the survey. The survey questions were perceived to be clear, although there was a suggestion by two participants to shorten the overall length of the survey. Some participants of the pilot survey recommended the design of a complementary online survey to improve accessibility and ease of completion, and this suggestion was implemented.

5.4.3 Data collection

The survey was initially designed as a paper survey for dissemination via various Somali events and local racially minoritised networks that cater to the needs of the Somali population in Bristol. However, following recommendations from the pilot survey, an

online version of the survey was designed on Qualtrics. The survey was distributed via the following channels:

Bristol Somali Resource Centre- 19 July 2018 (n=17)

The first data collection took place at the Bristol Somali Resource Centre at Barton Hill Settlement, Bristol. The researcher had earlier paid a visit to the resource centre in March 2018 but was not given access to disseminate the survey via this organisation. However, following the intervention of a local gatekeeper with community links, the researcher was welcomed back in July 2019 for data collection. Data collection was performed by distributing paper copies of the information sheet, consent form and survey to those attending the resource centre.

Bristol City Council -19 July 2018 (n=5)

The researcher was led by the local gatekeeper to the Bristol City Council office in Easton, where some staff from the Somali community also completed the paper survey.

Black, Asian and Racially Minoritised Women's Forum at Barton Hill -20 July 2018 (n=15)

The Racially Minoritised Women's Forum is a weekly event organised by women from the local community around the Easton, Barton Hill and Saint Paul areas of Bristol. The event seeks to empower women from racially minoritised backgrounds with skills in catering, art and craft. The event also provides an opportunity for networking and mentoring new members of the community. The researcher attended the event and distributed the paper survey to eligible and willing participants.

Bristol Somali Festival-27 October 2018 (n=32)

The Bristol Somali Festival is an annual event designed to celebrate the Somali culture, heritage and community in Bristol. The event was designed to align with Black history month, celebrated annually in October across the UK. This event marked the first data collection at an event. The researcher attended the event alongside a local Somali interpreter to assist any individuals who may require interpretation to complete the survey. The event was attended by over 70 people, including children, adults and guests from non-racially minoritised backgrounds. Data collection was performed one-to-one by verbal

invitation. Eligible and consenting respondents were subsequently provided with an information sheet, consent form and the paper survey or the online survey to be completed on a tablet device. Data collection took place shortly before the event began and in between the event, during breaks. The paper survey was more popular than the online survey at the event.

Bristol Somali Careers Fair- 30 March 2019 (n=27)

The researcher attended the inaugural edition of the Bristol Somali Careers Fair at City Academy Bristol. This event was designed to inspire young members of the Somali community and was attended by a diverse range of Somali professionals and organisations affiliated with the Somali community. The researcher was provided with a stall to display a poster about the research and engage with interested members of the Somali community (figure 5.2). Paper questionnaires were distributed to eligible and consenting adults who visited the stall. Respondents were also given the option to complete the online version of the survey, but the majority showed a preference for the paper version.
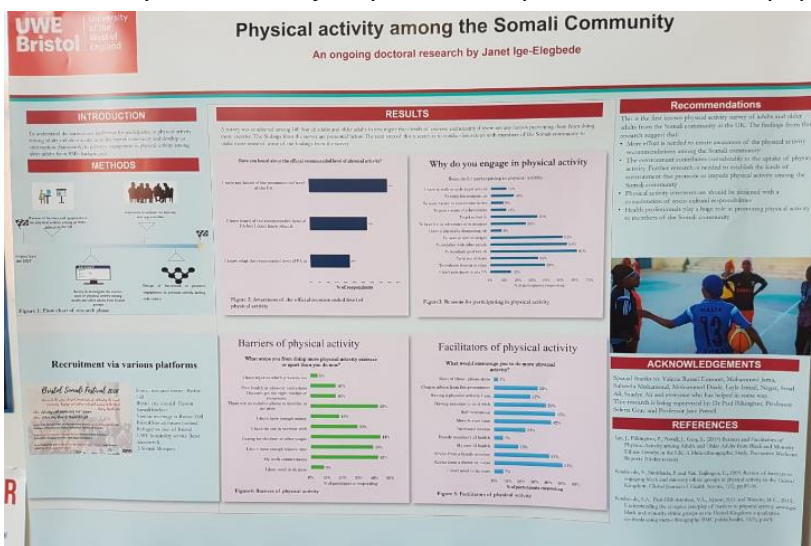
Figure 5.2 Image of a poster displayed at the Bristol Somali Careers Fair

Refugee Women of Bristol- 18 December 2018 (n=6)

Refugee Women of Bristol is a local charity that targets the needs of multi-ethnic refugee women in Bristol. The researcher met the coordinator of the charity during the Bristol Somali Festival and was invited to distribute the questionnaires during one of the organisation's weekly drop-in sessions. Data collection was performed one-to-one by verbal invitation. Eligible and consenting adults were invited to complete the paper questionnaire.

Tawfiq Mosque in Bristol December 2019 -January 2019 (n=18)

The paper survey was distributed by administrators of Tawfiq Mosque to members of the religious organisation. The researcher engaged with a member of the local community, who acted as a gatekeeper to disseminate the survey to members of this mosque. The mosque was chosen due to its strategic location in the Barton Hill area of Bristol and its membership composition, which is mainly adults and families from the Somali community.

Online dissemination of the survey

The anonymous survey link was shared with coordinators of the Wellspring Centre and Up Our Street. Both organisations are local charities that serve a diverse community, including but not limited to the Somali community in the Barton Hill and Lawrence Hill areas of Bristol. The coordinators of both organisations agreed to send out the survey link to members of their organisation via electronic mail. At the time of the survey dissemination, both organisations had a combined mailing list of 200 people; however, there are likely to be some overlaps in the membership of both organisations. The survey link was also shared on Facebook and targeted at local Somali forums in Bristol, including the Bristol Somali Forum.

5.4.4 Data analysis

The paper survey data were entered into IBM SPSS Statistics version 24.0 in preparation for data analysis, while the online survey data were extracted and imported into the same software. Data from both online and paper survey formats were examined and cleaned to ensure data accuracy compatibility of both data sources.

Data analysis was conducted on SPSS version 24, while graphs and charts were plotted in Microsoft Excel. Categorical variables were described by the number of respondents and percentages, while continuous data were described using Median and Interquartile range. Awareness of the importance of physical activity was tested using responses to two questions. The first question comprised five statements measured on a six-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree and can't choose). For ease of analysis, the options' strongly agree' and 'agree' were classified as 'agree', while the options' strongly disagree' and 'disagree' were classified as 'disagree', respectively. The second question comprised six statements on a five-point Likert scale

(strongly agree, agree, neither agree nor disagree, disagree and strongly disagree). The options' strongly agree' and 'agree' were classified as 'agree', while the options' strongly disagree' and 'disagree' were classified as 'disagree', respectively.

The barriers and facilitators of physical activity were measured by a range of multiple-choice questions; responses were analysed categorically and presented as the number of respondents and percentages. The role of the environmental factors was determined using responses to 11 statements measured on a five-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree) and presented as a three-point Likert scale by merging the options' strongly agree' and 'agree' as 'agree' and 'strongly disagree' and 'disagree' as 'disagree'.

The short form of the IPAQ tool was used to estimate the level of physical activity of survey respondents. The scoring technique recommended by IPAQ researchers was applied to rank the levels of physical activity of respondents as low, moderate and high (IPAQ 2005). This technique scores physical activity based on the type of the activity, the duration of the activity and the metabolic equivalent of the task (MET). The MET represents the ratio of energy expended during an activity to energy expended at rest (IPAQ, 2005).

The MET values for walking and moderate and vigorous physical activity were derived from the scoring protocol as 3.3 MET, 4.0 MET, and 8.0 MET, respectively. The formula below was applied for estimating the total MET minutes/week for each respondent:

Walking (MET minutes/week) = 3.3 * walking minutes * walking days

Moderate physical activity (MET minutes/week) = 4.0 * moderate-intensity activity minutes * moderate days

Vigorous physical activity (MET minutes/week) = 8.0 * vigorous-intensity activity minutes * vigorous-intensity days

Total MET minutes/week for each respondent = sum of Walking + Moderate + Vigorous MET minutes/week scores (IPAQ, 2005).

The following definition was applied from the IPAQ-scoring technique to categorise the levels of physical activity of survey respondents.

Low: Lowest level of physical activity. This includes individuals who do not meet the criteria for moderate or high physical activity levels, i.e. individuals who engage in physical activity at a level <600 MET min/week (IPAQ, 2005).

Moderate: This includes individuals who have engaged in physical activity at a level of 600–1,500 MET min/week by engaging in three or more days of vigorous-intensity activity for a minimum of 20 minutes per day; five or more days of moderate-intensity activity for a minimum of 30 minutes per day; or five or more days of any combination of moderate-intensity and vigorous-intensity activity achieving a total of at least 600 MET minutes/week (IPAQ, 2005).

High: This is the highest level of physical activity and includes individuals that have achieved vigorous-intensity activity for a minimum of three days to attain at least 1,500 MET min/week or seven days of any combination of moderate-intensity and vigorous-intensity activity to achieve a total of at least 3,000 MET min/week (IPAQ, 2005).

Comparisons between demographic variables, including gender, age and level of education, were conducted using the Chi-square test

5.4.5 Ethics

A risk assessment form was completed on 26 June 2017 (Appendix 1). The form identified all possible hazards associated with conducting the survey, e.g. safety of the researcher, risk associated with the translator drifting away from the survey questions and the risk of survey respondents becoming distressed. The researcher estimated the likelihood of the hazard occurring and the severity of the hazard if it ever occurred. A score was given for each component based on the risk assessment template. The researcher also considered actions to mitigate each of the hazards identified. The final estimate showed that the risk level for this study was negligible (risk level 2 out of 25). Although this project was deemed to be low risk, to ensure that the highest level of ethical practice was maintained, the researcher completed the UWE FREC ethics application form. This form is independently assessed by members of the university ethics committee to assess compliance with the university's ethical standards. The ethics form was initially submitted for the paper survey but was amended to include the online element of the research. The researcher was granted conditional ethics approval on 21 September 2017 (Appendix 2). The conditions

attached to the approval required clarification of the research methods and the provision of further information on the consent form. These conditions were addressed and assessed by the university ethics committee, following which a full ethics approval was issued on 3 October 2017 (Appendix 3).

This research adhered to the guidelines provided by the British Educational Research Association (BERA) (BERA, 2018). The BERA (2018) guidelines emphasise the importance of ensuring transparency of research by providing clear information about the research, the process of opting in and the right to withdraw from the study to potential participants. In this research, informed consent was achieved by providing a detailed participant information sheet that highlighted the rights of participants and the process of opting out of the study. Interested participants were required to indicate informed consent by completing the signature page on the information sheet and consent form (paper survey) or by agreeing with the information provided in the online version of the consent form.

Another important aspect of research ethics is the issue of compliance with regulations on data handling, processing and storage. In this research, the data provided by participants was held and used following the Data Protection Act (1998) and the General Data Protection Regulation (2019). As recommended by the data protection regulation, the data obtained from the paper survey was securely stored in the researcher's filing cabinet, which could only be accessed by the researcher. Once the data were entered on SPSS, the data were stored on an encrypted, password-protected laptop and on the researcher's UWE OneDrive, which could only be accessed by the researcher.

5.5 Results

5.5.1 Characteristics of respondents

A total of 140 participants completed the survey; this comprised 120 returns from the paper survey and 20 from the online survey. Table 5.3 provides a breakdown of the socio-demographic characteristics of the survey respondents.

Table 5.3 Characteristics of survey respondents

Respondent characteristics	Number of respondents	Percentage
Gender		
Male	70	50%
Female	68	49%
Prefer not to say	2	1%
Marital status		
Single	26	18%
Married	108	77%
Divorced	4	3%
Widowed	1	1%
Separated	1	1%
Age range		
40–50	52	38%
50–54	26	19%
55–59	27	19%
60+	32	24%
Employment status		
Employed	45	34%
Self-employed	41	31%
Unemployed	47	35%
Level of education		
No formal education	34	25%
High school or secondary school	22	16%
College	39	29%
Bachelor's degree	28	20%
Master's degree	9	7%
Professional degree	2	1%
Doctorate degree	1	1%
Other qualification	2	1%

The age distribution in the population was skewed towards those under 60, possibly reflecting the age distribution among the Somali adult population in Bristol. The level of

education also showed an unequal distribution, with relatively fewer degree holders. This perhaps reflects the high level of inequalities that exists among the Somali community in Bristol. It was also interesting to see an equal representation across both genders despite the widely reported barriers to engaging racially minoritised men in research.

5.5.2   Awareness of the importance of physical activity

The results generally show good awareness of the health and wellbeing benefits of physical activity, but there were some notable gaps in knowledge, with 17% of respondents agreeing that physical activity can weaken their bones and give them high blood pressure (table 5.4).

Table 5.4 Awareness of the health benefits of physical activity

Statements about the relationship between physical activity and wellbeing	Agree	Neither agree nor disagree	Disagree
Regular physical activity can help to prevent heart disease	137 (98%)	1 (1%)	1 (1%)
Regular physical activity can help to improve your health	135 (96%)	3 (3%)	2 (1%)
Regular physical activity can lengthen your life	105 (79%)	22 (17%)	5 (4%)
Regular physical activity can keep you supple	107 (78%)	28 (20%)	3 (2%)
Regular physical activity can weaken your bones	23 (17%)	41 (29 %)	76 (54%)
Regular physical activity can give you high blood pressure	23 (17%)	27 (19%)	90 (64%)

There were also some gaps in knowledge of the benefits of high-intensity forms of activity, as 36% of respondents felt that being out of breath from engaging in physical activity was not beneficial for their health. About 14% of respondents felt that they could not get enough physical activity without doing sports or exercise. This suggests that some respondents may perceive that other forms of activities, such as recreational walking or cycling, were not sufficient to maintain appropriate levels of physical activity (table 5.5).

Table 5.5 Awareness of appropriate levels of physical activity

Statements about physical activity	Agree	Neither agree nor disagree	Disagree	Can't choose
You can get enough physical activity in your daily life without doing sports or exercise, such as jogging or going to the gym	105 (77%)	12 (9%)	20 (14%)	-
Physical activity is good for your health, even if it is only for 10 minutes	128 (93%)	5 (3%)	6 (4%)	-
Physical activity is good for your health, even if it is moderate, such as walking briskly, gardening (for example, digging) and housework, for example, vacuuming)	124 (90%)	14 (10%)	-	-
Physical activity is better for your health if you keep it up for at least 30 minutes	114 (82%)	20 (14%)	5 (4%)	-
Physical activity is better for your health if it gets you out of breath	55 (40%)	32 (23%)	49 (36%)	1%

5.5.3 Awareness of physical activity recommendations

There was a considerable gap in the knowledge of the recommended levels of physical activity, with three-quarters of respondents reporting that they were unaware of the recommended level of physical activity (figure 5.3).
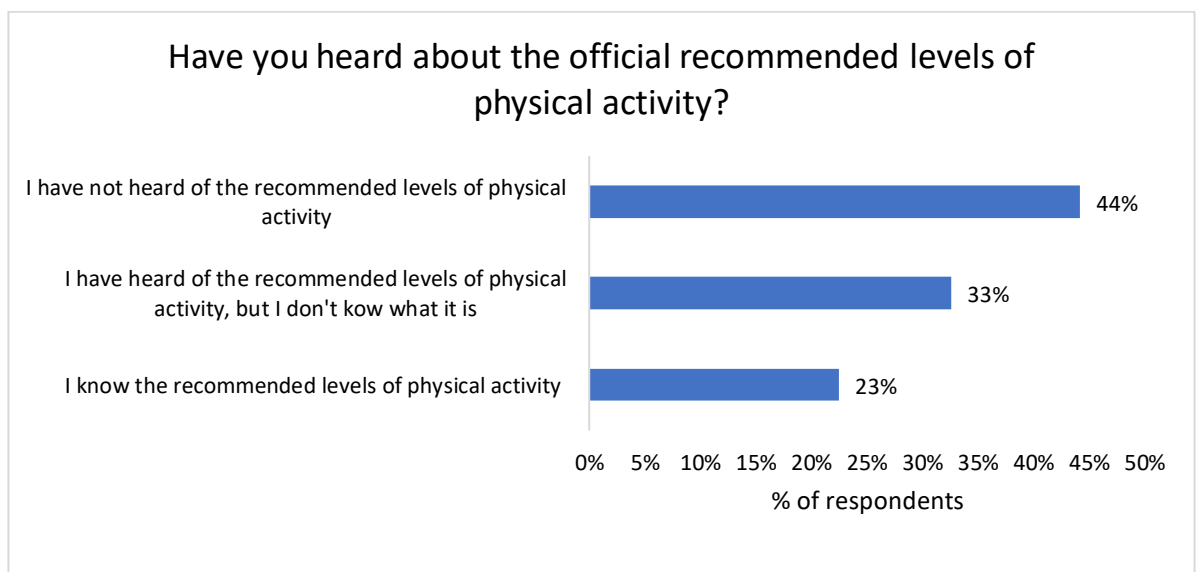
Figure 5.3 Awareness of the recommended levels of physical activity

Multiplying the average number of days, respondents think someone of their age should be active by the number of minutes per day suggests that the average time considered appropriate to spend on physical activity is about 81 minutes/week (table 5.6). This is much lower than either the WHO recommendation or the UK government recommendation of 150 minutes of moderate-intensity physical activity per week. However, it is worth noting that neither the question nor the answers from respondents specified the level of intensity.

Table 5.6 Perceptions of appropriate levels of physical activity

The average number of days respondents think someone of their age should do physical activity	Median (IQR)=3 days (±2)
Number of minutes per day required for maintaining good health	Median (IQR) = 30 minutes (±10)

5.5.4 Reasons for engaging in physical activity

According to the respondents, the most popular reasons for engaging in physical activity were to maintain good health, socialise and lose or control weight. The least popular reasons for engaging in physical activity in this survey were having a physically demanding job and the need to commute by walking or cycling (table 5.7).

Table 5.7 Reason for engaging in physical activity

Reason for engaging in physical activity	Number of respondents	% of respondents
To maintain good health	87	62%
To socialise with other people	76	54%
To lose or control weight	72	51%
To release tension or relax	57	41%
To get or feel fit	47	34%
To be out of doors	46	33%
To have fun, adventure or excitement	37	26%
To enjoy the competition	24	17%

To gain a sense of achievement	16	11%
To work harder or concentrate better	16	11%
I have to walk or cycle to get around	15	11%
I have a physically demanding job	10	7%

5.5.5 Barriers of physical activity

As expected, some of the most significant barriers identified relate to practical issues, such as lack of time and caring responsibilities. However, other issues, such as the lack of suitable places for physical activity, raise further questions about the quality of and access to green spaces, open spaces and parks (figure 5.4). Concerns about having no one to exercise with could reflect a preference for informal activities in a group setting. It is noteworthy that only 8% of respondents affirmed that they did not need to increase their physical activity levels. This could imply that there is a recognition of the importance of physical activity and a desire to improve levels of physical activity among the majority of the survey respondents.

What stops you from doing more physical activity, exercise, or sports than you do now?

Response	%
I have injuries which prevents me	5%
Poor health or physical limitations	16%
I haven't got the right clothes or equipment	16%
There are no suitable places to exercise in my area	42%
I don't have enough money	18%
I have no one to exercise with	30%
Caring for children or older people	44%
I don't have enough leisure time	39%
My work commitments	42%
I don't need to do more	8%

% of participants responding

Figure 5.4 Barriers to participating in physical activity as identified by respondents

5.5.6 Facilitators of physical activity

The perceived importance of health professionals, as shown in figure 5.5, is a strong indicator of the role of health professionals in raising awareness about physical activity.

Having someone to exercise with was also highly rated, reinforcing the argument about the preference for less-structured activities that can be undertaken in a group.

What would encourage you to do more physical activity?

Category	%
None of these- please state	3%
Clearer advice from the government	33%
Having a physical activity I am capable of	27%
Having someone to do it with	39%
Self-motivation	45%
More leisure time	42%
Increased income	23%
Family member's ill health	7%
My own ill health	18%
Advice from a family member	41%
Advice from a doctor or nurse	51%
I don't need to do more	7%

% of participants responding

Figure 5.5 Facilitators of physical activity as identified by respondent

5.5.7 The role of the built environment

The impact of the built and natural environment was explored using a set of questions adapted from the TPAQ (Ogilvie *et al.,* 2012). Respondents were asked to indicate whether they agreed or disagreed with statements about the design of their environment and its impact on physical activity. Lack of walking and cycling routes, concerns about safety, both from traffic and from perceived fear of crime, and antisocial behaviours were highlighted as key environmental issues. Other concerns relating to the quality of the environment and access to open space could reflect wider issues on inequalities and neighbourhood deprivation among people from racially minoritised communities, as discussed in the previous chapter.

Table 5.8 Environmental influences on physical activity

Statements about the built environment	Agree	Neither agree nor disagree	Disagree
Cycling is unsafe because of the traffic.	98 (72%)	18 (13%)	21 (15%)
There are no convenient routes for walking and cycling.	97 (72%)	14 (10%)	24 (18%)
There are not enough safe places to cross the roads.	88 (64%)	24 (18%)	25 (18%)
Walking is unsafe because of the traffic.	82 (59%)	15 (11%)	41 (30%)
The area is unsafe because of the level of crime or antisocial behaviour.	79 (59%)	25 (19%)	30 (22%)
There are many road junctions.	76 (56%)	41 (31%)	18 (13%)
There are pavements suitable for walking.	61 (45%)	20 (15%)	55 (40%)
There are places to walk or cycle to (e.g. shops, restaurants, leisure facilities).	58 (43%)	16 (12%)	60 (45%)
There are open spaces (e.g. parks, sports fields or beaches).	52 (38%)	9 (7%)	74 (55%)
There are special lanes, routes or paths for cycling.	38 (29%)	34 (25%)	61 (46%)
The area is generally free from litter or graffiti.	36 (26%)	34 (25%)	66 (49%)

5.5.8   Levels of physical activity and associated factors

The IPAQ short form was adapted to measure the levels of physical activity of respondents (IPAQ, 2005). Each respondent was ranked into one of three levels of physical activity (low, moderate or high) according to the scoring protocol. Unsurprisingly, an overwhelming majority of respondents fell into the low-IPAQ score category, while only 3% of respondents met the requirement of a high-IPAQ score (figure 5.6). This suggests a high prevalence of physical inactivity among survey respondents. This provides some evidence for further investigation of levels of physical activity among a more representative sample of Somali adults in Bristol.
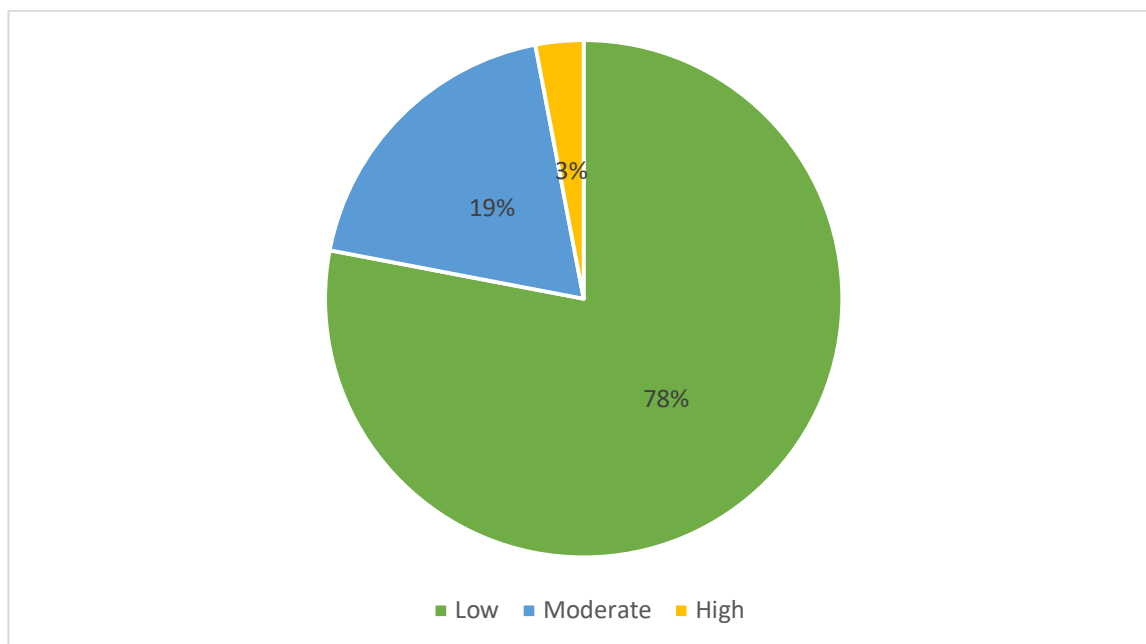
Figure 5.6 IPAQ score of respondents (n = 137)

The relationship between levels of physical activity measured by the IPAQ score and socio-demographic variables was assessed using the Kruskal Wallis test (table 5.9). The findings showed a significant association between the IPAQ score of respondents and gender, age, employment status and level of education. Females were more likely to be grouped within the low-IPAQ score category than males, while males were more likely to be categorised under the high-IPAQ score than females, although the sample size was relatively small.

The results also point to a possible decline in physical activity by age. The majority of the respondents over 60 years were all classed within the low-IPAQ score threshold. The variations in the IPAQ score of respondents aged 40–49 presented a more positive picture, but a considerable proportion of this population group remained within the low-IPAQ score threshold.

The relationship between the employment status of respondents and levels of physical activity was noteworthy. A higher proportion of unemployed respondents were categorised into the low-IPAQ score compared with those in employment.

There was no significant association between the self-reported health status of respondents and their IPAQ score. However, the level of education showed significant associations with the IPAQ score of respondents, with a higher proportion of respondents

with no formal education categorised under the low-IPAQ score category compared with those with a bachelor's degree or higher.

Table 5.9 Factors associated with IPAQ score of respondents

Respondent characteristics	IPAQ Score			P-value
Gender	Low	Moderate	High	
Male	48 (71%)	17 (25%)	3 (4%)	0.046
Female	56 (84%)	9 (14%)	1 (2%)	
Age range				
40–49	30 (59%)	17 (33%)	4 (8%)	0.000
50–59	43 (86%)	8 (16%)	0	
60 and above	30 (97%)	1 (3%)	0	
Employment status				
Employed	26 (59%)	14 (32%)	4 (9%)	0.001
Self-employed	35 (69%)	4 (31%)	0	
Unemployed	39 (85%)	7 (15%)	0	
Level of education				
No formal education	33 (97%)	1 (3%)	0	0.001
High school or college	46 (79%)	10 (17%)	2 (4%)	
Degree level	24 (58%)	15 (37%)	2 (5%)	
Health status				
Good (including excellent)	59 (71%)	21 (25%)	3 (4%)	0.067
Fair	30 (88%)	4 (12%)	0	
Poor	16 (90%)	1 (5%)	1 (5%)	

5.6 Discussion

Awareness of the importance of physical activity

Findings from this survey demonstrated varying levels of awareness of the health benefits of physical activity. The majority of respondents (90%) agreed with the statement that physical activity is good for one's health, even if it is moderate. This is in congruence with findings from the 2007 Health Survey for England, in which over 90% of respondents agreed with the same statement (National Statistics, 2007). Nearly all respondents (98%) agreed that regular physical activity could prevent heart disease and improve health (96%). This

finding is comparable to the study by Crombie *et al*. (2004), where 96% of Scottish respondents aged 65 and above affirmed that regular physical activity could improve one's health. Other studies have reported comparable levels of awareness of the health benefits of physical activity (Fredriksson *et al.,* 2018). This present study reported a higher level of awareness of the impact of physical activity on the prevention of heart disease (98%) compared with findings from Crombie *et al*. (2004) (87%). However, caution should also be applied while comparing findings from this study with Crombie *et al*. (2004) due to the time lag between both studies. This is because there have been more education and awareness campaigns about the benefits of physical activity since 2004. This caution is also applicable when comparing findings from this study with the 2007 Health Survey for England 2007 (National Statistics, 2007), as there have been more recent HSE results on physical activity including the 2012 and 2016 surveys.

Only a minority of respondents in this study provided incorrect responses – that regular physical activity can give one high blood pressure and weaken one's bones (17%). However, over a quarter (29%) were unsure of the impact of physical activity on bone strength, and 19% were uncertain about the effects of physical activity on blood pressure. Again, this finding is not too different from Crombie *et al*. (2004), in which 13% and 15% of respondents reported incorrect responses about the impact of physical activity on bone strength and blood pressure, respectively. The authors of this study also highlighted the concern that a quarter of respondents were unsure of the impact of physical activity on bone strength and blood pressure. Other qualitative studies have reported that adults and older adults from racially minoritised backgrounds are discouraged from engaging in physical activity due to its perceived negative impact on bone strength (McKenna and Ludwig, 2008) and hypertension (Khanam and Costarelli, 2008). Information about the benefits of physical activity for people with chronic conditions and the recommended levels of physical activity needs to be more widely promoted. Such guidance should be accessible to members of racially minoritised groups and their families. Healthcare professionals also have an essential role to play in clarifying information about the recommended levels of physical activity, particularly for patients with existing chronic conditions (Ige-Elegbede *et al.,* 2019).

A higher proportion of respondents in this study (77%) agreed that they could get enough physical activity in their daily lives without going to the gym or doing specific sports

compared with respondents in the Health Survey for England 2007 (44%) (National Statistics, 2007). This could be partly explained by cultural and demographic differences across both studies. Adults from racially minoritised communities are less likely to engage in formal exercise and sports than their non-racially minoritised counterparts (Williams *et al.,* 2011). The lack of engagement in formal sporting activities could be due to community expectations, overt racism and other practical challenges (Such *et al.,* 2016; Koshoedo *et al.,* 2015; Ige-Elegbede *et al.,* 2019). This could explain why the majority of the respondents in this survey agreed that they do not need to engage in formal physical activity or exercise to live active lives. The danger, however, is an assumption that people from racially minoritised communities are aware of other forms of physical activity that could count towards meeting the recommended levels of physical activity. There are several misconceptions about what counts as physical activity among racially minoritised communities in the UK (Such *et al.,* 2016; Grace *et al.,* 2008). It is, therefore, essential to promote understanding of culturally acceptable forms of physical activity to members of racially minoritised communities. Examples of such forms of physical activity identified in chapter 4 of this thesis include walking and community-led exercise classes. Further research is required to establish the types of physical activity that are culturally acceptable among Somali adults.

Awareness of the recommended levels of physical activity

Findings from this study show low awareness of the recommended levels of physical activity. Less than a quarter of respondents said they knew the recommended levels of physical activity, and about 43% of respondents said they were not aware of the physical activity recommendations. This is considerably lower than the figures reported in the 2007 Health Survey for England (National Statistics, 2007). The average number of minutes of physical activity which respondents considered appropriate (90 minutes/week) is also considerably lower than the recommended levels of 150 minutes of moderate-intensity physical activity per week. It is important to note that, although respondents were not explicitly asked to indicate whether or not the time specified related to moderate or vigorous physical activity, it is assumed that the figures provided relate to the former. This assumption is corroborated by findings from Curry et al. (2015) where the researchers reported that women from South Asian backgrounds believed that light intensity physical activity derived from housework and domestic responsibilities was enough to meet the

physical activity requirements for healthy living. Furthermore evidence from Koshoedo *et al.* (2015) suggest that adults from racially minoritised groups are less likely to meet the recommended physical activity guidelines. Improving awareness of the recommended levels of physical activity among adults and older adults from racially minoritised communities is essential for the uptake of physical activity interventions (Such *et al.,* 2016). The WHO Global Action Plan on physical activity recommends integrating physical activity communication campaigns with community-based programmes to improve awareness of and appreciation for physical activity (WHO, 2018). This approach could provide opportunities to develop accessible and culturally appropriate communication campaigns for racially minoritised communities. It is also important that awareness raising interventions discuss the levels an intensity of various forms physical activity. Curry *et al.* (2015) called for a recognition that people from racially minoritised communities might already be engaged in light intensity activity and would need targeted support to build on this to achieve MVPA required for healthy living.

Although low levels of awareness of the recommended levels of physical activity are particularly prevalent across racially minoritised groups, it is not limited to this population. Several studies have reported low levels of awareness of the guidance on physical activity among non-racially minoritised groups (Chatterjee *et al.,* 2017; Lowe *et al.,* 2017; Wheeler *et al.,* 2017; Sawyer *et al.,* 2014; Douglas *et al.,* 2006).

Levels of physical activity

The proportion of respondents meeting the IPAQ criteria for moderate and high physical activity levels was unsurprisingly low, given the low levels of awareness of physical activity recommendations. Over three-quarters of survey respondents were deemed to engage in low levels of physical activity, i.e. less than 600 MET minutes/week. Other studies have reported a high prevalence of physical inactivity among adults from other racially minoritised groups in the UK (Emadian and Thompson, 2017; Curry and Thompson, 2015; Babakus and Thompson, 2012). Findings from the 2018/2019 Active Lives Survey suggest that whilst there was an increase in the overall percentage of regularly active adults, people from Black and Asian backgrounds continue to be less active. According to the Active Lives Survey report, 29% of Black adults aged 16 and above were deemed to be inactive (Sports England, 2019). This figure is considerably lower than the data from this study. While there

are fundamental differences in the definition of inactivity and low physical activity levels across both studies, the disparity between both studies could also be attributed to demographic differences. The data from the Active Lives Survey include a broader definition of Black adults, i.e. people aged 16 and above who identify as Black and not necessarily African. This would include Black British born in the UK, Afro-Caribbean and other non-African groups who self-identify as Black. There is no nationally representative data on physical activity among Africans in the UK. The broad categorisation of data in the Active Lives Survey report can lead to an underestimation of the prevalence of physical inactivity among Black Africans aged 40 and above.

The level of physical activity of respondents in this survey was significantly associated with gender, age, employment status and level of education. A higher proportion of females compared to males were deemed to engage in low levels of physical activity. This is in line with the general trend observed in the UK (Sports England, 2019) and trends observed among South Asian adults in the UK (Moniruzzaman *et al.,* 2016). Although the relationship between gender and physical activity is complex, evidence suggests that the gap begins in early life (Cla, 2018). Addressing such gaps would ultimately require shifts in sociocultural norms and equitable access to physical activity (Cla, 2018). This is particularly important, as findings from the meta-ethnographic study in chapter 4 showed that women from racially minoritised communities perceived physical activity as a neglect of duty. The association between age and level of physical activity has been widely reported in previous studies (Sports England, 2019; Moniruzzaman, Ahmed and Zaman*,* 2017).

The relationship between sociodemographic variables and levels of physical activity among people from racially minoritised groups in other parts of the world, have followed a similar pattern to the pattern observed in this study. The study by Eyler *et al.* (2002a) and Eyler *et al* (2002b) both reported a decline physical activity levels by age among people from diverse racial backgrounds in the United States. Gavin, Fox and Grandy (2011) also reported a similar pattern of association between gender and levels of physical activity with men from racially minoritised groups in the USA reporting higher levels of physical activity than their female counterparts. Dassanayake *et al.* (2011) analysed secondary data from the Australian National Health Survey to examine the correlates of physical activity among racially diverse populations. The authors reported higher levels of inactivity among female immigrants compared to male immigrants. Other studies in New Zealand (Kolt *et al.,*2007)

and Canada (Ali *et al.,* 2022) have reported similar associations between sociodemographic variables and levels of physical activity and have called for targeted interventions for people from racially minoritised groups.

Further actions are required to address the higher prevalence of physical inactivity in later life. The WHO (2019) recommends the creation of active environments by designing infrastructures to support walking and cycling with due regard for safety and equitable access for people of all ages. It is also essential that such facilities are designed to meet the needs of ethnically diverse groups.

The socioeconomic factors associated with physical activity in this study include the level of education and employment status. Although these factors have been widely reported to impact physical activity across the general population (Sports England, 2020), people from racially minoritised groups are disproportionately affected by these socioeconomic factors. Evans and Page (2012) reported that Somali-born migrants in the UK have the highest rate of unemployment, suggesting higher susceptibility to physical inactivity. Therefore, it is vital for physical activity interventions to recognise the socioeconomic disadvantages that adults from the Somali community face and ensure that interventions are accessible.

Barriers to physical activity

Some of the practical barriers to physical activity identified in this present study have been previously reported among non-racially minoritised groups (Franco *et al.,* 2015). However, other challenges, such as lack of suitable space and caring responsibilities, are more widely reported among people from racially minoritised communities (Koshoedo *et al.,* 2015). Such *et al*. (2016) assert that, although adults from racially minoritised groups encounter similar barriers to the general population, other peculiar sociocultural barriers apply almost exclusively to people from racially minoritised communities. Lack of suitable space is a key barrier that is peculiar among people of racially minoritised communities. Data from the Office for National Statistics (2020c) suggests that compared with White people, Black people in England are four times as likely to have no outdoor spaces in their homes. This lack of access to outdoor spaces is likely to have an impact on the engagement and use of parks and green spaces among people from racially minoritised groups (Burt *et al.,* 2013). The majority of respondents in this survey indicated that there are no convenient walking

and cycling routes in their locality. Over half of the respondents expressed concerns about the safety of their neighbourhoods due to antisocial behaviour.

Further research is needed to explore the environmental modifications required to promote physical activity among members of the Somali community. Caring responsibilities were also cited as a barrier to physical activity. This could mainly apply to women due to perceptions of the primary responsibility of a woman to be that of a home keeper (Grace *et al.,* 2008). Therefore, it is essential to explore opportunities to embed physical activity as part of daily living. This could entail promoting active travel as an alternative to driving to schools and convenience facilities.

Facilitators of physical activity

The importance of dialogue between health professionals and adults from racially minoritised groups was affirmed by over half of respondents who reported that advice from a health professional would encourage them to do more physical activity. Findings from the meta-ethnographic study conducted in chapter 3 of this thesis affirm that, although health professionals play an essential role in promoting healthy lifestyles, they are often reluctant to discuss physical activity during consultations with members of racially minoritised groups. Douglas *et al*. (2006) conclude that medical support provides significant improvement in the adoption and maintenance of active lifestyles. Research conducted by Nobles *et al.* (2020) sought to investigate the understanding of physical activity among underserved groups in Bristol. This study involved 15 Somali women aged 19–65 years and non-racially minoritised participants living in deprived areas of Bristol. The findings from this study suggested that Somali women perceived healthcare professionals as key influencers on physical activity (Nobles *et al.,* 2020).

The ability of health professionals to clarify the importance of physical activity and physical activity recommendations can be influenced by their knowledge of existing guides on physical activity. The study by Wheeler *et al*. (2017) investigated awareness of the recommended levels of physical activity among healthcare professionals, mainly GPs, GP registrars and practice nurses. The authors reported that over half of health professionals underestimated the UK-recommended physical activity guidelines. A similar study in Scotland found that only a third of GPs correctly identified at least one component of the national guidance relating to physical activity (Douglas *et al*., 2006). This suggests a possible

lack of emphasis and incorrect advice on physical activity recommendations to patients during consultations.

Further actions are needed effectively to disseminate information relating to physical activity among health professionals. Douglas *et al*. (2006) recommended using tailored physical-activity tools and guidance to increase awareness of physical activity recommendations and improve the consistency of information across several healthcare settings. The All Our Health resource is an example of a resource designed to help health professionals promote health and wellbeing as part of their daily practice in England (Public Health England, 2019). The resource, which has over 25 separate guidance on a range of public health issues, including physical activity, also features an online interactive learning tool for physical activity (Public Health England, 2019). Although the physical activity resource aims to equip healthcare professionals with the confidence and skills required to promote physical activity, its effectiveness is highly dependent on the awareness and use of the resource. A formal evaluation of the tool in terms of its reach and impact is yet to be conducted. However, findings from a recent meta-analysis evaluating the effectiveness of primary care interventions prompted or delivered by health professionals suggest that such interventions could increase the odds of patients meeting the guidelines for moderate to vigorous physical activities (MVPA) by 33% (Kettle *et al.,* 2022).

Another important facilitator identified in this study is advice from a family member. This reiterates the importance of social support in maintaining active lifestyles. This is congruent with findings from Nobles *et al.* (2020), in which Somali women were more likely to take advice from peers and members of their families. Khanam and Costarelli (2008) identified a lack of support from friends and family as a key barrier to physical activity among overweight Bangladeshi women living in the UK. The authors further identified cultural values as the underpinning reason behind the lack of family support in that husbands disapprove of their wives going out alone. This assertion is yet to be tested among the Somali community.

Implications of findings

As disused above, the correlates, barriers and facilitators of physical activity identified in this study have also been reported among other racially minoritised groups within and outside the UK (Ali *et al.,* 2022; Curry and Thompson; 2015; Eyler *et al*., 2002). Yet, there

are calls for targeted interventions for specific groups, despite similar shared experiences of barriers across racially minoritised groups (Such *et al.,* 2016; Babakus and Thompson, 2012). This could be partly explained by the fact that people from different ethnicities share different values, religion and traditions (Commission on Race and Ethnic Disparities, 2021). As such, what is culturally acceptable to one group might be counterproductive to another. Although, a one-size fits all approach to physical activity intervention would be unproductive (Public Health England, 2020); it is important to examine successful interventions implemented across other racially minoritised groups and consider if and how they can be adapted to a different group. This would require a good knowledge of the cultural values of the target community and community engagement with target community to evaluate the feasibility of adapting such interventions. Murray *et al.* (2017) provides a framework for cultural adaptation of physical activity interventions to Somali women. This framework identifies four stages; information gathering, adaptation design; preliminary testing and adaptation refinement (Murray *et al.,*2017).

Strengths and limitations of this study

This is the first known study investigating the awareness of the health benefits of physical activity, levels of physical activity, barriers and facilitators among adults from the Somali community in the UK. This study utilised an internationally recognised physical activity instrument to estimate the levels of physical activity. There are, however, several limitations to this research that must be acknowledged.

First, while this study provides insight into an under-researched and under-represented population in physical activity studies, the small sample size and the cross-sectional relationship investigated in this study are important limitations. Cross-sectional survey designs are not appropriate for drawing inferences on causality.

A number of steps were taken to achieve a more representative sample, despite the lack of reliable estimates of the sample frame. One of such step was the use of both paper and online questionnaires with the hope of reaching out to more eligible and willing respondents. Data from the total number of returned questionnaires suggested that the online survey was less preferred than the paper survey. However, the reach of the online survey was reliant on dissemination by local charities to eligible participants, and due to

the requirements for data protection, the researcher was not given access to details of the mailing list used to contact potential participants.

Recruitment was done via convenience sampling methods and this meant that potential confounders could not be controlled at study design stage. However, the stratification of variables at the analysis stage is a good practice for controlling for potential confounders during analysis (Pourhoseingholi, Baghestani, and Vahedi, 2012).

The literature review conducted to inform the selection of an appropriate physical activity tool omitted some potentially reliable tools including the Rapid Assessment of Physical Activity (RAPA) (Topolski *et al.,*2006). This tool offers some potential advantage that over IPAQ including it's specificity towards those approaching later life and the ease of self—administration.

Another limitation is the reliance on self-reported data to estimate levels of physical activity. The accuracy of data provided in this survey also relied on the sincerity of respondents and their understanding of the survey questions. While acknowledging the possibility of over-reporting socially acceptable practices and under-reporting undesirable practices, the assurance of anonymity of response should have prevented false reports. On the other hand, the study by Babakus and Thompson (2015) compared data from accelerometer derived measures of physical activity and the IPAQ short-form among South Asian women and found that women under-reported physical activity levels using the IPAQ tool as a result of lack of understanding of what constitutes MVPA and inability to recall certain parameters of IPAQ. In terms of understanding of questions, the pilot survey proved helpful in assessing understanding, but the gender-biased demography of participants of the pilot survey could present a false assurance of understanding. There are limited physical activity survey tools for people from racially minoritised background and this is a clear research gap that needs to be addressed.

Objective measures of physical activity involving the use of accelerometers are well-esteemed as a more reliable means of estimating physical activity levels (Miles, 2007). However, this was not feasible for a number of reasons. First, the initial consultations with members of the Somali community in Bristol revealed a distrust between members of the community and the research community, which would make the acceptability of wearables difficult. Second, as the field work for this project was self-funded, there were important

resource considerations. Hence, the use of anonymised paper questionnaires provided a more practical way of establishing initial contact with members of this community.

Piloting the survey with middle-aged men during a football game creates a bias in the sampling of the pilot study. It would have been helpful to conduct a pilot among women and across different age groups.

These limitations notwithstanding, this study provides important insight into some of the cultural and behavioural influences of physical activity among adults and older adults from the Somali community in Bristol.

5.7 Conclusion

This study was conducted to investigate the barriers and facilitators of physical activity among adults aged 40 and above from the Somali community in Bristol. Findings from this study highlight the importance of improving the awareness of physical activity recommendations and addressing factors that predispose members of the Somali community to physical inactivity. While there is a general understanding of the benefits of physical activity, the levels of physical activity in this study are remarkably low. The survey also identified important environmental barriers, ranging from access to green spaces to the quality and safety of the built environment. There is also scope to explore the types of physical activity perceived to be culturally acceptable to members of this community. The barriers and facilitators highlighted in this study warrant further in-depth exploration, especially in relation to key cultural considerations that may have been missed.

CHAPTER SIX: QUALITATIVE STUDY

A qualitative study of the experiences of physical activity among adults and older adults from the Somali community in Bristol

6.1 Chapter overview

This chapter presents a discussion on the aims, objectives, methods and outcomes of the qualitative study undertaken as part of the explanatory sequential mixed-methods design. This chapter also presents a deeper insight into the key factors identified in the quantitative aspect of the study, discussed in chapter 5.

6.2 Introduction

While it is unsurprising that the majority of the survey respondents reported low levels of physical activity on the IPAQ scale, the survey raised several issues about the perceived importance of supportive structures to promote physical activity among the Somali community. More specifically, the survey highlighted the potential impacts of neighbourhood environment access to clear and timely information. These factors will be discussed further.

The importance of having a clear communication strategy

While findings from the survey reported in chapter 5 showed some awareness of the health benefits of physical activity among the surveyed respondents, the majority of the respondents were unaware of the recommended levels of physical activity. This clearly indicates a gap in the reach or understanding of guidance on physical activity. Other studies among South Asian communities in the UK have also reported similar findings (Koshoedo *et al.,* 2015; Grace *et al.,* 2008'). A recent publication by Public Health England examined the inequalities in physical activity among various protected groups, including older adults, Muslims, and people from racially minoritised backgrounds (Public Health England, 2021b). This publication examined evidence from 140 studies investigating inequalities in physical activity and concluded that communication around physical activity should be accessible across languages and literacy levels (Public Health England, 2021b). Some of the barriers to physical activity identified in the report were linked to a lack of access to campaign messages and marketing materials (Public Health England, 2021b). The study by Mendoza-

Vasconez *et al.* (2016) examined the strategies used to promote physical activity in underserved populations in the USA and highlighted successful cases in which people from racially minoritised groups were targeted for physical activity interventions by linguistically and culturally adapting communication materials. This suggests that any adaptation of communication strategy should go beyond advertisement and marketing materials to the design and implementation of interventions.

Supportive neighbourhood environment

Findings from chapter 5 highlight that there are concerns about the suitability of infrastructures and available spaces for physical activity among adults and older adults from the Somali community. The relationship between the provision of infrastructures for physical activity and the levels of physical activity is, however, complex due to multiple confounding factors, including individual and cultural factors. In the context of racially minoritised communities, culture and religion play a key role in decisions around physical activity (Koshoedo *et al.*, 2015). The survey conducted as part of this thesis identified concerns with the built environment but was unable to unpack any cultural or religious factors underpinning the environmental issues identified. Such factors will be integral to designing any successful physical activity intervention among the Somali community. A qualitative study would provide an opportunity to understand the role of culture and religion in physical activity.

Qualitative research provides a unique opportunity to explore the lived experiences of people (Silverman, 2011) and can be pivotal to understanding the cultural and environmental issues affecting people's lived experiences. There is no known qualitative research on the experiences, barriers, and facilitators of physical activity among the Somali community.

The aim of this study is to gain a deeper insight into the experiences of physical activity and the barriers and facilitators of physical activity among adults and older adults from the Somali community in Bristol by exploring the role of culture, religion, the environment and associated factors.

6.3 Research questions

The following research questions were considered important for this study:

1 In what ways do religion and culture impact the decision to engage in physical activity among adults and older adults from the Somali community in Bristol?

2 How does the built environment impact decisions to engage in physical activity among adults and older adults from the Somali community in Bristol?

3 What can be done to increase the levels of physical activity among adults and older adults from the Somali community in Bristol?

6.4 Methods

The aim of this qualitative phase is to gain a deeper understanding of the experience of physical activity among the target audience and further explore the barriers and opportunities identified in the quantitative phase of this research, particularly the role of culture, religion, the environment and associated factors among adults and older adults from the Somali community in Bristol. Although the findings from the survey provide valuable indicators of the key issues impacting the levels of physical activity in the target population, the data retrieved provide limited insights into the complexities and relationships between the variables identified. This necessitates the use of a qualitative research design to gain a deeper understanding of the key determinants of physical activity by considering the subjective opinions, beliefs and experiences of physical activity among the target audience. This research design is in line with the explanatory sequential mixed-methods study, which was discussed in the methodology chapter. A qualitative study helps understand concepts, behaviours, attitudes and events of which little is known (Silverman, 2011; Strauss and Corbin, 1998). A key strength of qualitative research is its ability to study events in their everyday setting (Barbour, 2013). A qualitative research design was chosen to help understand and contextualise the findings from the quantitative phase and to explore the role of the social and physical environment in addressing some of the identified barriers.

6.4.1 Interview design

Diaries, focus groups, interviews, field notes, and photographs are examples of data collection methods used in qualitative research (Barbour, 2013; Creswell, 2007;). The

choice of data collection methods is in part determined by the study design, the aims of the study and the feasibility of the data collection methods. However, generally speaking, interviews are widely used in qualitative research due to their flexibility and ability to generate deep insights into an individual's experiences, ideas and beliefs about a phenomenon (Silverman, 2011). As this research aimed to understand the experiences, barriers and facilitators of physical activity, interviews were considered appropriate for data collection. Through interviewing adults and older adults from the Somali community, the researcher will be able to come up with 'relevant, valuable and analytically rich data' (Barbour, 2013, p. 114).

There are some notable drawbacks to using interviews as a means of data collection. Conducting interviews can typically be time-consuming due to the time and effort required for translation (where necessary), transcription and coding (Alsaawi, 2014). Creswell (2014) also noted that conducting interviews in a designated place often means that researchers are unable to observe the participants in their natural, real-world settings. This is even more important with telephone interviews, which have been criticised for missing out on visual and non-verbal cues. However, telephone interviews are widely acknowledged for their ability to reach a wider audience in a more relaxed and safe manner (Novick, 2008). The ability to collect data via telephone interviews is increasingly vital in a post–COVID-19 world of social distancing measures.

This study employed a mix of both face-to-face interviews conducted pre–COVID-19 (November 2019) and telephone interviews conducted during the COVID-19 (2020) lockdown in the UK. The interviews were originally planned to be face-to-face; however, only a handful of them was completed before the first lockdown in March 2020. This necessitated the move to telephone interviews as a more suitable alternative.

The interviews were conducted as semi-structured interviews. Semi-structured interviews are widely used in social science research, and they are particularly valuable for their ability to generate in-depth and focused discussion around a broad topic. They provide a balance between interviewer- and interviewee-driven content (Alsaawi, 2014). Semi-structured interviews can be designed in a way to enable the participants to have control and to converse at a pace that suits them (Creswell, 2014). Semi-structured interviews are flexible in exploring a range of issues of interest to the interviewer and interviewee. They rely on

open-ended questions, often called interview probes, to generate initial discussions upon which further issues can be discussed (Alsaawi, 2014). For the purpose of this study, the researcher developed a series of interview probes which were categorised into five thematic areas (table 6.1). The interview probes were used to guide the discussion, but the interviews were flexible and often involved moving across thematic areas.

The probes were derived from the key findings of the survey and related specifically to some gaps identified in the survey and other aspects of the survey that would benefit from further contextualisation.

Table 6.1 Semi-structured probes for the qualitative interviews

Thematic Area	Probes
Experience of living in Bristol	1. How long have you lived in Bristol, and what has been your experience of living in Bristol? 2. *How has the pandemic impacted your way of life? 3. Are you aware of any local facilities (green space, parks) suitable for physical activity? If yes, please mention them.
Understanding the importance of physical activity	4. What do you consider to be the benefits of physical activity? 5. What do you think you will gain from participating in physical activity? 6. What kind of physical activity/exercise do you consider appropriate for someone of your age, and how much? 7. Are you aware of any recommendations or guidance on how much physical activity you need to do?
Experience of physical activity	8. Can you tell me about your experience with physical activity? 9. What forms of physical activity do you enjoy most? 10. What type of environment do you enjoy doing physical activity in, and why? 11. What role does your culture and/or religion play in your decision to participate in physical activity?

Barriers of physical activity	12. Are there any barriers that prevent you from doing as much (or more) physical activity as you would wish?
Facilitators of physical activity	13. Is there anything you think might help you do more physical activity?
	14. In your view, what needs to change for you to maintain or increase your level of physical activity?

In line with recommendations that open-ended questions be piloted in advance (Dörnyei, 2007), the probes generated for this research were initially piloted with the supervisors of this thesis and then with one male member of the Somali community who contributed to the public involvement element of this research. The feedback on the interview probes was that they were clear and could easily be translated to the Somali language for those who did not speak English. As stated earlier, the COVID-19 outbreak occurred halfway through data collection, and the researcher felt it would be helpful to understand the impact of the pandemic on physical activity levels and general wellbeing of the people from the Somali community; hence the inclusion of probe two, which looks at the impact of COVID-19. This was well received by the research supervisors and the member of the Somali community who contributed to the initial pilot.

6.4.2   Access and recruitment

Sampling is an important aspect of qualitative research that involves selecting participants capable of addressing the research questions (Barbour, 2013). Contrary to quantitative sampling, which seeks to attain representativeness based on a random or probabilistic sampling technique, qualitative research aims to generate information-rich content based on a purposive selection of individuals or groups of individuals that can contribute to the research question (Creswell and Plano Clark, 2011). Sampling in qualitative research also reflects the diversity of thoughts needed to produce possible comparisons (Kuzel, 1992). This study used a purposive sampling technique in which interviewees were selected based on their experience with the phenomenon of interest (Creswell and Plano Clark, 2011). Emmel (2013) described purposive sampling as a strategic approach for selecting participants relevant to the research question.

Based on the purposive sampling approach, the following inclusion criteria were considered essential to address the research questions of this study:

- Somali origin: Participants should be individuals who self-identify as members of the Somali community or of Somali ethnic origin.
- Bristol residents: Participants should be individuals who self-identify as residents of Bristol. This criterion was considered important as the survey conducted among Bristol residents identified some important environmental considerations that this qualitative study seeks to explore further.
- Age 40 and above: This is also in line with the selection criteria for the survey.

Language was identified as an essential consideration. A report from Bristol City Council (2019) identified that about 9% of the population does not speak English. This report also shows that the Somali language was the third-most-popular language spoken in Bristol after English and Polish (British City Council, 2019). Therefore, it was decided that language would not be used as a screening criterion for eligibility. However, as the researcher neither speaks nor understands Somali, interpreters had to be recruited to help with translation for interviews with non-English speakers.

6.4.2.1 Recruitment of interpreters

One of the key advantages of using interpreters is the opportunity to understand the experiences of people from racially minoritised groups and marginalised communities (Irvine, Roberts and Bradbury-Jones, 2008). However, several challenges have been reported with the use of interpreters in research (Vara and Patel, 2012). Plumridge *et al.* (2012) discussed the potential for messages to be lost during translation. The authors advocated informal or formal training for interpreters and flagged the importance of establishing a trusted relationship between the interpreter, researchers and interviewees. While there may be some benefits to recruiting interpreters with research experience and skills, it is often more expensive and difficult to recruit such interpreters (Plumridge *et al.,* 2012). As the fieldwork for this study was independently funded, the researcher had to balance recruiting highly skilled interpreters and the resource constraints.

Two interpreters were recruited from the Somali community. They included one male interpreter in their early 40s and one female interpreter in their late 20s. Both interpreters

were identified via the personal contacts of the researcher. Both interpreters had some experience with doing research, with the male interpreter having just completed a master's degree in the UK and the female interpreter having completed a BSc in psychology in the UK. The decision to recruit interpreters of both genders was reached following discussions between the researcher and members of the Somali community, who explained the importance of respecting cultural norms, i.e. the prohibition of social mixing of males and females. This is in line with the study by Plumridge *et al.* (2012), which acknowledged that issues relating to gender, ethnicity and age could necessitate the recruitment of more than one interpreter in a research study.

The researcher held a meeting with both interpreters separately to discuss the research aims and review the interview probes to assess their understanding and the ease of translation of questions. The researcher also held a brief meeting with the interpreters following each interview to review the notes taken and provide an opportunity for the interpreters to provide feedback on any interpretation that may not have been captured adequately during the interview. This process of validation has been described as essential for improving the accuracy of research involving the use of interpreters (Vara and Patel, 2012).

6.4.2.2   Recruitment of participants

Potential interviewees were initially identified from the survey participants who consented to be contacted for the interviews. This aligns with the sequential explanatory study design, where the selection of study participants for the qualitative study is informed by the quantitative phase (Ivankova, Creswell and Stick 2006). Out of the 20 survey respondents who indicated an interest in the qualitative study, only ten provided their contact details. Of the ten contacted, three male and three female interviewees agreed to be interviewed. The interviews with the three male interviewees were held in person on Friday, 28 November 2019, from 2 pm to 4 pm. The location for the interviews was chosen by the interviewees, and the preferred location was a Somali café in the Lawrence Hill area of Bristol. The interviews lasted an average of 30 minutes per interviewee. Two of the interviews were conducted in English, while the third interview required the use of a translator.

The COVID-19 pandemic had a significant impact on recruitment activities, as the closure of offices and non-essential shops further restricted access to members of the Somali community. The stay-at-home order, which was in place for much of 2020, also meant that face-to-face interviews could not be conducted. Nonetheless, the researcher explored the opportunity to conduct telephone interviews instead of face-to-face interviews. Recruitment for the three female interviewees who expressed an interest in this follow-up study was done via a gatekeeper with access to these women. Following the three interviews, two further interviewees were identified and recruited via snowballing. All five interviews conducted with the Somali women involved an interpreter while only two of the five interviews with Somali men involved the use of an interpreter. The researcher had already established a good relationship with key gatekeepers and some members of the Somali community during the survey recruitment phase. This provided opportunities to access members of the community during the lockdown.

6.4.3 Data saturation

Data saturation is a methodological concept in qualitative research that describes the point at which further data collection would not add any new information to the study (Fusch and Ness, 2015). Therefore, data saturation refers to the point where the themes and categories are fully developed. Failure to attain data saturation can impact the validity of qualitative research (Fusch and Ness, 2015). While there is no definition on how to attain data saturation, there is a general recognition that saturation is reached when the information becomes repetitive and no new themes or codes emerge from the data (Jose, 2019). A fixed number of interviews is not required to attain data saturation; studies have identified that saturation can be achieved by as little as six interviews (Guest, Bunce and Johnson, 2006). The data appeared to be repetitive in this study after conducting eight interviews (three males and five females). However, since data collection for the men occurred before the COVID-19 lockdown, while data collection for the women took place during the lockdown, the researcher felt the need further to explore the impact of the lockdown on physical activity among the men, as this was extensively discussed among the women. Two further interviews were conducted with the men, bringing the total number of interviews conducted to ten. The additional interviews also helped to attain a balance between the number of male and female interviewees and to ensure that data were sufficiently rich.

6.4.4 Data analysis

Unlike numerical data obtained from quantitative studies, qualitative studies generate mainly unstructured text-based data (Wong, 2008). However, data can also be in pictorial or audiovisual forms (Wong, 2008). Data analysis in qualitative research involves an intuitive process of thinking, rethinking and theorising data to understand the phenomenon of interest (Basit, 2003). There are various forms of qualitative data analysis, but thematic analysis (TA) is one of the widely used techniques. TA has been described as a method used to systematically identify, analyse and present patterns or themes across a dataset (Braun *et al.,* 2018; Braun and Clarke, 2006). TA enables the researcher to identify commonalities and make sense of the shared meanings and experiences within a dataset (Braun *et al.,* 2018). TA recognises that qualitative data may generate numerous patterns that are not always relevant to the research question; hence, the analysis helps identify patterns and meanings relevant to addressing the research question(s) of interest (Braun *et al.,* 2018). As such, TA provides the flexibility to generate an in-depth analysis of the data in numerous ways (Braun *et al.,* 2018). TA is not a singular approach, and indeed several versions of TA exist (Braun and Clarke, 2021; Braun *et al.,* 2018). Reflexive TA (Braun and Clarke, 2021; Braun and Clarke, 2019) is a reasonably new conceptualisation of the original TA idea by Braun and Clarke (2006). The authors saw the need to differentiate their TA approach as the reflexive TA approach to reflect the organic development of themes from codes via an analytic and interpretative engagement by the researcher (Braun and Clarke, 2021; Braun and Clarke, 2019). This approach differs from other versions of TA analysis in that it neither follows an objective coding framework nor uses a structured approach to coding. Coding in reflexive TA evolves from the researcher's understanding of the data and recognises the importance of reflexivity (Braun and Clarke, 2021; Braun and Clarke, 2019).

Reflexive TA is particularly suitable for questions relating to the experiences of a group of people about a phenomenon of interest (Braun and Clarke, 2021; Braun and Clarke, 2019). This is clearly aligned with the goal of this research. In addition, this method is widely recognised in qualitative research and has been extensively discussed, meaning there is a strong theoretical underpinning and guide for this method. In light of the reason mentioned above, reflexive TA was chosen for this study.

Braun and Clarke (2006) provide a framework comprising six phases for conducting reflexive TA. This framework was updated by Braun and Clarke (2021). The phases involved are illustrated in figure 6.1.
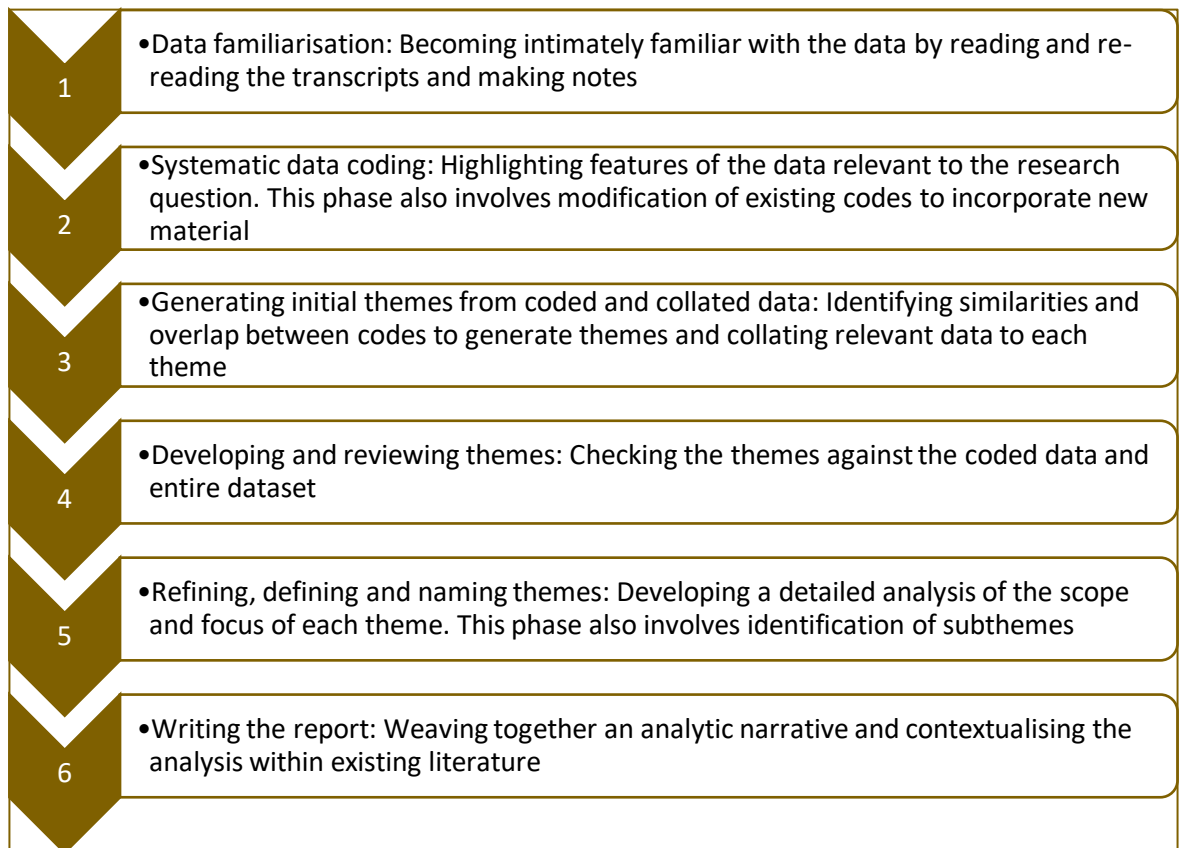
1	•Data familiarisation: Becoming intimately familiar with the data by reading and re-reading the transcripts and making notes
2	•Systematic data coding: Highlighting features of the data relevant to the research question. This phase also involves modification of existing codes to incorporate new material
3	•Generating initial themes from coded and collated data: Identifying similarities and overlap between codes to generate themes and collating relevant data to each theme
4	•Developing and reviewing themes: Checking the themes against the coded data and entire dataset
5	•Refining, defining and naming themes: Developing a detailed analysis of the scope and focus of each theme. This phase also involves identification of subthemes
6	•Writing the report: Weaving together an analytic narrative and contextualising the analysis within existing literature

Figure 6.1 Thematic analysis process by Braun and Clarke (2006)

These steps were applied in this research as follows.

Data familiarisation

The researcher conducted all ten interviews, and although an interpreter was used for seven of these interviews, the presence of the researcher at all interviews provided opportunities for data familiarisation. In addition, all interview recordings were transcribed by the researcher, and this process provided more opportunities to be intimately familiar with the data. The researcher also read the transcripts before commencing data analysis to gain deeper insight into the data. Notes were taken at this stage, and questions (e.g. 'How do men perceive free mixing?') were annotated.

Systematic data coding

Following the immersive data-familiarisation process, features of the data relevant to the research questions were highlighted in the coding process via the use of NVivo software. Coding was initially guided by the semi-structured interview probes; however, it became clear that the data did not always align with this semi-structured coding framework. Coding was therefore progressed in an organic and unstructured format. This is in line with Braun and Clarke (2021), who argue that codes should be developed inductively from the data. Semantic and latent coding techniques were employed as appropriate. Semantic analysis looks at the surface meaning of the data and generates codes solely on what the interviewee has said. In contrast, latent analysis goes beyond the semantic level to identify underlying assumptions (Braun and Clarke, 2006). The latent coding process involved an investigation of the underlying assumptions in the data.

In line with Braun and Clarke (2021), the entire dataset was coded; this helped identify interesting and relevant aspects in the data that informed the development of the unit of analysis (themes). The NVivo 12 (QSR International) software was used to assist with the coding process.

Generating initial themes from coded and collated data

At the end of the coding process, a total of 101 data extracts (codes) were identified as relevant and interesting to the research questions. These codes were printed and laid on a surface where the researcher could collate and visualise similarities and overlaps to generate themes. The development of themes involves an interpretive analysis of the data in relation to the research questions (Braun and Clarke, 2006). A mind map was used on a magnetic board to separate codes into theme piles. The process of visualising and sorting the codes led to the development of some main themes and the identification of subthemes. There were also coded data that did not fit under any established themes; these were separated and labelled as other interesting lifestyle factors. This is in line with Braun and Clarke's (2006) recommendations.

Developing and reviewing themes

The themes identified in the previous phase were reviewed along with their supporting data to ensure that data within each theme were coherent and logical (internal

homogeneity) and that data between themes were distinct (external heterogeneity) (Patton, 1990). Some initial themes were combined, and others were split to improve clarity and alignment with the research questions.

Refining, defining and naming themes

At this point, the scope and purpose of each theme were defined. Braun and Clarke (2006) proposed that this phase identifies the story each theme tells and how this fits with the overall research questions. A total of seven themes were identified and reviewed in relation to the research questions. These themes were aligned with the aims of the research and presented a compelling story about the lifestyle and experiences of physical activity among the Somali community.

Writing the report

The final phase of this analysis involved the presentation of the report. Braun and Clarke (2006) argued that the analysis should provide enough data extract to evidence the prevalence of each theme. The result of the analysis is presented in section 6.5 with relevant and appropriate data extract highlighting the essence of each theme. This is followed by a discussion of the findings in relation to the research questions. The findings from this study are also contextualised with a discussion of existing research.

6.4.5   Methodological rigour

Rigour is an essential aspect of qualitative research that helps assess the quality of data collection, analysis and interpretation (Prion and Adamson, 2014).

The measures of rigour for qualitative research vary significantly from those of quantitative studies (Johnson, Adkins and Chauvin, 2020; Maher *et al.,* 2018). Reliability, validity and other well-established requirements of rigour in quantitative research are less applicable to qualitative research (Maher *et al.,* 2018). These methods stem from quantitative paradigms and traditionally focus on the accuracy of measurement, which has little or no significance in qualitative research (Maher *et al.,* 2018).

Rigour in qualitative research is defined as a measure of the trustworthiness of the research process (Maher *et al.,* 2018). Guba and Lincoln (1989) provide some key principles for

evaluating rigour in qualitative research by assessing its trustworthiness. The authors propose that for research to be trustworthy, it should meet the following four criteria: credibility, transferability, dependability and confirmability (Guba and Lincoln, 1989). These criteria were applied in this study.

Credibility

Credibility ensures that the research reflects the social reality of participants (Maher *et al.,* 2018). Credible research provides the confidence that the results of the study are true and believable from the perspective of the participants (Forero *et al.,* 2018). Various strategies, including member checks, prolonged engagement and data saturation, have been identified as ways of enhancing credibility (Maher *et al.,* 2018; Guba and Lincoln, 1989). In this study, credibility was enhanced through member checks with the interpreters and interviewees during each interview to confirm that the ideas presented have been well understood and captured accurately by the researcher. In addition, the researcher held a series of debriefing meetings with the supervisors of this study, in which the data collection process was discussed, along with a summary of the key findings from each interview. Data saturation, which has been discussed previously, also contributed to the credibility of this research.

Transferability

Qualitative research is not intended to be generalised to a population level; however, findings should provide a 'thick description' of the context to enable readers to assess the transferability of findings from one context to another (Maher *et al.,* 2018; Guba and Lincoln, 1989). Johnson, Adkins and Chauvin (2020) propose that transferability can be assessed through a description of the research methods and sampling factors, including geographical context where recruitment was performed, age of participants and essential characteristics of the participants. In this study, the sampling criteria for the purposive sample was clearly stated. The research was conducted among adults and older adults from a defined community (Somali community) in Bristol, United Kingdom. Further details of the characteristics of participants, including their age range and gender, are documented in section 6.5. The clear account of the recruitment and data collection process for this study provides adequate information about the context of this research, and this could help researchers make judgements about the transferability of findings.

Dependability

Dependability refers to a thorough description of the methods employed in a bid to ensure that the findings are repeatable if the research was repeated with the same cohort of participants (Maher *et al.,* 2018; Guba and Lincoln, 1989).

In this study, dependability was enhanced by following a well-established stepwise TA framework and by providing a clear description of the methods employed for conducting this research.

Confirmability

Guba and Lincoln (1989) propose that confirmability can be achieved by being transparent with the presentation of findings. Two essential criteria for assessing confirmability are triangulation and reflexivity (Guba and Lincoln, 1989).

Triangulation

Triangulation refers to the use of multiple approaches to address a research question (Heale and Forbes, 2013). The goal of triangulation is to increase confidence in the findings of a research by using more than one approach for data collection and analysis (Natow, 2020). This combination of approaches typically provides a more comprehensive account of the result of research than using a single approach (Natow, 2020). There are several ways of achieving triangulation – by using multiple methodologies, multiple data sources and multiple data analysis techniques (Natow, 2020).

Triangulation-multiple methodologies

In the context of this doctoral research, several methodologies were used to address the overall goal of this research. First, a meta-ethnographic study was conducted to identify the barriers and facilitators of physical activity among adults and older adults from racially minoritised communities in the United Kingdom. The findings of this research and the gaps identified led to the development of a mixed-methods research design to investigate the experiences, barriers and facilitators of physical activity among adults from the Somali community in Bristol. Using a mixed-methods approach provided opportunities for triangulation.

Triangulation- multiple data sources

As stated above, the mixed-methods design of this thesis implies that multiple data sources were used – survey data, qualitative data and review-level data. In the context of the qualitative study presented in this chapter, interview data were combined with field notes, which provided an additional layer of triangulation.

Multiple data analysis techniques

This mixed-methods research was underpinned by a pragmatist paradigm and involved a combination of inductive and deductive forms of data analysis.

Reflexivity

Reflexivity refers to an awareness of the researcher's beliefs, judgements and practices on the research process and outcomes (Dodgson, 2019). Reflexivity entails considering any contextual intersectional relationship between the researcher and the participants (Dodgson, 2019). Reflexivity plays a central role in qualitative research and has often been described as a gold standard for determining the trustworthiness of qualitative research (Teh and Lek, 2018).

My background and experience are, in some ways, similar to the participants studied. I am a Black African woman who migrated to the UK for further education and opportunities. As such, I have experienced the feelings of living away from my home country and the challenges that come with adapting to a new environment with a different set of values and cultural beliefs. I recall being called 'my African sister' in some of the interviews, as interviewees tried to highlight the differences between the African culture and the UK culture. This also implies that my background could have helped me build a better rapport with the interviewees.

In terms of my personal experience of physical activity, my migration to the UK also impacted my levels of engagement with physical activity, as I became more sedentary over time. This was mainly due to a lack of motivation, having no links with any religious factors. However, at the start of my doctoral research, I made a conscious effort to become more active. This included enrolling in a cycle course to learn how to cycle and regularly engaging

in physical activity. Over time, I became more active and maintained my physical activity level.

I was aware of the perceived influence of my pre-existing knowledge and experiences on the research process and outcomes, and I took some steps to minimise the impact of my subjectivity. The actions taken included following the same semi-structured interview format to ensure that the interview was not entirely dominated by my views and interpretation of the participants' realities. I also ensured that I checked my understanding of the issues raised with the interviewees and translators during the interview process. Undertaking these steps did not entirely dismiss the influence of my knowledge and experience on the conduct of the interviews.

There were also some differences between my lived experience and those of the interviewees. Although I identify as a member of a religious community, I am a Christian, and the interviewees were all Muslims. As such, I did not share the same interpretation of religious values, such as modesty, as the interviewees. Additionally, I am from Nigeria, which is situated in West Africa, while Somalia is in East Africa. These differences meant that I had very few preconceived ideas about cultural and religious beliefs that could influence the research topic.

6.5 Results

A total of ten people took part in the in-depth interviews; this comprised five males and five females. Table 6.2 provides a breakdown of the characteristics of interviewees

Table 6.2 Characteristics of interviewees

Characteristics of interviewees	Number of interviewees	%(n) requiring interpreters
Gender		
Male	5	40% (2)
Female	5	100% (5)
Age		
40–50	5	40% (2)
51–60	3	100% (3)
61–65	2	100% (2)
Years lived in Bristol	3.5 years to 22 years	

Seven key themes emerged from the analysis of the interview data: they included the experience of living in Bristol; the impact of COVID-19; awareness of the benefits and recommendations of physical activity; preferred forms of physical activity; barriers of physical activity; the role of health professionals; food and diet; and opportunities for improving physical activity. Figure 6.2 presents a visual representation of the themes and subthemes identified in this review.
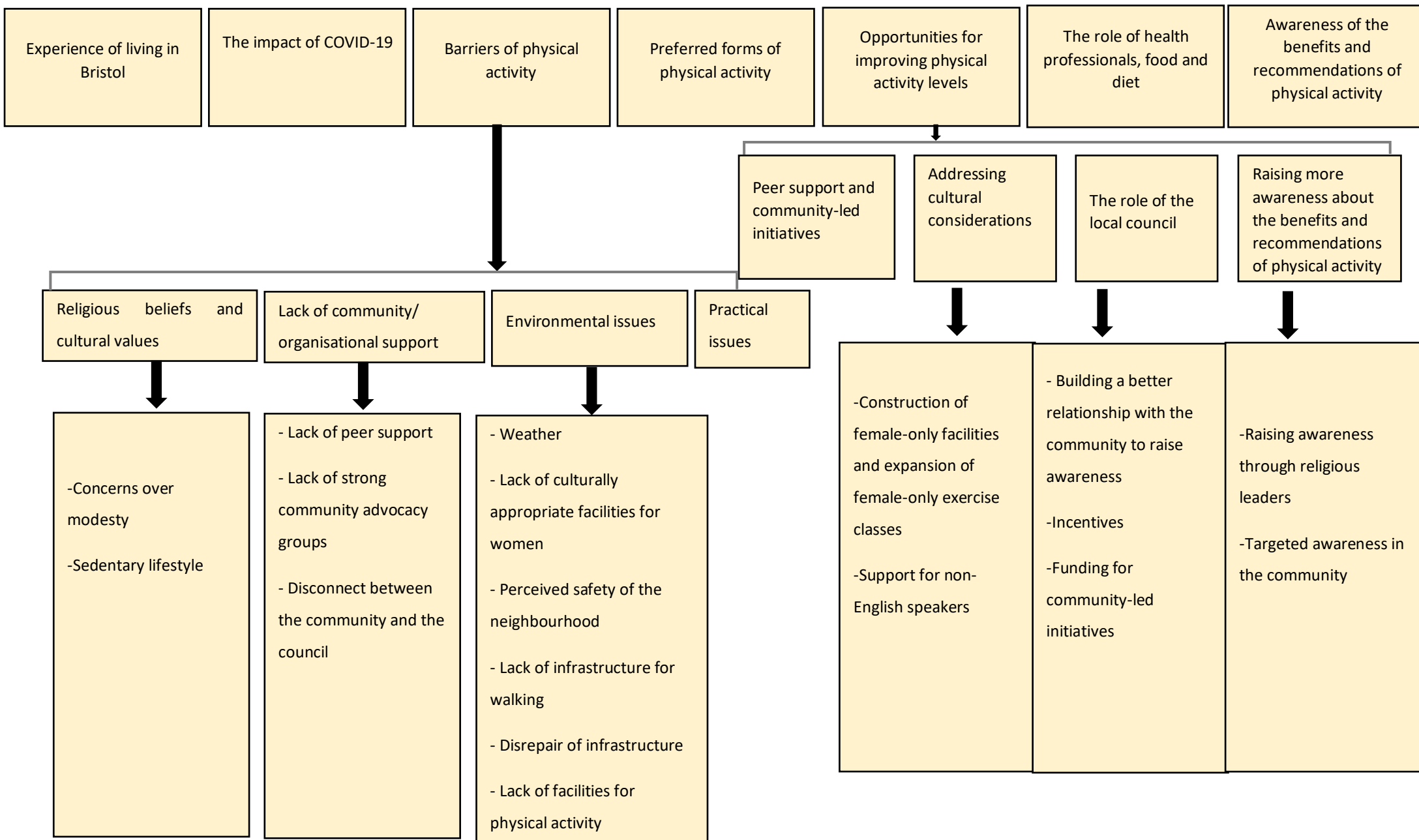
Experience of living in Bristol	The impact of COVID-19	Barriers of physical activity	Preferred forms of physical activity	Opportunities for improving physical activity levels	The role of health professionals, food and diet	Awareness of the benefits and recommendations of physical activity

Barriers of physical activity:

Religious beliefs and cultural values	Lack of community/ organisational support	Environmental issues	Practical issues

- Religious beliefs and cultural values:
  - Concerns over modesty
  - Sedentary lifestyle

- Lack of community/organisational support:
  - Lack of peer support
  - Lack of strong community advocacy groups
  - Disconnect between the community and the council

- Environmental issues:
  - Weather
  - Lack of culturally appropriate facilities for women
  - Perceived safety of the neighbourhood
  - Lack of infrastructure for walking
  - Disrepair of infrastructure
  - Lack of facilities for physical activity

Opportunities for improving physical activity levels:

Peer support and community-led initiatives	Addressing cultural considerations	The role of the local council	Raising more awareness about the benefits and recommendations of physical activity

- Addressing cultural considerations:
  - Construction of female-only facilities and expansion of female-only exercise classes
  - Support for non-English speakers

- The role of the local council:
  - Building a better relationship with the community to raise awareness
  - Incentives
  - Funding for community-led initiatives

- Raising more awareness about the benefits and recommendations of physical activity:
  - Raising awareness through religious leaders
  - Targeted awareness in the community

Figure 6.2 Summary of themes and key subthemes

EXPERIENCE OF LIVING IN BRISTOL

The interviewees discussed their experiences of migrating to and living in Bristol. The range of years the interviewees said they had been living in Bristol was from 3.5 years to 22 years. None of the interviewees was born in Bristol. In many cases, Bristol was reported as the first place of abode since they migrated from Somalia. When asked about the positive things they have experienced in Bristol, some respondents mentioned that there were more employment and education opportunities. Another interviewee spoke about the psychological benefits of having a sense of belonging among the large Somali community in Bristol.

'Bristol is a very interesting city in many perspectives. And there's a large Somali community living here. In terms of social gatherings, I think, psychologically, I feel very comfortable when I see a lot of Somali colleagues who are talking about back home, having conversations from one to another'. -Male interviewee A, 51-60 years

However, this view was not equally shared, as one interviewee recalled the challenges faced with acculturation and the feeling of having mixed identities.

'My experience so far about Bristol, I would say, mixed feelings... The reason why I said so is because some days you feel like you're a part of the city, and then some days or sometimes you feel like you're not part of the city. It's about you, how you feel in the society and how you come across in the city. I have two parts, a part here and a part back in Somalia. Most of my life I've spent here and there. So I can't really call Bristol home or back home, home' .- Male interviewee C, 40-50 years

THE IMPACT OF COVID-19

The COVID-19 pandemic was reported to have had a substantial adverse impact on the already low levels of physical activity among people from the Somali community. Several interviewees mentioned that the pandemic and the national lockdown had reduced the opportunities they had to maintain active lives. Both women and men alike said that they were unable to work during the lockdown due to closures of non-essential businesses. One of the women also mentioned that she was unable to further her studies of the English language at her local learning centre. These disruptions implied that there were reduced

opportunities to engage in physical activity as part of their daily activities. One male interviewee said

'Now, most of the time, I'm in the house. Sometimes I'm even on my bed, and that was never the case. Even now, I work from home; I work from home three days in the week'.- Male interviewee D, 51-60 years

Another male interviewee said

'I would say it [COVID-19] affected my education, my way of life; it affected my lifestyle. You got to realise there are so many things that were closed – university, gym, restaurants'.- Male interviewee B, 40-50 years*.*

There was also a consensus amongst the interviewees that the COVID-19 pandemic reduced their motivation and willingness to engage in outdoor forms of physical activity due to fear and safety concerns about being in a public space.

'We have the facilities, but at this particular moment of… Things are a bit complicated because those facilities are not open all the time… Even though you can go outside and go to the park, but still you will be conscious that you might bring COVID-19 *back to your house like you won't be going more than necessary'* -Male interviewee E, 40-50 years*. -*

*'I was quite scared actually about the virus and tried to follow the rules as much as possible and minimise any outside activity'.-*Female interviewee A, 40-50 years

Other wider issues raised about the impact of COVID-19 relate to the stress resulting from loss of employment.

'Some people have been relieved from work. I'm one person that has been relieved from work, my previous work. I was working as a security… Yeah, life's tough at the moment'.- Male interviewee E, 40-50 years

AWARENESS OF THE BENEFITS AND RECOMMENDATIONS OF PHYSICAL ACTIVITY

The interviewees listed some physical and mental health benefits of regular physical activity, including improving general physical health, improving mental wellbeing, and improving the strength and functional ability of body organs, among others.

One female interviewee said

'Very beneficial both for, obviously, your physical body and your mind. I enjoy taking walks, and to just clear my mind and, and get away from anything that I am thinking about, any of my worries' Female interviewee B-, 51-60 years.

Another male interviewee said

'I think it is very crucial and it benefits…like in many ways. First of all, it's about your health… It improves your health. If you do like physical exercise, your body will be more healthier; you feel light… Also…it would help you mentally; it has like a mental benefit. You don't feel like the pressure. It will ease down all your stress; it would give you like relief. I, for a person, it really gives me that tranquillity when I jog or run…Even if I'm not having a good day and I go for running or a brisk walk, I feel different, and it gives me that tranquillity and peace of mind when I do physical exercise '.- Male interviewee B-, 40-50 years

Two interviewees with pre-existing chronic conditions recounted the positive impact of physical activity in the management of their pre-existing conditions. One female interviewee said

'It's something that's very important. And…[I've] seen the differences… When [I do] exercises, [my] blood pressure comes down, [my] blood sugar also becomes lower as well ' Male interviewee A, 51-60 years.

In terms of awareness of the recommendations for physical activity, none of the interviewees reported knowing about the recommendations for physical activity. Some of the women were keen to find out what this was and asked the interviewer for more information. A few interviewees mentioned that they hardly hear any information from their health professionals, the local council or the media about physical activity and the appropriate recommendations. One male interviewee said

'I haven't heard any public notice from the local government explaining… I think that area is lagging behind in my understanding' Male interviewee A, 51-60 years..

Compared to the female interviewees, the male interviewees tended to report higher levels of engagement in physical activity. One male interviewee said he swims two hours a week

and walks for about 30 minutes daily. The women generally reported doing about 20 minutes of physical activity one, two or three days a week.

PREFERRED FORMS OF PHYSICAL ACTIVITY

Similar to the majority UK population, interviewees reported engaging in a diverse range of activities, and their responses varied across both genders. However, both male and female interviewees reported that they enjoyed or were interested in walking and swimming. Football and running were mentioned in a few instances, but only by male interviewees. In addition to swimming, some women said they liked cycling, doing some stretches and doing yoga.

In many cases, both women and men alike reported a preference for low-intensity forms of exercise and referred to this as a 'relaxed', 'chilled' form of physical activity. One interviewee explained how the preference for low-intensity forms of physical activity is linked with the lifestyle of people living in Somalia and said

'I know most of them (his friends), they don't go to the gym because most of them like to be relaxed. You got to realise, Somalia is a country where people are relaxed, chilled. They like to have more chilled activities rather than high-intensity activities'-Male interviewee C, 40-50 years.

The consensus among most interviewees was that there is not any particular form of physical activity that was considered inappropriate from a cultural standpoint; however, the only cultural and religious requirement is the prohibition of free mixing. One female interviewee said

'There's not a particular exercise that [I] would say is like not allowed or frowned upon, but… it's the free mixing. So, the mixing of males and females, which isn't allowed' Female interviewee C, 40-50 years.

Some interviewees also mentioned that they engaged in regular physical activity as part of their daily jobs and when commuting to work. Two women reported that working in the cleaning sector provided them with enough opportunity to be physically active.

'I don't particularly go out for exercise…I was doing some walks when the lockdown eased but working wise, I find that I'm very active. And I work in an active job and walk to and from work, so I think that it's very helpful for my welbeing and health' Female interviewee A, 40-50 years.

BARRIERS TO PHYSICAL ACTIVITY

Four subthemes were identified relating to the barriers to physical activity; they include religious beliefs and cultural values, practical barriers, lack of community/organisational support and environmental issues.

Religious beliefs and cultural values

This subtheme captures some important religious and cultural considerations resulting in low uptake of physical activity among members of the Somali community. This subtheme generated the highest number of quotes and was extensively discussed by the women. This subtheme was classified further into two subthemes: sedentary lifestyle and concerns over modesty.

<u>Sedentary lifestyle</u>

Several interviewees reflected on what they described as the highly sedentary culture in Somalia and how this has impacted their inability to remain physically active. Some interviewees said

'Culturally, we are not an exercise community (laughs), especially when I came to the UK, I saw 50 years old woman was running; you can't see in our community even 30 years old woman running (laughs)'.- Male interviewee B, 40-50 years.

'I think, in general, like Somalis, they are not like, they are not used to do exercises because like when you see where they come from, like, they used to do some like natural exercise because the way they used to live used to be pretty ancient, and people used to walk from place to place'. - Male interviewee A, 51-60 years.

'And Somalis are one of those people who spend long hours sitting... Some of them would come here [the café where the interview took place] at two o'clock and would leave at five

o'clock – three hours just having conversations with a friend; after that, with other friends. So that's an issue'. - Male interviewee C, 40-50 years.

Some of the interviewees gave a historical account of the Somali culture regarding physical activity, stating that the Somali community was historically an active community with animal husbandry as the main driver for walking. However, they noted that rapid urbanisation and motorisation had resulted in an increasingly sedentary lifestyle. One male interviewee said

'Back home in the old days, Somali culture is always walking...because the Somalis are a pastoralist community, so they have to walk from one place to another place. But once the urbanisation process, Somalis came to the cities; what happened is, the Somali cities were not designed in a way that invites the common people, the ordinary people can do exercise while walking the pavements of the roads. So what happens is that Somali culture does not encourage physical exercise '- Male interviewee C, 40-50 years*.*

Some of these interviewees also pointed out the impact of this generational sedentary culture on children born in the UK to Somali parents.

*'And I think there are some cultural barriers within the community that are there because it's not in the culture to do like a lot of physical exercise, and the kids are learning from their parent... Even those who are born and raised here…most of them, they cultivate this habit from their parents, and they are not active…' -*Male interviewee D, 51-60 years.

<u>Concerns over modesty</u>

Nearly all the women interviewed spoke about the cultural and religious requirement for modesty. The women noted that the primary religious and cultural constraint to engaging in physical activity is the prohibition of mixed-gender activities. It was further explained that it is impractical for women to engage in many forms of physical activity in their modest clothing and that changing into more comfortable clothing in a mixed-gender facility is culturally and religiously unacceptable. Some women recounted stories of how they were discouraged from attending female-only gym classes or swimming lessons due to the presence of male staff within the facility.

'Perhaps due to my culture and religion, the clothing that I would be wearing, I wouldn't be able to go on these jogs because I wouldn't feel comfortable in what I'm wearing. So again, outdoor activities, I find it quite difficult because I wear sort of a longer what we would call Jilbab. It's like a longer Hijab, the one that covers the full body, and it's a bit impractical, and obviously, I am not going to take it off due to my religion'. -Female interviewee A, 40-50 years.

'There's not a particular exercise that I would say is, like, not allowed or frowned upon, but it's the free mixing. So, the mixing of males and females, which isn't allowed, because a lot of the time, if you are swimming, you'd be in a bathing costume and you couldn't really wear a headscarf. Or like if you're, you know, particularly in a gym, some people do, but they might want to feel more comfortable not wearing a headscarf. So in that case, they wouldn't be allowed to be with males, so they need a section for them personally'. -Female interviewee C- 40-50 years

'I personally signed up for swimming classes. I paid for about six months' worth of swimming classes or just swimming to allow me to swim. The Easton Leisure Centre provided on a Sunday an hour and a half where it would be female-only as they promised, and they said that the lifeguards would also be female. Because that's an issue where I go, I would turn up to have my swim lessons or swim class. And I would be told that there's male lifeguards due to the fact that the rota has led it to be that way, even though they know that Muslim women and Somali women particularly are not able to be swimming, but not the actual swimming but the covering of the body with male lifeguards...It stopped me from going completely; I felt disappointed. I just felt like it was a bit of a let-down for them to, you know, kind of promote it as something that would be female-only and eventually have male lifeguard, so I stopped going completely'. – Female interviewee A, 40-50 years.

Another point raised about modesty was a view shared by two female interviewees, who reported being uncomfortable with music being played during gym or exercise classes. This was linked to their interpretation of their religious values. One female interviewee said

'I and a few other ladies of my friendship group did try an exercise class, but they were playing music, which is one of the things that Islam doesn't really promote. So, for that, we found it difficult to continue, because it's something that goes against our religion'-Female interviewee B, 51-60 years.

Another female interviewee, however, expressed a neutral opinion towards playing music during exercise, stating that it was more of a personal preference than a religious requirement

'For that, it's the person's discretion; like some people are okay with it and some people are not…and it's not something linked to religion, but it's the person's choice'- Female interviewee A, 40-50 years.

Practical issues

The key practical issues identified were lack of time and language barriers. Lack of time reported among the male interviewees was mainly linked to working long hours and working every day to meet the financial demands of their family, while the women reported a lack of time from combining work and caring responsibilities:

'You have to understand African people; we get to carry extra luggage...You want to make everyone happy'. -Male interviewee E, 40-50 years

'A major issue is time, being a working mom, with young kids as well'. -Female interviewee C, 40-50 years.

Language barrier was also raised as a factor that discouraged some women from fully engaging in exercise classes in the gym:

'We can follow the actions of a class, but we are not able to understand the benefits of the particular exercises'. -Female interviewee B, 51-60 years.

'Most of the Somalis aged 50 and above do not speak English fluently, so for them, it's quite hard to communicate in English language. - Male interviewee C, 40-50 years.

Lack of community/organisational support

Three subthemes arose from this theme: lack of peer support, lack of strong community advocacy groups and the disconnect between the community and the council.

<u>Lack of peer support</u>

Lack of peer support was highlighted as a contributory factor to low levels of physical activity among the Somali community. This could be linked to the sedentary culture prevalent in the Somali community. Some interviewees also highlighted concerns about being stigmatised for engaging in physical activity. One of the interviewees said

'Another area is among the Somali community. The Somalis don't always encourage each other to exercise, and there is, I don't know how to put it...psychological issue. I was having a conversation here with an elderly man here yesterday, same place (café). He is a very strong man, and he was telling me, I was asking him do you do a lot of exercise and he said no. I used to do a lot of exercise ten years before, and when I started to do lots of exercise, I lost some weight. And most Somalis would come to me and would ask me, have you got sick? Which disease are you having? So that kind of mentality prevents some people from doing lots of exercise'- Male interviewee B, 40-50 years.

Lack of strong community advocacy groups

Two male interviewees mentioned that there are no strong advocacy groups among the Somali community that can help with raising awareness of the benefits of physical activity and lobby the local council to provide suitable facilities for physical activity in areas with a high Somali population.

'The problem is that the Somali community is not organised in a sense that they can pressure the local councillor and put forward something which reflects the needs of the community' Male interviewee D, 51-60 years.

'I think it seems to do with a lack of awareness, and there is no strong community organisations that can do this' -Male interviewee A, 51-60 years.

The disconnect between the community and the council

Some interviewees expressed concerns over what they described as a disconnect between the local community and the council. This was considered a barrier in terms of the level of support and funding for culturally appropriate interventions like walking groups. There was an indication that the Somali community does not feel included in conversations around community engagement within the local council and, as such, does not feel like their voice and needs are heard. One male interviewee said

'But what I see from Bristol is there is a disconnection between the Somali community and the local council, the Somali community and the NHS community; there is a big gap in my understanding' Male interviewee A, 51-60 years.

The same interviewee said

'The other part is getting to know the community better, building a relationship with the community. It's going to take time for people to open up to you to feel comfortable with you. It would help to have mutual agreement'. - Male interviewee A, 51-60 years.

Environmental issues

This subtheme lays out the key environmental barriers identified by the interviewees. The theme is further categorised into six subthemes: weather, lack of facilities for physical activity, lack of culturally appropriate facilities for women, perceived safety of the neighbourhood, lack of infrastructure for walking and disrepair of infrastructure.

<u>Weather</u>

Some of the interviewees blamed the weather for their inability to engage in physical activity. A few of them compared the weather in Bristol, which they described as being too cold compared to the predominantly sunny weather in Somalia.

'Before I came to the UK, I used to do a lot of exercise, but here because of the cold…'-Male interviewee C, 40-50 years

'And the other thing is that our home back and here is not same. Our home is 24 hours sunshine but here is not'. -Female E interviewee, 61-65 years

<u>Lack of facilities for physical activity</u>

Facilities for both indoor and outdoor exercise were identified as being important. However, some of the interviewees mentioned that in Bristol, the areas predominantly occupied by people from the Somali community have inadequate facilities for physical activity like swimming pools and gyms.

'The local council does not put much emphasis on physical activity issues in the environment, especially in the environment or in the neighbourhood where the Somali lives, and you can

feel from almost 20,000 places. Somalis live within Easton and Lawrence Hill and St George, and there's maybe only two swimming pools or one'. Male interviewee E, 40-50 years

'Most of the problem, especially here in Barton Hill, is there is no swimming pool nearby in this area, and a lot of people have to go to Easton to go for swimming. And that's one major obstacle or challenge you like that can prevent you from going there. Because Muslim always prefer to nearby place'. -Male interviewee A, 51-60 years

On the contrary, another interviewee noted that they were satisfied with access to facilities around her neighbourhood, saying that

'I have some open spaces, and we have a park that is near my house. I live in St Agnes, and there is a park just right behind my house. And also, the fitness centre is right behind the house in St Paul's Centre'. -Female interviewee C, 40-50 years

Lack of culturally appropriate facilities for women

While lack of facilities was raised as a general concern, there was an additional concern that the few available swimming pools and gyms were not culturally appropriate facilities for women in many cases. Several women said they were discouraged from taking up regular swimming or exercise sessions due to a lack of female-only space for exercise.

'Probably the main barrier would be, again, the lack of female-only facilities. So whether that's the gym or swimming facilities, that's something that prevents me from going into it because there's a lacking due to my religion and culture, which doesn't really allow for mixing with males. That's what prevents me'. -Female interviewee B, 40 -50 years.

'But even here, I think you don't find women gym specific here, and you don't see many Somali women coming to the gym here, and that's a big problem because there are lots of Somali women here'. -Female interviewee C, 40-50 years

Perceived safety of the neighbourhood

Safety concerns were raised by several interviewees across both genders. Some interviewees recounted how they felt uncomfortable taking their young children to the parks due to issues relating to the safety of parks; others talked about how they perceived their neighbourhood to be unsafe due to drug use.

I've been living here for about 20 years and, previously, it was quite safe. But what I've noticed recently is that more of the drug use in the community around parks and green spaces. So sometimes it can be somewhat unsafe... I guess in the daytime I find it particularly more safe than particularly going after sunset'. -Female interviewee E, 61-65 years

'You got to look at the safety as well; some parks are not safe... A lot of things happen at the parks; some people do bad stuff'. -Male interviewee C, 40-50 years

However, safety concerns were not shared by all interviewees, as two people expressed satisfaction with the levels of safety of their neighbourhood.

Lack of infrastructure for walking

Access to walking paths and the demarcation of walking and cycling lanes was raised as a barrier to walking by some of the interviewees.

' There aren't any proper walking paths in the St Paul's area where we could go for daily exercise'.- -Female interviewee D, 61-65 years

'I am using the same path or the same pavement to do exercise as other people are walking normally and using a bicycle, and that limits how far I can go'.- Female interviewee B, 51-60 years

Disrepair of infrastructure

One male interviewee described how the parks in his area had not had any refurbishment or upgrade of equipment in the last 30 years.

'Some parks in my area, they've been having the same seats and facility for the last 30 years. They have not been refurbished...equipment not improved...and you probably only get volunteers coming to clean it maybe once a month or like twice a month, and the council comes in less frequently despite the fact that it's their job. I'd say renewing parks, refurbishing parks'.-Male interviewee A, 51-60 years

THE ROLE OF HEALTH PROFESSIONALS

Two female interviewees spoke about their interactions with health professionals. They described how the health professionals provided them with recommendations on targeted types of exercise to help relieve chronic back or leg pain. Both of the interviewees stated that physical activity was not discussed during appointments.

One female interviewee said

'We are only told us about things that are more specific to our needs or, like for anyone, more specific to their needs, not necessarily in a general health and exercise recommendations'. Female interviewee D, 61-65 years

There was, however, an indication that diet was discussed during consultations. Another female interviewee said

'I found it useful, and the other thing that the doctor mentioned was nutrition as well. They told me about healthy eating and healthy eating habits '.- Female interviewee B, 51-60 years

FOOD AND DIET

The 'Somali tea' was mentioned by some of the interviewees, and they described this tea as a major contributor to an unhealthy diet among people from the Somali community. The Somali tea was described as tea that has 'more sugar [and is] more milky'.

One male interviewee said

'most Somalis take Somali more tea, and they don't do a lot of physical exercise' Male interviewee D, 51-60 years.

Beyond the discussion on Somali tea, there was a general acknowledgement of a high prevalence of overweight, obesity and other risk factors for NCDs among people from the Somali community. One male interviewee said

'In the Somali community, you see two kinds of people – you either see people who are malnourished and people who are over-nourished... Like overweight, diabetes, blood pressure, we have that in our community – quite high. It's like in Easton; for example, there

are restaurants, so many people will sit down in the cafeteria. They would drink tea high in calories and eat heavy food and stay there for a couple of hours discussing' -Male interviewee A 51-60 years.

OPPORTUNITIES FOR IMPROVING PHYSICAL ACTIVITY LEVELS

A key focus of the interviews was to discuss opportunities for increasing participation and engagement in physical activity among members of the Somali community. All ten interviewees provided their thoughts on how to achieve this. An analysis of their response resulted in four subthemes, namely: addressing cultural considerations, peer support and community-led initiatives, the role of the local council and raising more awareness about the benefits of physical activity and recommendations.

Addressing cultural considerations

The data from the study showed that cultural issues were one of the biggest contributors to a high level of physical inactivity among women from the Somali community. As such, interviewees spoke extensively on ways of addressing such issues. Two further subthemes were identified from this subtheme: construction of female-only facilities and expansion of female-only exercise classes, and support for non-English speakers.

<u>Construction of female-only facilities and expansion of female-only exercise classes</u>

There was a desire to see the establishment of more female-only facilities, such as gyms and swimming pools. Some interviewees called on the government and local councils to make this type of infrastructure available within areas with a high Somali population. One female interviewee said

'Being a Muslim lady, I think that perhaps there could be more female-only gyms. The best thing I can think of that would be helpful is to actually have for a whole gym to be made for just females. So, including a swimming pool, including the sauna, including the actual gym facility, maybe also some open space that you could run in, or play any sports in general, solely female-only so the staff would be female and any of the teachers in the classes would be female. That would be something that would be a good change for the Somali community and that they would engage well in that, especially among Somali women' Female interviewee C, 40-50 years

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In addition to the construction of female-only facilities, some interviewees expressed a desire to increase the number of female-only exercise sessions in facilities that currently offer such sessions. This was identified as a way to provide more opportunities for women who are otherwise unable to attend the only weekly female-only session due to work or family commitments. One female interviewee said

'I actually enjoy swimming at the Easton Leisure Centre, which isn't far from my house. And they actually were good and did provide a female-only swim on Sunday, but it was only for about a few hours... They could provide more in the sense of more slots so that maybe people that can't go to certain times are able to get to other time'.- Female interviewee A, 40-50 years

Support for non-English speakers

Findings from this study suggest that one way of addressing the language barriers preventing people from participating in structured exercise is for such sessions to be led by a Somali-speaking facilitator who could translate important information to Somali people.

One female interviewee said

'If there was somebody who had the same language as someone that spoke Somali, who was providing the exercise classes, it would work a lot better, because even, you know, obviously, they're able to follow the actions of a class, but they're not able to understand the benefits of the particular exercises whereas, if it was in Somali, a Somali person was providing that class, they would be able to understand exactly what that exercise is helping them with'- Female interviewee B, 51-60 years

Translating important information about physical activity and a healthy lifestyle to the Somali language can help raise more awareness about physical activity in the Somali community. One of the interviewees called for leaflets and information materials in English to be translated into the Somali language

'maybe it will be helpful to have these [leaflets] in another language. So if, for example, the Somali community in particular, they had more leaflets or, adverts or things like that, that

they could readily access so that they don't need a third person to translate and it can register to them a lot better if they are obviously being told about the health concerns of not exercising.' -Female interviewee D, 61-65 years

Peer support and community-led initiatives

Peer support was considered a vital source of motivation for various forms of physical activity, including walking and cycling. For instance, several women expressed interest in attending social activities organised by Somali women that incorporates various forms of physical activity

'Somali women as well they like to get together a lot, especially in their free time.. that would be an actual thing that would be social and also an activity that would also be fun and adhering to religious boundaries'. -Female interviewee E, 61-65 years

Some of the interviewees mentioned that they were aware of some informal peer-support walking groups and expressed a desire for this to be more inclusive, especially for people with mobility limitations

'there's already a group of ladies that do something like this, like Somali women who have organised to go back on walks, but they go on really long walks. So, I am unable to take part because of the distance. But if it's something that is not a long distance, I should be able to'. -Female interviewee A, 40-50 years.

The role of the local council

The council was seen as integral to addressing the problems of physical inactivity among people from the Somali community. The three subthemes identified include building a better relationship with the community to raise awareness, incentives and funding for community-led initiatives.

<u>Building a better relationship with the community to raise awareness</u>

Some of the interviewees suggested that the council should seek ways to engage with the community through the elders and religious leaders in the Somali community. This was suggested as a way of bridging the divide between the council and the Somali community. Establishing such relationships with community leaders would create more opportunities

to raise awareness about physical activity within the community. One male interviewee said

'The first thing is that the council has to work with the Somali community leaders, whether they are religious leaders or whether they are other community leaders, so that they push for what can be termed as one-week physical activity awareness or something sort of that kind from religious gatherings, like this gathering, there should be some posters'. - Male interviewee E, 40-50 years

Incentives

Incentives such as free gym memberships or vouchers to attend exercise classes was suggested as another potential facilitator of physical activity. There was an indication that such incentives have been offered previously, but it is not clear whether this had any real effect on improving physical activity levels. One male interviewee said

'Maybe like a programme; I also think things like programmes. I remember back then there were some, like, programmes by the Council, and they used to give, like, free memberships in the sports facilities, the leisure centre for Somalis. Yeah, those sorts of things could help them. Like, having such programmes from the Council often'. Male interviewee B, 40-50 years.

Funding for community-led initiatives

Some interviewees gave the example of the Bristol Forum of Faith as one of the local organisations that seek to promote healthy lifestyles among people from the Somali community. A few respondents recalled being invited to attend organised walks and physical activity awareness campaigns organised by this charity. However, they mentioned that the charity was unable to sustain the range of activities and programmes it intended to organise due to a lack of funding. As such, the provision of funding for local initiatives was perceived to be an essential role of the local council. One male interviewee said

'To put more grants and finance on local community organisations who are encouraging physical exercise. As far as I remember, there was a local organisation here in Bristol; it's called Bristol Forum of Faith. They do jogging, and so they were called. One of my friends is the director; he is an English man, so he used to call me and say, "Zafir [pseudonym], we

need four or six people, or ten people, Somali people who can come and do jogging", so we used to do jogging for almost 25 minutes. So that was the only organisation… One of the things they told me is they don't have sufficient funds to do more and make a better impact. Their impact was restricted, but if the council finances and invests and puts more money, I'm sure there will be a very tangible outcome'.- Male interviewee A, 51-60 years

Raising more awareness about the benefits and recommendations of physical activity

Findings from this study suggest that, although adults and older adults were generally aware of some benefits of physical activity, there was a gap in their understanding of the daily physical activity recommendations and the forms of physical activity that are suited to people with pre-existing conditions. As such, there was a recommendation for raising awareness within the community. Two subthemes were identified: raising awareness through religious leaders and targeted awareness in the community.

Raising awareness through religious leaders

Worship centres were perceived to be central to raising awareness about physical activity. Since exercise and physical activity are not contrary to religious doctrines, some interviewees suggested that religious leaders should be equipped with the knowledge of the benefits of physical activity to share during religious gatherings. One male interviewee said

'In our religion, everything entails every aspect of life, including exercise, but it depends on the preacher and how they…explain it'. Male interviewee D, 51-60 years

Another person said

'If the religious leaders are informed well. Today it was Friday, so we had a Friday ceremony/gathering, so if those kinds of religious leaders can inform the Somali people within that lecture, then that would have a very lasting impact, and that link is also missing, and I think all that can be pushed from grassroots'. -Male interviewee B, 40-50 years

Targeted awareness in the community

The Somali community in Bristol is clustered within certain areas of the city, and this presents an opportunity for targeted raising awareness within the community. Some

interviewees highlighted the key areas where people from the Somali community reside and asked for targeted educational intervention within those areas.

'They know the area of the Somali people; most of them, they live in Barton Hill, Easton and St Paul. They do small leaflets which explain what exercise is good for you'. -Male interviewee A, 51-60 years

'I think the things we could do is, I think we could do a few things. First, I think we have to do a lot of awareness within the community. And we have to; we have to get the awareness, the importance of doing the exercises and how it will contribute to the health and, at the same time' -Female interviewee C, 40-50 years

6.6 Discussion

This is the first known qualitative study investigating the barriers and facilitators of physical activity among the Somali community in the United Kingdom. However, similar studies have been conducted in Sweden (Persson *et al.,* 2014) and the United States (Devlin *et al.,* 2012; (Mohamed *et al.,* 2014). Studies on the Somali community in the UK have been primarily focused on investigating FGM among this community. This study raises important considerations for designing inclusive physical activity interventions for adults and older adults in the UK. This discussion will be structured using the research questions presented in section 6.3

In what ways do religion and culture impact decisions to engage in physical activity among adults and older adults from the Somali community in Bristol?

This study found that although migration from Somalia to the United Kingdom is accompanied by lower levels of physical activity, the Somali culture is generally sedentary. The sedentary lifestyle is thought to be a result of urbanisation and motorisation, which dramatically changed the lifestyle of a once pastoral, nomadic community. This finding aligns with previous qualitative studies conducted among Somali migrants in Sweden (Persson *et al.,* 2014) and the United States (Devlin *et al.,* 2012). This provides some evidence that people from racially minoritised communities could be already engaging with light intensity physical activity.

Light intensity activity are activities like leisure walking, that do not produce shortness of breath and typically use between 1 and 3 MET(Buman *et al.,* 2010). The evidence on the impact of such activities on health and wellbeing was underdeveloped until more recent times. There is now a growing recognition that these forms of activities are important especially among sedentary older adults (Fuezeki *et al.,* 2017). A recent systematic review of the health benefits of light intensity activities called for a revision of physical activity recommendations to include light intensity activity for inactive people (Fuezeki *et al.,* 2017). Interventions to improve the levels of physical activity among this traditionally inactive community would need to be introduced in a gradual and sustainable manner. This is in line with recommendations from the WHO, which proposes a gradual increase in levels of physical activity among sedentary groups (Bull *et al.,* 2020).

There was a recognition of a high prevalence of overweight, obesity and type 2 diabetes among members of the Somali community, and this was generally attributed to unhealthy diet and sedentary lifestyle prevalent in the community. A qualitative study by Asamane *et al.* (2019) explored the perceptions of eating behaviours among ethnically diverse older adults in Birmingham, UK. The authors reported that Africans were less likely to perceive their diet as unhealthy compared to South Asians. This suggests that the members of the Somali community interviewed in this study were more aware of their unhealthy dietary practices. Further research is needed to understand the links between awareness of unhealthy diet and dietary changes.

Walking was considered the most widely practised and culturally acceptable form of physical activity across both genders. This is logical based on their expressed preference for low-intensity forms of physical activity. This finding is also in agreement with a qualitative study of barriers and facilitators of physical activity among Somali men in the USA, where all participants in the study unanimously recommended walking groups as a means to increase physical activity levels among older Somali men (Mohamed *et al.,* 2014). A study of physical activity among men from South Asian backgrounds in the UK also reported walking as one of the most prevalent form of physical activity (Emedian and Thompson, 2017).

Contrary to preconceived views that certain forms of physical activity are forbidden for Somali women, findings from this study suggest that, while no form of physical activity is

prohibited, the most important religious and cultural issue is the prohibition of mixed-gender activities. The requirement for modesty implies that women should not be seen by males wit their hair exposed or with any revealing or tight-fitting attire. This is also a widely adopted view among South Asian Muslim communities in the UK (Snape and Binks, 2008; Sriskantharajah and Kai, 2007 and Somali communities in the USA (Devlin *et al.,* 2012; Rothe *et al.*, 2010) and has been reported as a barrier preventing women from engaging in structured forms of exercise in gyms and swimming pools.

Findings from this study show a strong commitment by members of the Somali community to cultural norms and religious beliefs. The Somali community is predominantly a Muslim community; as such, Islam is closely linked to the Somali identity and forms a key aspect of everyday life. The interviewees in this study spoke about their culture and religion as the same entity. Svenberg, Mattsson and Skott (2009) posit that social norms and customs among Muslim communities are derived from Islamic traditions and are preserved by religion. The authors also argued that women from the Somali community tend to become more religious upon migration to Western countries (Svenberg, Mattsson and Skott, 2009). This reinforces the finding of this study, highlighting the importance of religious leaders in promoting physical activity in the community.

While some of the Somali men in this study also advocated for creating women-only activities to increase uptake of physical activity among Somali women, this was not discussed as a requirement for the men. In fact, some of the men reported a preference for going to the gym. There are no male-only gyms in Bristol, hence the need to understand if and why it is acceptable for Somali men to use mixed-gender facilities. Bagheri (2012) identified two approaches to interpreting Islam – conservative and reformist. The reformist approach disagrees with gender segregation and allows for non-sexual opposite-sex interactions between males and females (Bagheri, 2012). This could partly explain why some Somali men are comfortable with using mixed-gender facilities. A minority of Somali women in the study by Persson *et al.* (2014) said they would consider attending a mixed-gender gym. This could also be linked with their interpretation of their religious values.

How does the built environment impact decisions to engage in physical activity among adults and older adults from the Somali community in Bristol?

This study identified perceptions of unsafe neighbourhoods as a deterrent to park use. Drug use and gang-related activities were also identified as important environmental concerns. Berggen, Gerardi and Mueller (2017) reported similar findings. The authors reported that exposure to drugs and violence and the presence of gangs were major deterrents for physical activity among Somali women. The fear of walking alone and feeling unsafe in the neighbourhood was also reported in a study of barriers to physical activity among Somali women (Persson *et al.*, 2014). In another study of the barriers to physical activity among Somali men in the USA, the participants spoke of the fear of harassment while walking and recounted an experience of a Somali woman being chased and harassed by a driver of a pickup truck (Mohamed *et al.,* 2014). Although safety issues identified by this study are not explicitly linked to racial prejudice, addressing neighbourhood safety concerns can improve physical activity levels (Berggren, Gerardi and Mueller, 2017).

Several studies have also reported the links between inequalities, perceived safety and low physical activity levels (Carver, Timperio and Crawford, 2008; Bennett *et al.,* 2007). For instance, Bennett *et al*. (2007) investigated the association between perceived neighbourhood safety and pedometer-determined physical activity among ethnic minorities living in low-income neighbourhoods in Boston, USA. The findings showed that, compared with women who reported high levels of night-time safety, women who reported feeling unsafe at night completed significantly lower steps per day.

Neighbourhood deprivation is a key determinant of neighbourhood safety (Newburn, 2016; White *et al.,* 2011). Data from Trust for London (2021) showed that between 2018 and 2019, the most income-deprived areas in London recorded one-third more crimes than the least income-deprived areas. Official government figures in the UK show that Pakistanis and Bangladeshis were more than three times as likely as White British people to live in the most income-deprived 10% of neighbourhoods. At the same time, Black Africans were most likely to live in the most deprived neighbourhoods in relation to housing and access to services (Ministry of Housing, Communities and Local Government, 2020). Considering the links between neighbourhood deprivation, neighbourhood safety and low levels of physical activity, people from racially minoritised groups are more likely to experience additional

barriers linked to neighbourhood safety resulting from living in more deprived areas (Roe, Aspinall and Ward Thompson, 2016). As such, the local council needs to discuss environmental concerns with members of the Somali community and address such concerns.

The need for culturally appropriate women-only facilities identified by participants in this study is widely acknowledged among Muslim communities. The lack of such facilities is a major deterrent to outdoor physical activity (Persson *et al.,* 2014; Devlin *et al.,* 2012; Snape and Binks, 2008; Sriskantharajah and Kai, 2007). This has been previously discussed in chapter 4 of this study.

What can be done to increase the levels of physical activity among adults and older adults from the Somali community in Bristol?

Findings from this study show that peer support and community-led initiatives can improve physical activity participation among members of the Somali community. Having someone to exercise with was also identified as a facilitator by nearly half of the survey participants in the previous chapter; this view was also clearly expressed by men and women in this study. This aligns with findings from Asamane *et al.* (2019) and Asamane, Grieg and Thompson (2020), in which the authors reported that social networks and encouragement from family members motivated older adults from racially minoritised communities in Birmingham, UK, to participate in physical activity and adopt a healthy diet. Berggren, Gerardi and Mueller (2017) also reported that peer support and community-led initiatives had a profound impact on self-efficacy and participation in physical activity among Somali immigrants in the USA. Taking an asset-based community development (ABCD) approach would empower members of the Somali community to design culturally appropriate and engaging physical activity initiatives.

ABCD is a strategy that aims to develop sustainable community initiatives by building on the assets existing in the community (Kretzmann and McKnight, 1996). The value of ABCD is that it is embedded and underpinned by 'community-centred experiences' (Kretzmann and McKnight, 1996). Developing interventions around community-centred experiences of the Somali community would address cultural and religious considerations. ABCD requires identifying strengths within the community by working with members of the community to map out assets and develop a community vision and plan to achieve the desired outcomes

(Misener and Schulenkorf, 2016). This will require working with community partners to mobilise strengths to help achieve goals. However, creating a social change with regard to physical activity at a community level would require members of the community to be more integral in the planning and development of interventions (Misener and Schulenkorf, 2016).

Findings from this study revealed the existence of physical activity initiatives within the community. Some of the women interviewed talked about participating in walking groups for women. It is important that researchers do not try to reinvent the wheel by duplicating initiatives already in existence, but rather, research efforts should be directed at understanding the experiences of those women who attend such walking groups. This could form a basis for scaling up engagement and expanding participation in such groups. In the context of this study, ABCD would require building trusted relationships between the Somali community and key stakeholders within the community, the council, research institutions and charities that work with the community. Studies have identified various benefits of community-led physical activity programmes ranging from improved confidence to participate in physical activities to improved self-efficacy and improved physical fitness (Werner, Teufel and Brown, 2014; Wieland *et al.,* 2012). Wieland *et al.* (2012) recommend the use of such a community participatory approach in the design of fitness programs for immigrants. A Public Health England (2021b) report that sought to provide evidence-based guidelines on addressing inequalities in physical activity also recommended the need to involve members of racially minoritised communities in the design and implementation of physical activity programmes for their community.

The local council was identified as pivotal to developing sustainable physical activity initiatives. One of the recommendations by members of the Somali community in this study to the local council is to strengthen collaboration with members of the community, including religious leaders, to raise awareness about the importance of physical activity and the recommendations. The council can also support the Somali community by providing funding for culturally appropriate interventions, which would be best driven by the community.

Strengths and limitations of the qualitative research stage

This is the first known qualitative study conducted to explore the experiences, barriers and facilitators of physical activity among the Somali community in the UK. Findings from this study can provide valuable insights into important considerations in the design of interventions to improve physical activity levels among an underserved, racially minoritised community, such as the Somali community in the UK. However, caution should be applied when transferring findings from this study across other racially minoritised communities, as these comprise a very heterogeneous group of people. This research was conducted in an inclusive manner by ensuring that language barriers did not pose a major constraint to gaining a deep insight into the experiences of the Somali community, particularly the older adults within the community. The use of experienced Somali interpreters meant that potential interviewees were not excluded based on language.

There were a number of limitations with the qualitative arm of this research. First, some of the interviews were conducted face to face, pre–COVID-19, and this gave the researcher a better chance to build rapport and connect with the non-verbal cues of the interviewees. However, due to the personal circumstances of the researcher (maternity), the rest of the interviews had to be conducted during the COVID-19 lockdown. This meant that face-to-face interviews were impossible, and the researcher had to rely on telephone interviews. Although it would have been helpful to maintain a consistent approach for data collection, using a semi-structured interview schedule enabled the researcher to keep a reasonably consistent approach for all interviews. A study comparing transcripts from telephone and face-face interviews of a single study reported no significant difference and concluded that telephone interviews can be used productively in qualitative research (Sturges and Hanrahan, 2004). The study by Novick (2008) also reported that telephone interviews generate rich data and should be considered as a suitable alternative to face-face interviews where practical.

Additionally, although the use of interpreters provided an opportunity to be inclusive in the recruitment of participants, there is a potential for inconsistencies with using more than one interpreter. To abide by the cultural values of the interviewees, the researcher had to use interpreters from both genders. This has already been discussed in the methods

section, and the researcher ensured that both interpreters were well acquainted with the interview probes.

6.7.   Conclusion

This study provides a deeper insight into the experiences of physical activity among adults and older adults from the Somali community in Bristol. Findings from this study highlight the importance of engaging members of the Somali community in the design of culturally appropriate interventions to improve participation and engagement in physical activity. This would also create opportunities for social interactions and peer support, which was flagged as a potential motivator for physical activity among adults and older adults from the Somali community.

CHAPTER SEVEN: GENERAL DISCUSSION

Implications of the findings of this research on the development of interventions to promote engagement in physical activity

7.1 Chapter overview

This chapter will provide an integrated discussion of the findings from the three research stages conducted as part of this thesis and highlight the implications of these findings by making recommendations on strategies for promoting participation in physical activity among the Somali community in the UK. A key focus of this chapter is on adopting a whole-systems approach to improving physical activity levels. This chapter will also reflect on the contribution of this doctoral research to generating new knowledge. Finally, the chapter will reflect on the researcher's development as a result of undertaking this research.

7.2 Synthesis of findings into recommendations to promote physical activity

As stated in section 3.3.2 of chapter 3, a key feature of mixed-methods research is the integration of findings from the different stages of the research process and the reporting of results. Several ways of achieving this synthesis include reporting findings from individual stages, sequentially or in combination (Bryman, 2007). Findings from the research stages conducted as part of this doctoral research were reported individually, along with a discussion on how they compare with existing literature and how the findings feed into the design of the subsequent research stage. However, this section will further integrate the results via a list of recommendations.

The findings from the three research stages were mapped into the COM-B model to identify potential recommendations that could improve physical activity levels among the target audience (figures 7.1, 7.2 and 7.3).

Implementing culturally appropriate awareness campaigns by working with community and religious leaders to raise awareness would improve understanding of the benefits of physical activity (psychological capability). There is also scope to improve awareness of the recommendations and guidelines for physical activity via dialogue with health professionals (figure 7.1). This recommendation has been shown to be effective in improving self-reported physical activity levels among the general population (Kettle *et al.,* 2022). It is also

vital to ensure that interventions are culturally appropriate. Providing a mix of low-intensity and high-intensity forms of activity would enable people to identify the most suitable form of activity for them (physical capability).

Physical activity interventions should strive to reduce socio-environmental barriers and maximise opportunities provided by the built environment (figure 7.2). An umbrella review by Public Health England (2017) investigated the relationship between the built and natural environment, and reported that environmental determinants such as neighbourhood walkability, safety and access to facilities (physical opportunity) can improve physical activity levels among the general population, including older adults. However, not features of the built environment have clear associations with physical activity and this review was unable to identify what forms of activity is improved by specific features of the built environment. A systematic review of the effects of the built environment on physical activity synthesised 36 studies, and concluded that there is consistent evidence linking availability of public transport with increased walking. Other modifiable features of the environment including improved walking and cycling infrastructure did not significantly increase overall physical activity levels (Tcymbal *et al.,*2020). This review identified the importance of understanding and addressing prevailing social norms among people from racially minoritised communities (social opportunity) (figure 7.2).

Finally, motivation is essential to maintaining and sustaining active living. Health professionals can play a key role by providing encouragement, support and referral to culturally appropriate physical activity interventions. Strategies, such as goal setting and evaluation of goals (reflective motivation), have been shown to improve motivation for physical activity. Incentives and financial support (automatic motivation) can also encourage participation in physical activity (figure 7.3).
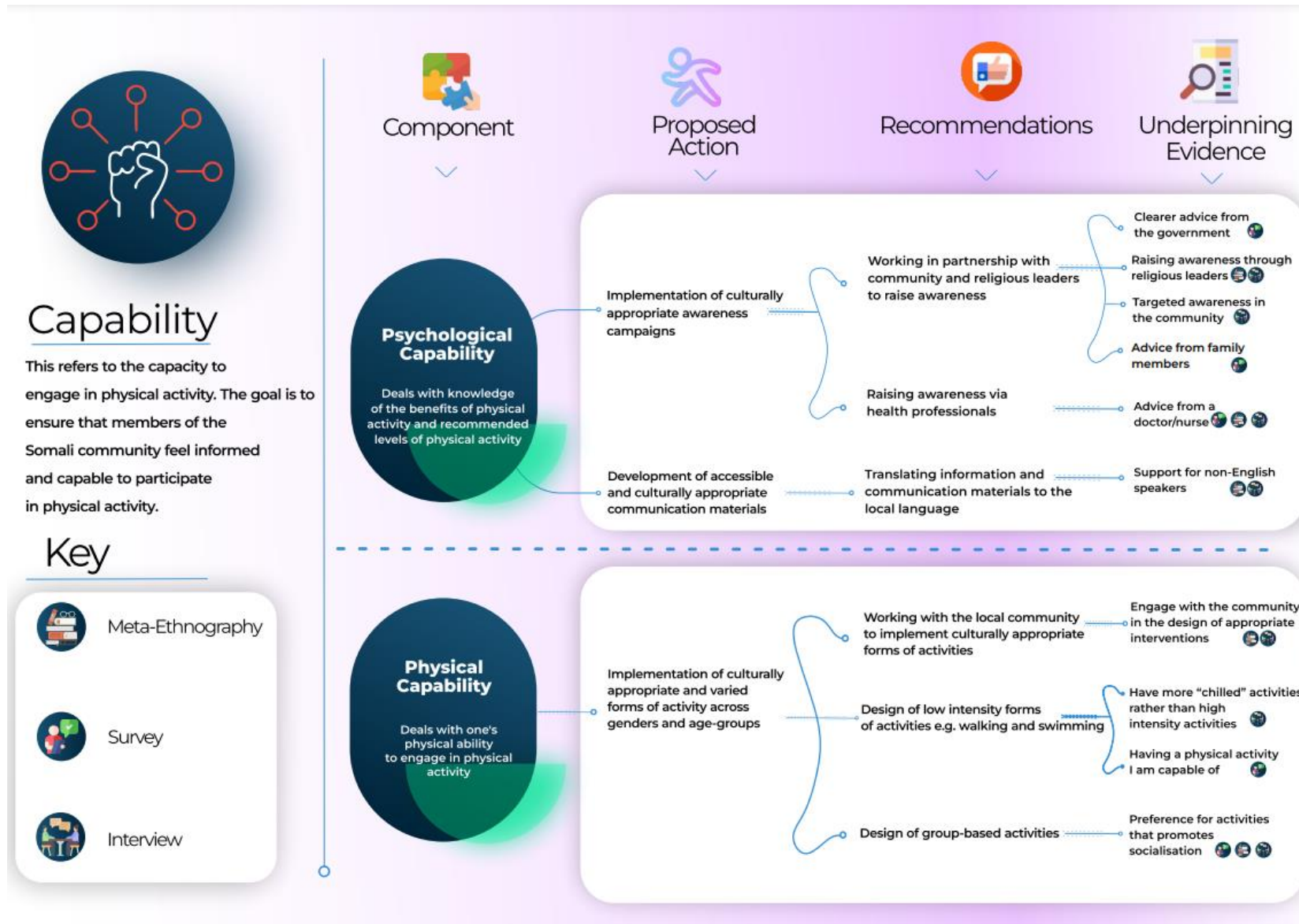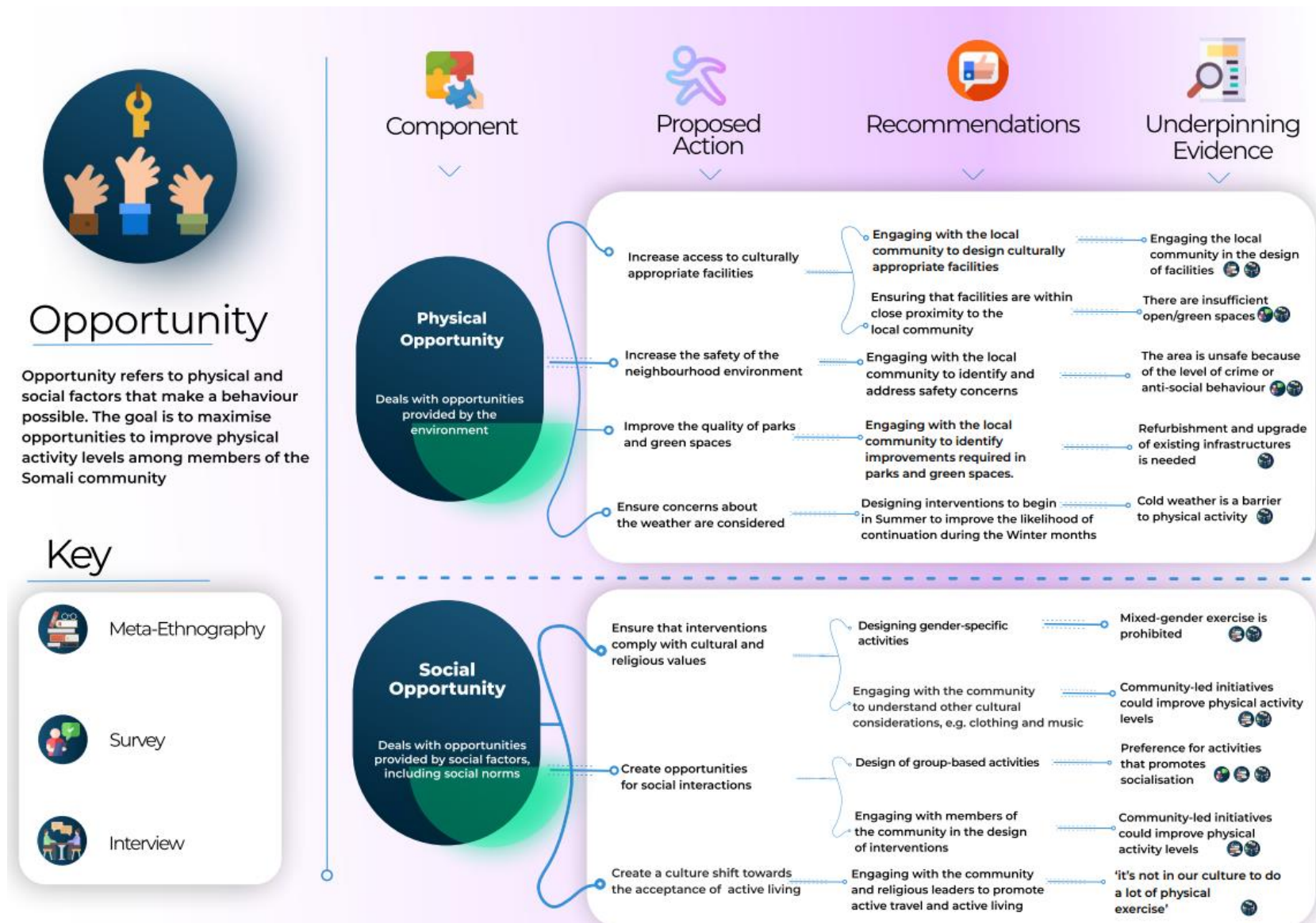
Figure 7.1 Recommendations based on capability

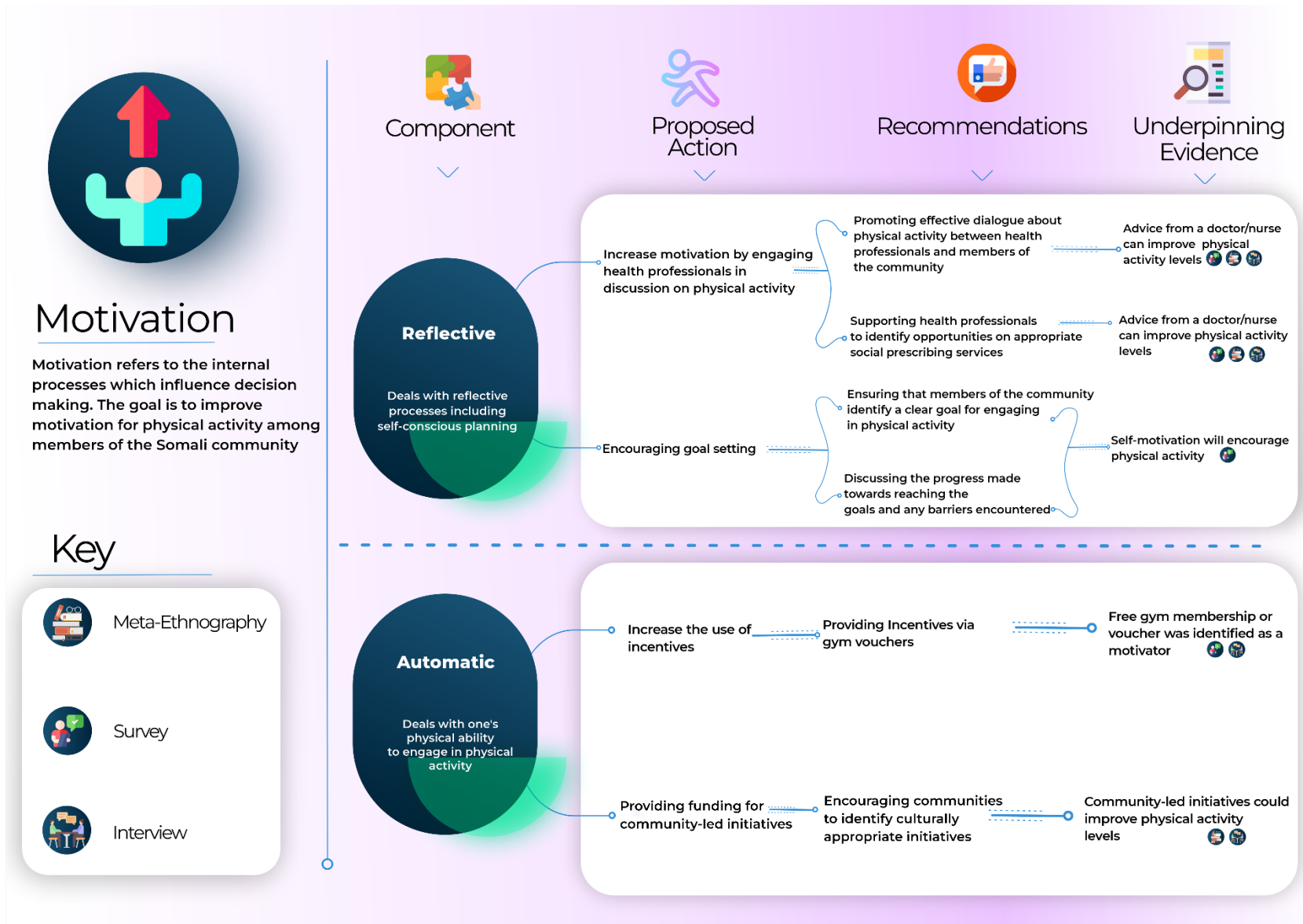Figure 7.2 Recommendations based on opportunity

Motivation

Motivation refers to the internal processes which influence decision making. The goal is to improve motivation for physical activity among members of the Somali community

Key

Meta-Ethnography

Survey

Interview

Component | **Proposed Action** | **Recommendations** | **Underpinning Evidence**

Reflective

Deals with reflective processes including self-conscious planning

Increase motivation by engaging health professionals in discussion on physical activity

Promoting effective dialogue about physical activity between health professionals and members of the community

Advice from a doctor/nurse can improve physical activity levels

Supporting health professionals to identify opportunities on appropriate social prescribing services

Advice from a doctor/nurse can improve physical activity levels

Encouraging goal setting

Ensuring that members of the community identify a clear goal for engaging in physical activity

Self-motivation will encourage physical activity

Discussing the progress made towards reaching the goals and any barriers encountered

Automatic

Deals with one's physical ability to engage in physical activity

Increase the use of incentives

Providing Incentives via gym vouchers

Free gym membership or voucher was identified as a motivator

Providing funding for community-led initiatives

Encouraging communities to identify culturally appropriate initiatives

Community-led initiatives could improve physical activity levels

Figure 7.3 Recommendations based on motivation

7.3 Call for a whole-systems approach

Findings from this research and the recommendations in figures 7.1, 7.2 and 7.3 highlight the need for adopting a whole-systems approach to dealing with physical inactivity among underserved communities. The complex interactions between individual, societal, socioeconomic and environmental factors identified in this research underscore the importance of systems thinking as a core element of planning and designing physical activity interventions. Research on complex public health issues like physical activity has provided new ways of thinking that transcend the traditional linear cause-and-effect model (Rutter *et al.,* 2019). Systems thinking promotes the shift needed to move away from a narrow focus on individual-centric interventions to a deeper understanding of the dynamic factors that interact together to form a system (Nobles *et al.,* 2021; Rutter *et al.,* 2019). The growing recognition of the role of systems mapping to address public health issues can be traced back to the publication of the UK Foresight map of the complex web of obesity causation in 2007 (Bagnall *et al.,* 2019). Since then, systems thinking and systems theory have been applied to several complex public health issues, including tobacco control and, more recently, physical activity (Rutter *et al.,* 2019).

Although there is limited empirical evidence evaluating the value of systems mapping, these maps have been shown to support the development of policies aimed at improving physical activity levels (Rutter *et al.,* 2019).

7.4 Implications for policy and practice

Evidently, it is vital to ensure that interventions aimed at addressing behavioural inequalities among racially minoritised communities are flexible enough to incorporate various individual, practical, environmental and social needs. A one-size-fits-all approach will yield limited results, as requirements vary within and across racially minoritised groups. This position is also supported by a Public Health England report highlighting the importance of understanding the demographic context before designing interventions to address inequalities in physical activity (Public Health England, 2020). Calls for culturally tailored interventions have been made in previous research on racially minoritised communities in the UK (Bhatnagar, Foster and Shaw, 2021). Arguably, this will involve

working with multiple stakeholders, including community members, researchers, the local council and health professionals in primary care (Koshoedo *et al.,* 2015).

There is scope for the research community to engage better with people from the Somali and other racially minoritised communities on behavioural and lifestyle research. The distrust between racially minoritised communities and research bodies could be partly attributed to a lack of engagement with such communities. The labelling of racially minoritised communities like the Somali communities as 'hard to reach' or 'difficult to engage' reinforces gaps in engaging with such communities (Mendoza-Vasconez *et al.,* 2016). It would be more beneficial to see racially minoritised communities like the Somali community as communities requiring a different engagement approach. The process of conducting this mixed-methods study clearly shows the value of building trust and rapport between the researchers, healthcare professionals, and community members.

The National Institute of Clinical Excellence (NICE) recommends that health professionals in primary care settings proactively identify inactive adults and encourage them to engage in 30 minutes of moderate-intensity activity on five or more days of the week (Hillsdon et al., 2005). Adults and older adults from racially minoritised communities will benefit from knowing the types of moderate-intensity activities they could engage in; therefore, health professionals need to be aware of cultural and religious considerations when making such recommendations. Training health professionals on the importance of physical activity for primary prevention could play a key role in facilitating dialogue between health professionals and members of racially minoritised communities (Horne *et al*., 2010). Such training will also need to address widespread misconceptions held by some medical professionals about the role of religion on the uptake of physical activity among racially minoritised communities. Social prescribing, also known as community referral, could prove valuable in linking inactive members of racially minoritised communities to appropriate physical activity services within the community. However, such referral to community service would only be successful if the services are sensitive to people's cultural identity (i.e. culturally appropriate). Two systematic review studies evaluating the effectiveness of social prescribing have described it as a promising intervention with potential, but the underpinning evidence on the impacts on health and wellbeing is not strong (Costa *et al.,* 2021; Bickerdike *et al.,* 2017).

7.5 Contribution to knowledge

Although systematic review-level evidence exists on the barriers and enablers of physical activity among people from racially minoritised communities, the majority of existing evidence focuses on children, young adults and youths. There is far less review-level evidence on the experiences of adults and older adults aged 40 and above from racially minoritised communities in the UK. While it is essential to address the problem of inactivity among the younger generation, we know that people are living longer, some with disabilities and ill health for a better part of their life (WHO, 2016b). As such, it is equally important to promote physical activity among older adults from racially minoritised backgrounds. This thesis has contributed to knowledge by synthesising existing qualitative evidence on barriers and motivators of physical activity among adults and older adults from racially minoritised communities in the UK (study 1).

Furthermore, this is the first known research study investigating physical activity levels and associated factors among people from the Somali community in the UK. Although there is strong evidence showing that members of the Somali community experience high levels of health and social inequalities (Bristol Ageing Better, 2019, Jabłonowski, Abdi and Abdi, 2013), research on this community has to date, focused heavily on FGM (Larsson *et al.,*2018; Moxey and Jones, 2016). This has fuelled some negative narratives about the community, possibly resulting in their isolation from behavioural research. This research has identified key factors impacting the health and behavioural inequalities among the Somali community and has highlighted the value of undertaking research among this underserved community.

In terms of conceptual contribution, it is acknowledged that the COM-B model of behaviour change has been widely applied to understand the motivators for physical activity, although less so among adults and older adults from racially minoritised backgrounds. This study was able to apply the model to draw out some evidence-based recommendations on addressing inequalities in the levels of physical activity among racially minoritised communities.

7.6 Reflection on the conceptualisation and implementation of the research

The idea for this project first emerged from my experience of relocating from Nigeria to the United Kingdom for studies in 2015; I discovered that I had become more sedentary, and I wanted to address this issue. I joined a gym for the first time in my life, and it was a strange experience. The environment was different; I had no idea how to use the equipment, the induction was too brief, and I felt alone. I decided to join an exercise class to feel a sense of belonging. Although that felt better, I struggled for a long time due to not understanding what the instructors were saying. They kept mentioning words like 'star jump', 'burpees', etc., and I had no idea what those meant; I had to stay at the back and watch what others were doing. It felt like I needed a lot of catching up.

The next big step I took was registering for a free one-to-one bicycle training class. Before that, I never rode a bike, as my parents considered it a dangerous and 'underprivileged' means of commuting in Lagos, Nigeria, one of the busiest cities in Africa. Luckily, I had a very patient instructor who took the time to explain the basics. After three lessons, I was already cycling from home to work. I remember this felt so liberating, and I was always eager to share my cycling experience with members of my social circle from Nigeria. However, not everyone was pleased with this lifestyle change, and I remember one of my local Church leaders in Bristol called me to tell me off about cycling. He wondered if my car had broken down and expressed disappointment at my excitement about cycling. This encounter was a turning point for me. I soon started to pay attention to my surroundings and noticed that I hardly ever saw a Black woman cycling. I started asking several questions about what could be wrong and how to get people from my community more engaged in physical activity. This was my primary motivation for wanting to conduct this doctoral research. Initially, I wanted to conduct the study on the Nigerian community in Bristol, but I soon realised that other than my bias as a member of the community, there was insufficient literature to back the rationale for the choice of undertaking the research solely among Nigerians.

This led me to conduct further research into the UK's most socioeconomically deprived and sedentary communities. I realised that people from South Asian communities, refugees, and asylum seekers from East African communities topped this list. However, considering the evidence base, there was far more research on the barriers and facilitators of physical

activity among people from South Asian communities. The evidence on people from East African communities was non-existent at the time, and I saw this as a clear gap. Although I would have been naturally inclined towards doing research among the West African community due to common religious and social experiences, I knew that this research would be more beneficial if conducted among the East African community. I chose the Somali community, as they were the largest East African community in the UK.

Moreover, Bristol is home to one of the top five places of abode for Somalians in the UK. Although the Somali community is predominantly a Muslim community, it could be tempting to ask why the research did not focus on Muslim communities; however, beyond religion, there are several differences between the Somali and other Muslim communities, such as those in South Asian communities. For instance, Somalia is the second-most common country of nationality of refugees arriving in the UK in the past ten years. Besides Afghanistan, which is ranked as the ninth-most common country of nationality of refugees, no other South Asian country is among the top ten (Migration Observatory, 2021). This implies that deprivation is experienced differently in Muslim-speaking countries. Just as it is unhelpful to cluster different communities based on their skin colour, it might be equally unhelpful to cluster communities together based on sharing similar religions.

7.6.1   Reflection on personal development

The process of undertaking this research opened my eyes to the complexities involved in managing a research process. Several changes had to be made to the study design due to new discoveries during the public engagement process and external factors like the COVID-19 pandemic. Being able to adapt and respond to these changes is one of the valuable skills I developed during the course of the research.

I gained valuable expertise in time and resource management. Although I planned to complete my studies in 2021, this was impossible due to going on maternity leave in 2020. However, my ability to combine a full-time job, my personal life and my doctoral research amidst the disruption caused by COVID-19 attest to my time management skills.

Although combining a full-time research role and part-time doctoral studies allowed me to apply some research skills I had developed from work to my studies, the PhD was my first real experience of undertaking a research study from the design to the implementation and

reporting phases as an independent researcher. This meant that I was able to independently visualise and conceptualise the project idea and its logical pathways. I was also able to develop my skills in mixed-methods research, as I did not have much experience with mixed-methods research prior to my doctoral studies. Of course, I received tremendous support from my supervisory team; their reputation and expertise were significant drivers for developing my problem-solving and independent thinking skills.

This project also enabled me to develop skills in recruiting and accessing under-represented communities. I was wrong about my initial assumption that access to the community would be straightforward because I am also of a Black African background. Undertaking this project enabled me to understand the value of building networks with gatekeepers within the community. It also helped me to understand the perspective of the Somali community and how they felt ostracised by the research community. First, I built trust with gatekeepers by showing a genuine interest in learning more about the Somali community. I attended a series of events and discussions centred on the history and culture of the Somali community. I soon realised that I saw the same faces coordinating these events, and I immediately began to identify key gatekeepers. By engaging with these gatekeepers, I became abreast of key developments within the community and was invited to local events, including a film on FGM. I also developed a rapport with one of the domestic staff of Somalian heritage assigned to clean the offices on my block at work. What started as a corridor conversation began to open my eyes to details about the Somali culture, the politics in Somalia and the impact of the political divide on Somalians in the UK. I became friends with a mature Somali student who was studying a masters of Law at my university. His insights and links with the community proved helpful in gaining access to the community. To date, I have maintained contact with some of these gatekeepers via social media platforms such as WhatsApp. A recent publication on the lessons learnt from recruiting older adults into community-based trials reported that, although relationship building is time and resource consuming, it can be worthwhile in recruiting older adults from racially minoritised groups (Withall *et al.*, 2020). This argument summarises my experience of building rapport with the Somali community in Bristol.

7.6.2   Next steps

I would wish to continue with this research by applying for external funding to undertake further studies using the recommendations set out in section 7.2 to design an appropriate intervention study to promote physical activity among the Somali community and monitor and evaluate outcomes. I will also be looking to publish the findings from the mixed-methods study in a peer-review journal article within the coming months.

I was unable to conduct experimental research on this project due to funding constraints and the need to build a trusted relationship with members of the Somali community. From my initial discussions with gatekeepers, it was clear that I had a huge burden of first rebuilding trust between the research community and members of the community. Therefore, it was agreed that an experimental study would not be feasible due to time and resource constraints. However, having established some good networks with the Somali community, I feel that I am in a stronger position to pursue this next step.

I am also interested in researching physical activity, behaviour change and risk factors of NCDs among other racially minoritised communities in the UK. A colleague has recently approached me to collaborate to bid for a National Institute for Health Research project on stroke among racially minoritised communities in the UK. Although I have transitioned to a senior lecturer role in the university due to the stability it offers over my short-term research contracts, I am still very much interested in developing myself as an independent researcher and contributing to research with an impact on health promotion, especially among racially minoritised communities.

7.7 Limitations of the Thesis

The following limitations are worth noting in relation to this thesis, some of these have been reported in previous chapters.

Although the search strategy for the meta-ethnographic study (chapter 4) did not explicitly exclude mixed-methods study, there is a chance that such evidence could have been missed during the search process due to not including search parameters specific to such study designs.

The sample size of the quantitative study is relatively small and was drawn from a convenience sample, implying that it cannot be relied on as representative of the population of adults and older adults across the whole Somali community in Bristol (see page 143-144 for further details on this)

The use of self-reported physical activity measurement tool is not without it's flaws. These tools do not produce an objective and accurate estimate of physical activity levels see page 144 for further details on this)

The time-lag between the first three interviews and the subsequent eight interviews was about 10 months as a result of the Covid-19 lockdown. Telephone was the only practical way of continuing the study during the Covid-19 lockdown. This meant that data from both face-face and telephone interviews were combined in a single study (see page 188).

7.8 Conclusion

Existing evidence on the experiences of physical activity among racially minoritised communities is limited and mainly skewed towards the views of people from South Asian backgrounds. This thesis has contributed to the existing literature by investigating the experiences, barriers and facilitators of physical activity among one of the largest groups of immigrants to have arrived in the UK over the last decade. This thesis demonstrates that the barriers to physical activity among adults and older adults from the Somali community in Bristol are complex. Interventions to address these barriers need to be flexible and embrace a whole-systems approach. The COM-B model of behaviour change provides a useful starting point for the contextualisation of the experiences, barriers and facilitators of physical activity among racially minoritised groups. Further research is needed to test the effectiveness of this model in implementing initiatives to improve levels of physical activity among adults and older adults from racially minoritised groups.

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APPENDICES

Appendix 1: General Risk Assessment Form

Appendix 2: Ethics Conditional Approval Letter

Appendix 3: Ethics Unconditional Approval Letter

Appendix 4: Amendment to Existing Research Ethics Approval

Appendix 5: Questionnaire

Appendix 6: Indicative Semi-structured probes for qualitative interviews

Appendix 7: Quotes from interviews

Appendix 8: Cover page of published article

Appendix 1: General Risk Assessment Form

University of the West of England BRISTOL	**GENERAL RISK ASSESSMENT FORM**

Describe the activity being assessed: **Survey of knowledge and attitude towards physical activity among the Somali population aged 40+ in Bristol**	Assessed by: Janet Ige	Endorsed by: Paul Pilkington
Who might be harmed: Researcher, interpreter and study participants How many exposed to risk: c. 150	Date of Assessment: 26/06/2017	Review date: 29/06/2017

Hazards Identified *(state the potential harm)*	Existing Control Measures	S	L	Risk Level	Additional Control Measures	S	L	Risk Level	By whom and by when	Date completed
The interpreter may drift away from the survey questions and probe for further information which may be distressful for the participants.	The survey questions will be clearly written and the interpreter will be adequately trained on how to administer the survey. Arrangements will be made to have some practice sessions prior to the pilot survey.	2	1	2						
Participants may become distressed recounting traumatic experiences	The participants will be informed that they can withdraw from the survey at any time. This information will be clearly stated on the information sheet and reiterated at the beginning of the survey.	2	1	2						

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| Safety of the researcher | The researcher will ensure that the director of studies is aware of the date, time and location of data collection | 2 | 1 | 2 | | | | | |

RISK MATRIX: (To generate the risk level).

Very likely **5**	**5**	**10**	**15**	**20**	**25**
Likely **4**	**4**	**8**	**12**	**16**	**20**
Possible **3**	**3**	**6**	**9**	**12**	**15**
Unlikely **2**	**2**	**4**	**6**	**8**	**10**
Extremely unlikely **1**	**1**	**2**	**3**	**4**	**5**
Likelihood (L) **Severity (S)**	**Minor injury – No first aid treatment required** **1**	**Minor injury – Requires First Aid Treatment** **2**	**Injury - requires GP treatment or Hospital attendance** **3**	**Major Injury** **4**	**Fatality** **5**

ACTION LEVEL: (To identify what action needs to be taken).

POINTS:	RISK LEVEL:	ACTION:
1 – 2	NEGLIGIBLE	No further action is necessary.
3 – 5	TOLERABLE	Where possible, reduce the risk further

6 – 12	MODERATE	Additional control measures are required
15 – 16	HIGH	Immediate action is necessary
20 – 25	INTOLERABLE	Stop the activity/ do not start the activity

Appendix 5: Questionnaire

Dear Sir/Madam

My name is Janet Ige. I am undertaking a doctoral study at the University of the West of England, Bristol where I aim to: **Investigate the experiences, attitudes, barriers and facilitators of physical activity among Somali community members aged 40+ in Bristol**

What is the research about?

The amount of physical activity we engage in can affect our health. There are several reasons why people choose to engage or not to engage in physical activity. We want to find out more about your participation in physical activity

What is required of you?

This study asks you to complete a questionnaire which should take no longer than 15 minutes to complete. Any information collected during the course of this study will be kept strictly confidential and at no point will your name appear on any document from any of our findings.

There is an option to provide contact details if you are willing to participate in a focus group discussion. Any contact information given will only be used to contact you and will not be linked to survey answers in any way.

Can I withdraw from the study?

For both the survey and the focus group discussion, you have the right to withdraw at any time until 25th November 2018 without giving a reason. To withdraw your information from the survey, please contact the researcher using the email address or phone number below and quote the serial number on this consent form, the corresponding information will be safely deleted and the paper questionnaire destroyed.

This consent form must be completed to ensure that the work is carried out to good ethical practice standards for research. The data collected from the study will be stored in a secure manner and will be destroyed once the study report is complete.

Are there any benefits in my taking part?

The information collected during this research will give us a better understanding of your experience, barriers and motivation for engaging in physical activity. This will help us to make recommendations to the city council and appropriate authority on changes that could improve your experience.

If you have any further questions about this study or you wish you to raise any concerns about this research, please contact the researcher, Janet Ige, Tel: 01173289978, Janet.Ige@uwe.ac.uk or the project supervisor, Dr Paul Pilkington, Tel: 01173288860 Paul.Pilkington@uwe.ac.uk at the Department of Health and Social Sciences, University of the West of England, Bristol

Please read the following statements

- I understand that I can withdraw from the survey at any-time by quoting the number on this information sheet
- I have read and understood the information above, and agree to participate in this study.

☐ Yes

☐ No

1. We would like to know your thoughts on the following statements about physical activity and exercise. Please indicate how strongly you agree or disagree with the statements

Statement	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	Can't choose
You can get enough physical activity in your daily life without doing sport or exercise such as jogging or going to the gym	☐	☐	☐	☐	☐	☐
Physical activity is good for your health even if it is only 10 minutes at a time	☐	☐	☐	☐	☐	☐
Physical activity is good for your health even if it is moderate, such as walking briskly, gardening (for example digging) and housework (for example vacuuming)	☐	☐	☐	☐	☐	☐
Physical activity is better for your health if you keep it up for at least 30 minutes at a time	☐	☐	☐	☐	☐	☐
Physical activity is better for your health if it gets you out of breath	☐	☐	☐	☐	☐	☐

2. Please indicate whether you agree/disagree with the following statements about how physical activity can affect your health
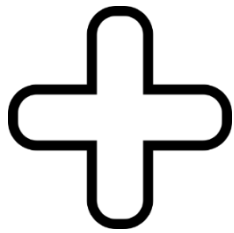
Statement	Strongly Agree	Agree	Neither agree nor Disagree	Strongly Disagree	Disagree
Regular physical activity can help to prevent heart disease	☐	☐	☐	☐	☐
Regular physical activity can help to improve your health	☐	☐	☐	☐	☐
Regular physical activity can lengthen your life	☐	☐	☐	☐	☐
Regular physical activity can keep you supple	☐	☐	☐	☐	☐
Regular physical activity can weaken your bones	☐	☐	☐	☐	☐
Regular physical activity can give you high blood pressure	☐	☐	☐	☐	☐
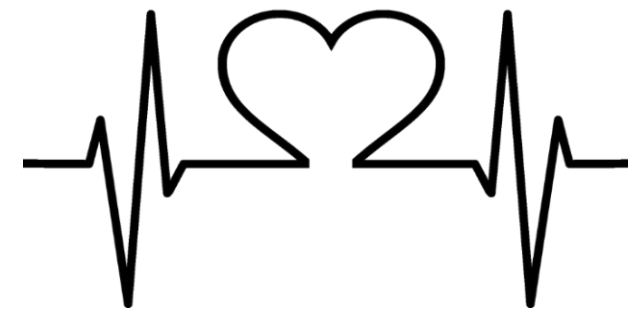
3. Have you heard about the official recommended level of physical activity? Which of the following statements applies to you?

☐ I know what the recommended level of physical activity is

☐ I have heard of the recommended level of physical activity but I don't know what it is

☐ I have not heard about the recommended level of physical activity

4. How many days a week do you think **people of your age** should do physical activity?

Please write in **NUMBER** [   ] **days**

☐ OR **TICK I don't know**

On each of the days someone of our age does moderate physical activity, how many minutes a day should they do it for it to be good for their health?

Please write in **NUMBER** [   ] **Minutes per day**

☐ OR **TICK I don't know**

5. There are many reasons for taking part in physical activity, exercise or sport, which, if any, on the following list apply to you? **Tick all that apply**

☐ I don't participate in any physical activity ⟶ Go to question 6

☐ To release tension or relax

☐ To be out of doors

☐ To maintain good health

☐ To socialise with other people

☐ To lose or control weight

☐ I have a physically demanding job

☐ To have fun or adventure or excitement

☐ To get or feel fit

☐ To gain a sense of achievement

☐ To enjoy the competition

☐ To work harder or concentrate better

☐ I have to walk or cycle to get around

☐ Something else, please state

6. What **stops** you from doing more physical activity, exercise or sport than you do now?

☐ I don't need to do more ⟶ Go to question 7

☐ My work commitments

☐ I don't have enough leisure time

☐ Caring for children or older people

☐ I have no one to exercise with

☐ I don't have enough money

☐ There are no suitable places to exercise in my area

☐ I haven't got the right clothes or equipment

☐ Poor health or physical limitations

☐ I have injuries which prevent me

☐ None of these, **PLEASE** state other reasons

[   ]

7. Many other factors can prevent people from doing more physical activity, exercise or sport. From the following list tick all that apply

☐ I'm not the sporty type

☐ I'm too shy or embarrassed

☐ I'm worried about injury

☐ I'm too old

☐ I prefer to do other things

☐ I think exercise is a waste of time

☐ I'm too overweight

☐ I'm not motivated to do more

☐ I don't enjoy physical activity

☐ Something else, **PLEASE** state   [   ]

☐ None of these

☐ Don't know

8. What would encourage you to do more physical activity, exercise, or sport?

☐ I don't need to do more

☐ Advice from a doctor or a nurse

☐ Advice from a family member

☐ My own Ill health
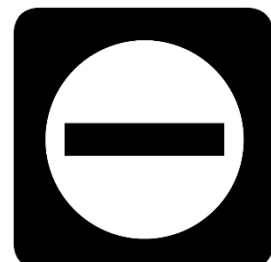
☐ Family member's ill-health

☐ Increased income

☐ More leisure time

☐ Self-motivation

☐ Having someone to do it with

☐ Having a physical activity, I am capable of

☐ Clearer advice from the government

☐ Something else, PLEASE state [   ]

☐ None of these

9. We'd like to ask you about the neighbourhood where you live. By *neighbourhood* we mean the area that you could walk to in 10–15 minutes from your home. How much do you agree with the following statements about your neighbourhood? (Tick one box per row.)

Statement	Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
Walking is unsafe because of the traffic.	☐	☐	☐	☐	☐
Cycling is unsafe because of the traffic.	☐	☐	☐	☐	☐
There are no convenient routes for walking and cycling.	☐	☐	☐	☐	☐
There are not enough safe places to cross roads.	☐	☐	☐	☐	☐
The area is unsafe because of the level of crime or anti-social behaviour.	☐	☐	☐	☐	☐
The area is generally free from litter or graffiti.	☐	☐	☐	☐	☐
There are places to walk or cycle to (e.g. shops, restaurants, leisure facilities).	☐	☐	☐	☐	☐
There are open spaces (e.g. parks, sports fields or beaches).	☐	☐	☐	☐	☐
There are pavements suitable for walking.	☐	☐	☐	☐	☐
There are special lanes, routes or paths for cycling.	☐	☐	☐	☐	☐
There are many road junctions.	☐	☐	☐	☐	☐
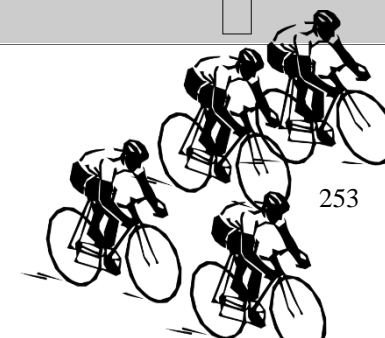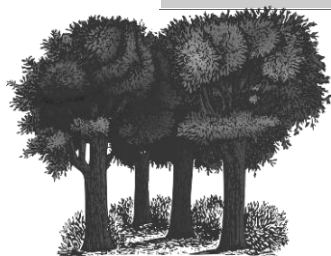
Participation in physical activity

10. How many days have you been involved in any vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling in the **last 7 days?**

_____**days per week**

☐ No vigorous physical activities   ➡ *Skip to question 12*

11. How much time did you usually spend doing **vigorous** physical activities on one of those days?

_____ **Hours per day**
_____ **Minutes per day**

☐ Don't know/Not sure

12. How many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis in the **last 7 days**? Do not include walking.

_____**days per week**

☐ No moderate physical activities   ➡ *Skip to question 14*

13. How much time did you usually spend doing **moderate** physical activities on one of those days?

_____ **Hours per day**
_____ **Minutes per day**

☐ Don't know/Not sure

14. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

_____**days per week**

☐ No walking   ➡ *Skip to question 16*

15. How much time did you usually spend **walking** on one of those days?

_____ **Hours per day**
_____ **Minutes per day**

☐ Don't know/Not sure

16. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

_____ **Hours per day**
_____ **Minutes per day**

☐ Don't know/Not sure

Finally, some details about you

Please select your age range

☐ Less than 50   ☐ 65-69

☐ 50-54   ☐ 70-74

☐ 55-59   ☐ 75 or above

☐ 60-64   ☐ Prefer not to say

What is your gender?

☐ Male

☐ Female

☐ Prefer not to say

What is your marital status?

☐ Single

☐ Married

☐ Divorced

☐ Widowed

☐ Separated

What is your current occupation?

☐ Employed

☐ Self-employed

☐ Unemployed

☐ Others

What is your highest level of education?

☐ No formal qualifications

☐ High school or secondary school

☐ College

☐ Bachelor's degree

☐ Master's degree

☐ Professional degree

☐ Doctorate degree

☐ Other qualification

How long have you lived in your current home?

| | Years | | months |

Would you say that for someone of your age, your own health in general is (Tick only one)

☐ Excellent

☐ Good

☐ Fair

☐ Poor

Appendix 6: Indicative Semi-structured probes for qualitative interviews

Thematic Area	Probes
Experience of living in Bristol	15. How long have you lived in Bristol and what has been your experience of living in Bristol? 16. How has the pandemic impacted your way of life? 17. Are you aware of any local facilities (green space, parks) suitable for physical activity (interviewer to show respondent map of local environment)
Understanding of the importance of physical activity	18. What do you consider to be the benefits of physical activity? 19. What do you think you will gain from participating in physical activity? 20. What kind of physical activity/exercise do you consider appropriate for someone of your age and how much? (consider how respondents track their activities- e.g. Fitbit, app) 21. Are you aware of any recommendations or guidance on how much physical activity you need to do?
Experience of physical activity	22. Can you tell me about your experience of physical activity? 23. What forms of physical activity do you enjoy most? 24. What type of environment do you enjoy doing physical activity in and why? 25. What role does your culture and/or religion play in your decision to participate in physical activity?
Barriers of physical activity	26. Are there any barriers which prevents you from doing as much (or more) physical activity as you would wish to?
Facilitators of physical activity	27. Is there anything you think might help you do more physical activity? 28. In your view, what needs to change for you to maintain or increase your level of physical activity?

Appendix 7: Quotes from interviews

Quotes	Code	Sub-category	Category
There's not a particular exercise that I would say is like not allowed or frowned upon, but, it's the free mixing. So, the mixing of males and females, which isn't allowed, because a lot of the time if you are swimming, you'd be in a bathing costume and you couldn't really wear a head scarf. Or like if you're, you know, particularly in a gym, some people do but they might want feel more comfortable not wearing a headscarf. So in that case, they wouldn't be allowed to be with males, so they need a section for women	Free mixing of genders not allowed	Cultural and religious considerations	Religious beliefs and cultural values
Probably the main barrier would be again, the lack of female only facilities. so whether that's the gym or swimming facilities, that's something that prevents me from going into it due to my religion and culture which doesn't really allow for mixing with males. That's what prevents me	Free mixing of genders not allowed	Concerns over modesty	Religious beliefs and cultural values
I personally signed up for swimming classes. I paid for about six-months worth of swimming classes or just swimming to allow me to swim. Easton Leisure Centre provided on a Sunday an hour and a half where it would be female only as they promised, and they said that the lifeguards would also be female. Because that's an issue where I go. I would turn up to have my swim lessons or swim class. And I would be told that there's male lifeguards due to the fact that the rota has led it to be that way even though they know that Muslim women and Somali women particularly are not able to be swimming but not the actually swimming but the uncovering of the body with male lifeguards....it stopped me from going completely I felt disappointed. I just felt like it was a bit of a let-down for me. to, you know, kind of promote it as	Free mixing of genders not allowed	Concerns over modesty	Religious beliefs and cultural values

something that would be female only and eventually have male lifeguard so I stopped going completely.			
if there are no places where there's female only if it's only mixing, I wouldn't go	Free mixing of genders not allowed	Concerns over modesty	Religious beliefs and cultural values
Because I have to go and dress modestly. I can't go to a gym where there are men and you can't exercise in mixed gym and swimming as well, like if people when ladies want to go swimming and it stops me from going swimming because they can't.. have to dress modestly and we can't obviously be seen naked, or half naked in front of other men.	Free mixing of genders not allowed	Concerns over modesty	Religious beliefs and cultural values
You're right, I'd say its culture and a lot of part of it is religion. It really depends on how the exercise is. Because women and men they can't mix together.	Free mixing of genders not allowed	Concerns over modesty	Religious beliefs and cultural values
However, there was a point where I and a few other ladies of my friendship group did try an exercise class, but they were playing music, which is one of the things that Islam doesn't really promote. So for that, we found it difficult to continue, because it's something that goes against our religion, but in a group, you can't kind of especially when there's other attendees that are not Muslim ask for that to be done for them. So I think exercise would need to be tailored towards us	Music	Concerns over modesty	Religious beliefs and cultural values

In terms of what is not allowed again free mixing and music	Music	Concerns over modesty	Religious beliefs and cultural values
For that, it's the person's discretion like some people are some people are okay with it and some people are not …and its not something linked to religion but it's the persons choice	Music	Concerns over modesty	Religious beliefs and cultural values
So I think but now with modern lifestyle. Like, they are not going out for exercise or doing a lot of exercise. For that is the reason they are laid back and even those who are born and raised here, they seen from like… most of them they cultivate this habit from their parents and they are not active.. but not all, they are a good number that normally play football. but regular exercise you wouldn't find Somalis going for jogging	Adapting to Western environment	Sedentary lifestyle	Religious beliefs and cultural values
I think, in general, like Somalis they are not like they are not used to doing exercises because like when you see where they come from, like, they used to do some like natural exercise because the way they used to live used to be pretty ancient and people used to walk from place to place	Life in Somalia	Sedentary lifestyle	Religious beliefs and cultural values
Back home in Africa, back in Somalia, and our culture, encourage walking.	Life in Somalia	Sedentary lifestyle	Religious beliefs and cultural values
And I think there are some cultural barriers within the community that are there because it's not in the culture to do like a lot of physical exercise and the kids are learning from their parent.	Physical activity is not a norm	Sedentary lifestyle	Religious beliefs and cultural values
And Somalis are one of those people who spend long hours seating here. Some of them would come here 2 o'clock and would leave 5 clock – 3 hours just having conversations with friend after that with other friends. So that's an issue		Sedentary lifestyle	Religious beliefs and cultural values

Back home in the old days, Somali culture is always….. because the Somalis are pasteuristic community so they have to walk from one place to another place. But once urbanisation process…Somalis came to the cities, what happened is the Somali cities is not designed in a way that invites the common people, the ordinary people can do exercise while walking the pavements of the roads. So what happens is that Somali culture does not encourage physical exercise	Life in Somalia	Sedentary lifestyle	Religious beliefs and cultural values
Culturally, we are not an exercise community (laughs) especially when I come UK, I saw 50 years old woman was running you can't see in our community even 30 years old woman running (laughs)	Physical activity is not a norm	Sedentary lifestyle	Religious beliefs and cultural values
My religion doesn't actually prohibit me from doing any exercises, so it's not like written anywhere that particularly exercise exercises are not allowed. However, like I was saying previously, I wouldn't feel comfortable go for a run, due to again, the attire	Appropriate clothing	Concerns over modesty	Religious beliefs and cultural values
if I try to at least make time, you know, taking away my job and my busy life as a mum, I find that I can't easily just do things like for example, I wanted to go for a run, due to my culture and religion, the clothing that I would be wearing. I wouldn't be able to go on these jogs because I wouldn't feel comfortable in what I'm wearing. So again, outdoor activities, I find it quite difficult because I wear sort of a longer what we would call TUBARB. It's LIKE A LONGER Ibab, the one that covers the full body and it's a bit impractical and obviously I am not going to take it off due to my Religion, religious belief.	Appropriate clothing	Clothing and requirements for modesty	Religious beliefs and cultural values
Running around to make money. Some have kids, some are working, some have other responsibilities. Some take care of others. You have to understand African people, we get	Work and caring responsibilities	Lack of time	Practical issues

to carry extra luggage.. You want to make everyone happy. Like now, I live with my parents and I'm taking care of my parents as well so that takes my free time. So it depends on the individual and personal responsibilities			
A major issue is time, being a working mom, with young kids as well. I'm busy a lot often times	Work and caring responsibilities	Lack of time	Practical issues
Yeah, I prefer the gym to walking. Because I don't have time to go to the parks	Lack of time- work constraints	Lack of time	Practical issues
And also, what prevents me the at the moment from doing as much exercise as I like is work. I am working seven hours a day, five days a week and that that's enough for me because I am is doing a physical job. And being that I don't get much time, other than when I'm working to exercise I don't feel like I can make extra time.	Lack of time- work constraints	Lack of time	Practical issues
I think men, majority of men do like sitting because most of them re drivers, where they sit and they sit long hours, so I think the great number of men are taxi drivers the rest work in warehouses and factories. So I think those who work in warehouses, or factories, they are at least walking around and doing some physical activities but those people who are driving taxi and buses. I think they're probably about probably in danger of getting those diseases like high blood pressure and diabetes, those kind of things.	Sedentary work among men	Sedentary occupation	Religious beliefs and cultural values
The one thing which Somalis now are realising is that because most of Somalis take Somali more tea and they don't do a lot of physical exercise and some of them are uber drivers so now they	Sedentary work among men	Sedentary lifestyle	Religious beliefs and cultural values
And I feel that that's a enough for me because I'm doing a physical job. And being that I don't get much time, other than when I'm working to exercise I don't feel like I can make extra time.	Physically demanding job	Lack of time	Practical issues

if there was somebody who was had the same language, as someone that spoke Somali, who was providing the exercise classes, it would work a lot better, because even you know, obviously, they're able to follow the actions of a class, but they're not able to understand the benefits of the particular exercises. Whereas if it was in Somali, a Somali person providing that class, they would be able to understand exactly that exercise is helping them with.	Language barriers	Practical issues	Practical issues
With the language barriers-I would say. Most of the Somalis aged 50 and above don not speak English fluently so for them it's quite hard to communicate in English language. I think its best if they had a translator or someone like that who is going to be in the middle ad translate what is going on.	Language barriers	Practical issues	Practical issues
Another area is among the Somali community, the Somalis don't always encourage each other to exercise and there is a I don't know how to put it ..psychological issue. I was having a conversation here with an elderly man here yesterday, same place (café). He is a very strong man and he was telling me, I was asking him do you do a lot of exercise and he said no, I used to do a lot of exercise 10 years before and when I started to do lots of exercise, I lost some weight and most Somalis would come to me and would ask me, have you got sick? which disease are you having so that kind of mentality prevents some people to do lots of exercise	Lack of peer support/motivation	Lack of peer support	Lack of community/ organisational support
The problem is that the Somali community are not organised in a sense that they can pressure the local councillor and put forward something which reflects the needs of the community	Lack of strong advocacy among the community	Lack of strong advocacy groups	Lack of community/ organisational support

I think it seems to do with a lack of awareness and there is no strong community organisations that can be	Lack of strong advocacy among the community	Lack of strong community advocacy groups	Lack of community/ organisational support
But what I see from Bristol is there is a disconnection between the Somali community and the local council, the Somali community and the NHS community, there is a big gap in my understanding	Disconnect between the council and the community	Disconnect between the community and the council	Lack of community/ organisational support
Another area is among the Somali community, the Somalis don't always encourage each other to exercise and there is a I don't know how to put it ..psychological issue. I was having a conversation here with an elderly man here yesterday, same place (café). He is a very strong man and he was telling me, I was asking him do you do a lot of exercise and he said no, I used to do a lot of exercise 10 years before and when I started to do lots of exercise, I lost some weight and most Somalis would come to me and would ask me, have you got sick? which disease are you having so that kind of mentality prevents some people to do lots of exercise	Lack of peer support	Lack of community/ organisational support	Lack of community/ organisational support

Quotes relating to opportunities to improve physical activity

Quotes	Code	Sub-category	Category
Maybe it will be helpful to have these in another language. So if, for example, the Somali community in particular, they had more leaflets or, adverts or things like that, that they could readily access so that they don't need a third person to translate and it can it can register to them a lot better if they are obviously being told about the health concerns of not exercising.	Translating information to Somali	Support for non-English speakers	
Yeah, if there was somebody who was had the same language, as someone that spoke Somali, who was providing the exercise classes, it would work a lot better, because even you know, obviously, they're able to follow the actions of a class, but they're not able to understand the benefits of the particular exercises. Whereas if it was in Somali, a Somali person providing that class, they would be able to understand exactly that exercise is helping them with.	Language	Support for non-English speakers	Addressing cultural considerations
The second thing is that the local council also can construct gyms specific for women, swimming pools, increase the number of swimming pools in this areas and also to put more grants and finance on local community organisations who are encouraging physical exercise.	Provision of culturally appropriate infrastructure	Construction of female-only facilities and expansion of female-only exercise classes	
Being a Muslim lady, perhaps there could be more female only gym.			
The local council also can construct gyms specific for women, swimming pools, increase the number of swimming pools in this areas			

The best thing I can think of that would be helpful is to actually have for a whole gym to be made for just females. So including a swimming pool, including the sauna including the actual gym facility, maybe also some open space that you could run in, or play any sports in general solely female only so the staff would be female and any of the teachers in the classes would be female. That would be something that would be a good change for the Somali community and that they would engage well in that, especially among Somali women.			
I used to actually enjoy doing swimming at the Easton leisure centre which isn't far from my house. They actually were good and did provide a female only swim on Sunday but it was only for about a few hours. They could provide more in the sense of more slots so that maybe people that can't go to certain times are able to get to other time.	Increasing the number of female only sessions in existing facilities	Construction of female-only facilities and expansion of female-only exercise classes	
I was lucky to take part in community training, which was aimed to raise awareness about physical activity.	Campaign to raise awareness	Targeted awareness in the community	Raising more awareness about the benefits of physical activity and recommendations
A couple of years ago, I used to go to ESOL lessons and a lady approached me and a few other Somali ladies to do bike rides, so these ladies weren't aware how to ride a bike and they helped us in learning that and I guess it's a form of exercise. So it would be really helpful if there was something like that for me to go to. It just depends on again my working schedule.	Peer support		Peer support and community led initiatives
What would get me out is more of a community kind of exercises with my fellow friends, the Somali ladies, because I feel like it will be more of a motivator. Whereas if I was just at home, because I spend a lot of time working, but when I'm not working I'm at home and at home I just uses it as my relaxing downtime. Whereas if there was an activity where I could go out with my friends but also be exercising, that			

would be the most helpful and that would help me do more physical activity			
Somali women as well they like to get together a lot especially in their free time.. that would be an actual thing that would be social and also an activity that would be also fun and adhering to religious boundaries.			
There's already a group of ladies that do something like this, like Somali women who have organised to go back on WALKS, but they go on really, really long walk. So I wasn't able to take part because of the distance. But if it's something that is not a long distance..should be able to and I will willing to inquire.			
Because I went to St. Paul's it's like five to six ladies who know each other. So it's not something formal. It's like 5-67 ladies.. they walk to Easter Park and they do laps around the clock. Not necessarily specific exercise routine, just walking.			
The first thing is that the council have to work with the Somali community leaders whether they are religious leaders or whether they are other community leaders so that they push for what can be termed as one week physical activity awareness or something sort of that kind and from religious gatherings like this gatherings, there should be some posters	Building a better relationship with the community to raise awareness		-Targeted awareness in the community
maybe like a programmes, I think also things like programmes. I remember back then there were some likes programmes by the council and they used to give like free membership in the sports facilities the leisure centre for Somalis. Yea, those sort of things could help them. Like having such programmes from the council often	Incentives	Incentives	The role of the local council

To put more grants and finance on the local community organisations who are encouraging physical exercise. As far as I remember, there was a local organisation here in Bristol, it's called Bristol Forum of faith, they do jogging and so they were called. one of my friends is the director, he is an English man, so he used to call me and said, we need four or six people, or 10 people Somali people who can come and do jogging, so we used to do jogging for almost 25 minutes. So that was the only organisations	Funding community led initiatives		Funding for community led initiatives
community organisation they were working with one of the things they told me is they don't have sufficient funds to do more and make better impact. Their impact was restricted but if the council finances and invests and put more money. I'm sure there will be very tangible outcomes			
the second thing which I hope and I'm sure is if the religious leaders are informed well. Today it was Friday so we had Friday ceremony, gathering so if those kind of religious leaders can inform the Somali people within that lecture then that would have a very lasting impact and that link is also missing and I think all that can be pushed from grassroot.	Raising awareness through religious leaders	Raising awareness through religious leaders	Raising more awareness about the benefits of physical activity and recommendations
In our religion entails … everything entails every aspect of life including exercise but it depends on the preacher and how they inaudible explain it			
I think the things we could do is, I think we could do few things. First I think we have to do a lot of awareness within the community. And we have to we have to get the awareness, the importance of doing the exercises, and how it will contribute to the health and at the same time we have to let them know that there are lots of …	Targeted awareness in the community	Targeted awareness in the community	Raising more awareness about the benefits of physical activity and recommendations
More awareness. They know the area of the Somali people, most of them they live Barton Hill, and Easton and St Paul. They do small leaflets which is explaining what exercise is good for you			

more of just like campaigning. And like getting them to be aware that this kind of thing exist. Most of them don't know but if you go out to their house or knock of their door to tell them that this kind of thing exist, they are more than happy to join in physical activity. And if they knew what the benefits were			
the phenomenon of social media is opening a new gate which is now I have been there three years and half and when I look around I see a lot of young people doing gym than before So now globalisation, social media is pushing Somali culture to do some exercise. So one of the things that the local council or the NHS can do here is to use more social media to have an impact on Somali community	Raising awareness through social media		Raising more awareness about the benefits of physical activity and recommendations

Quotes relating to the role of health professionals food and diet

Quote	Code	Category
I am only told us about things that are more specific to my needs or like for anyone more specific to their needs, not necessarily in a general health and exercise recommendations	Physical activity not discussed	The role of health professionals food and diet,
I found it useful and the other thing that my doctor mentioned was my nutrition as well. They told me about healthy eating and healthy eating habits	Diet and healthy eating discussed	

the only time I get see some notice about exercise is when I go to the GP. But it is more general, you are just waiting to see your doctor and you see a brief notice something like more exercise is healthy, something like that but I haven't heard any public notice from the local government explaining ….I think that area is lagging behind in my understanding	Insufficient information about physical activity		
in the Somali community you see two kinds of people- you either see people who are malnourished and people who are over nourished.. Like overweight, diabetes, blood pressure. We have that in our community- quite high. It's like in Easton for examples there are restaurants so many people will sit down in the cafeteria , they would drink tea high in calories and eat heavy food and stay there for couple of hours discussing.	Unhealthy diet and overweight	The role of health professionals food and diet,	
The one thing which Somalis now are realising is that because most of Somalis take Somali more tea and they don't do a lot of physical exercise	Unhealthy diet		

Quotes relating to the environment

Quote	Code	Sub-category	Category
Because I was born in a coastal city. So we have long beach when we were growing up. So we got used to swimming	Life in Somalia		Preferred forms of activity

As Somali we are a pasteuristic community and we always prefer to walk yeah and that is why we… (inaudible).	Life in Somalia	Walking preferred form of exercise	
Before I came to the UK, I used to do a lot of exercise but here because of the cold and because of the area, I used to live in St George and there are not a lot of gyms available and I really struggled to get gyms nearby. But I have always knew that if you do exercise that you will be always healthy physically and mentally That was always what I used to tell and used to do	Adapting to Western environment	weather cold	Environmental issues
And the other thing is that our home back and here is not same. our home is 24 hours sunshine but here is not.	Adapting to Western environment	Weather	
backing up Africa, in back in Somalia, and in our culture, encourage walking. The problems start when you come to a country like England, which you don't have the space to and you need to adapt to the modern facilities and that's where the challenge comes from. Yes. Back in Somalia I used to do a lot of walking sessions because of the environment.	Adapting to the modern facilities		Environmental issues
he local council does not put much emphasis on physical activity issues in the environment especially in the environment or in the neighbourhood where the Somali lives and you can feel from almost 20,000 places Somalis live within Easton and Laurence hill and St George and there's maybe only two swimming pools or one	Lack of facilities	Lack of fitness facilities	Environmental issues

But even here, I think you don't find women gym specific here and you don't see many Somali women coming to gym here and that's a big problem because there is lots of Somali women here	Lack of women only facilities	Lack of culturally appropriate facilities for women	Environmental issues
They do support them but there are no gyms specific for women. The Somali women don't like to go to general gym	Lack of women only facilities	Lack of culturally appropriate facilities for women	Environmental issues
there's not a particular exercise that I would say is like not allowed or frowned upon, but, it's the free mixing. So, the mixing of males and females, which isn't allowed, because a lot of the time if you are swimming, you'd be in a bathing costume and you couldn't really wear a head scarf.	Lack of women only facilities	Lack of culturally appropriate facilities for women	Environmental issues
if there no places where there's no female only if it's only mixing, I wouldn't go	Lack of women only facilities	Lack of culturally appropriate facilities for women	Environmental issues
probably the main barrier would be again, the lack of female only facilities. so whether that's the gym or swimming facilities, that's something that prevents me from going into it because there's a lacking due to my religion and culture which doesn't really allow for mixing with males. That's what prevents me	Lack of women only facilities	Lack of culturally appropriate facilities for women	Environmental issues
You don't find a lot of gyms. You find gyms but their gyms are not equipped or suited to the extent that you can do different exercise	Accessibility to exercise facilities		Environmental issues
Most of the problem especially here in Barton hill is there is no swimming pool nearby in this area and a lot of people have to go to Easton to go for swimming. And that's one major obstacle or challenge you like that's can prevent you going there. Because Muslim always prefer to nearby place.	Accessibility to exercise facilities		Environmental issues

Yea, now I have some open spaces and we have a park that is near my house. I live in St Agnes, and there is a park just right behind my house. And also, the fitness centre is right behind the house in St Paul's Centre	Lives in accessible neighbourhood	Accessibility to exercise facilities	Environmental issues
Bristol has a very good big parks and green place and I always feel comfortable to come. Yeah to come, come so I was find Bristol very interesting .. yeah ..yeah.	Bristol has big parks	Accessibility to exercise facilities	Environmental issues
The area I live in is accessible, exercise wise. And I live quite close to the Easton Leisure centre which provides activity and a lot of green space in my area as well.		Accessibility to exercise facilities	Environmental issues
I have two young daughters and feel that the area we live in is not particularly safe in terms of the park. Again, there's older adults there that I'm not sure really what they're up to, and I don't feel comfortable having my daughter there, even if obviously, I would be supervising them, but I don't feel comfortable just letting them run around in the environment.	Safety concerns	Perceived safety of the neighbourhood	Environmental issues
You got to lot at the safety as well, some parks are not safe.. a lot of things happen at the parks, some people do bad stuffs	Unsafe environments	Perceived safety of the neighbourhood	Environmental issues
I have been living here for about 20 years, and previously, it was quite safe. But what I have noticed recently that there is more of the drug use in the community around parks and green spaces. So sometimes it can be somewhat unsafe.. but. Yeah. And also drugs but I guess in the daytime it is particularly more safe than particularly going after sunset.	Unsafe environments	Perceived safety of the neighbourhood	Environmental issues
but I guess in the daytime it is particularly more safe than particularly going after sunset.	Unsafe environments	Perceived safety of the neighbourhood	Environmental issues

Even though I go during the day to exercise but during the night, it's pretty safe in my area. Very well lit and big roads there isn't any next ....., or anything that might seem scary to people	Safety not an issue	Perceived safety of the neighbourhood	Environmental issues
Some parks in my area they've been having the same seats and facility for the last 30 years. They have not been refurbished. Some parks- they change in terms of making them more kids friendly but some have not been refurbished in the last 30 years… equipment not improved.. and you probably only get volunteers coming to clean it maybe once a month or like twice a month and council comes in less frequently despite the fact that it's their job. I'd say renewing parks, refurbishing parks	Refurbishment of park facilities	Disrepair of infrastructure	Environmental issues
if there was more greenery like more green areas, and more walking paths. Just like cycles have their own path like more walking path meant for jogging and walking	Green space	Infrastructure to support physical activity	Environmental issues
that there isn't any proper walking paths in the St Paul's area where they could go for daily exercise	Lack of dedicated walking infrastructure	Infrastructure to support physical activity	Environmental issues
if there was more greenery like more green areas, and more walking paths. Just like cycles have their own path like more walking path meant for jogging and walking….I am using the same path or the same pavement to do exercise as other people are walking normally on and using bicycle and that limits how far I can go	Lack of dedicated walking infrastructure	infrastructure to support physical activity	Environmental issues
when I run, I use the cycle track and there are a lot of people walking on the cycle track , there are bikes on the cycle track and, yeah, so like on that aspect it's quite crowded and always there people on the cycle track	Lack of dedicated walking infrastructure	Infrastructure to support physical activity	Environmental issues

but I could say, I think there isn't enough space in green spaces that people could run because, as far as I know there are a few parks in Bristol. But, if there could have been more, it would have been enough	Green spaces	Desire for more green spaces	Environmental issues
but I could say, I think there isn't enough space in green spaces that people could run because, as far as I know there are a few parks in Bristol. But, if there could have been more, it would have been enough	Green spaces	Desire for more green spaces	Environmental issues
if there was more greenery like more green areas, and more walking paths. Just like cycles have their own path like more walking path meant for jogging and walking….	Green spaces	Desire for more green spaces	Environmental issues
I have been living here for 22 years now in the Easton area. previously, I didn't think there was enough green spaces for my kids but personally, it's gotten a lot better. And actually just right. Maybe like 50 yards or so from the back of the house is a big park. And there's also a cycle track that goes.. runs through that park which I take walks on.	Good amount of green spaces		Environmental issues
in the area I live, there is a quite big park where I and a few others would go out for walks after.	Good amount of green spaces		Environmental issues
Yea, now I have some open spaces and we have a park that is near my house. I live in St Agnes, and there is a park just right behind my house. And also, the fitness centre is right behind the house in St Paul's Centre	Good amount of green spaces		Environmental issues

So in terms of facilities, we have the facilities but at this particular moment of …. Things are a bit complicated because those facilities are not open all the time …		Accessibility to exercise facilities	Environmental issues

Appendix 8:Cover page of published article

Review Article

Barriers and facilitators of physical activity among adults and older adults from Black and Minority Ethnic groups in the UK: A systematic review of qualitative studies

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ABSTRACT

Older adults from Black and Minority Ethnic (BME) groups experience a relatively higher burden of physical inactivity compared with their counterparts from non-BME groups. Despite the increasing number of qualitative studies investigating the barriers and facilitators of physical activity among older adults from BME backgrounds in the UK, there is very limited review-level evidence. The aim of this review is to undertake a synthesis of existing qualitative studies, using a meta-ethnographic approach, to explore the barriers and opportunities for physical activity among adults and older adults from BME communities in the UK.

Studies conducted between January 2007 and July 2017 were eligible if they met the following criteria: employed any qualitative method; included participants identified as being BME, aged 50 and above, and living in the UK. In total, 1036 studies were identified from a structured search of six electronic databases combined with hand searching of reference bibliographies. Ten studies met the inclusion criteria for the review and were included.

Six key themes emerged from the data: awareness of the links between physical activity and health, interaction and engagement with health professionals, cultural expectations and social responsibilities, suitable environment for physical activity, religious fatalism and practical challenges. There was a substantial gap in research among Black African groups.

Interventions aimed at improving physical activity participation among older adults should be acceptable and accessible to minority groups. Further research is needed to investigate the barriers and facilitators of physical activity among older adults from African backgrounds.

1. Introduction

1.1. Importance of physical activity

The benefits of physical activity have been well established for over a century, yet a quarter of the global adult population is insufficiently active (WHO, 2018). Physical inactivity remains a global health issue responsible for nearly 5 million deaths worldwide (WHO, 2018; British Heart Foundation, 2017). Rated as the 4th leading risk factor for mortality, physical inactivity accounts for 10% of the global burden of disease from colon cancer, 10% of breast cancer, 7% of type II diabetes, and 6% of coronary heart disease (Lee et al., 2012).

Studies have shown that some older adults perceive physical activity to be only beneficial to the younger population (Burbank et al., 2002; Schutzer and Graves, 2004); however there is compelling evidence that the requirement for physical activity does not end in later life (Bherer et al., 2013; Public Health Agency of Canada, 2011). Findings from longitudinal studies demonstrate that engaging in regular physical activity can improve the capability to perform daily tasks, (i.e. functional ability) (Blair and Wei, 2000; Cadore et al., 2013) and cognitive ability among older adults (Bherer et al., 2013). Physical activity has also been linked to the prevention of several risk factors and adverse conditions including osteoporosis (McKenna and Ludwig, 2008), falls, and fear of falling (Canning et al., 2015), hip fractures (Feskanich et al., 2014; Lai et al., 2013), and depression (Mammen and Faulkner, 2013). Several studies have reported associations between physical inactivity and loss of mobility and independence in later life (Franco et al., 2015; Horne, 2013; Takagi et al., 2015).

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