SHAPING HEALTH: UNDERSTANDING AND INFLUENCING LIFESTYLE BEHAVIOURS IN LOW SOCIOECONOMIC WOMEN

A Thesis Submitted for the Degree of Doctor of Philosophy

By

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Abstract

Women of low socioeconomic status (SES) can expect to live shorter and less healthy lives than women of high SES. Health inequalities arise from individual factors and the structural characteristics of the environment. Lifestyle behaviours including the adoption of a healthy diet and participating in physical activity can prevent or delay the onset of non-communicable diseases (NCDs). Healthy lifestyle behaviours are not, however, solely a matter of individual agency, they are tied to the parameters from which health inequalities develop.

The first part of this research investigated two lifestyle behaviours, diet and exercise, in a group of mothers with young children, living in a London (UK) Borough, and identified the barriers and facilitators for the adoption of healthy behaviours. In the second part, the mothers contributed ideas for potential public health interventions that would help them participate in physical activity and eat a healthy diet. A focus group with a second group of mothers (Slough, UK), provided context for the development of the ideas for interventions.

An Interpretive methodology, influenced by Critical Theory was adopted for the qualitative research. A series of three in depth interviews with twenty participants, provided the data. Access to the groups of mothers was gained through volunteering with a national charity and regular visits to Children's Centres. A thematic analysis identified four key themes that influenced lifestyle behaviours: the conflicted mother; concerns about the body; experience of health; and external contextual factors. Four ideas for potential public interventions were discussed with the study group: self-help group; support for all the family; volunteers in the home; and changes to the environment.

The research provides important pointers for the development of public health interventions to support low SES mothers, particularly the need for practical support which takes into account the strong Ethic of Care in this group.

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Finally, I would like to thank my partner Nick, my children Jack, Suzie and Catherine, my friends and my fellow students, all of whom have encouraged and supported me as I grappled with this major piece of work. Their faith in me, supported my resolve to undertake and complete the project.

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List of abbreviations

BMI	Body Mass Index (defined as the body mass in Kg divided by the square of the body height in meters)
BMJ	British Medical Journal
DASH	Dietary Approaches to Stop Hypertension (diet)
HAES	Health at Every Size
HSCIC	Health and Social Care Information Centre
HSE	Health Survey for England
ICD	International Classification of Diseases
IDACI	Income Deprivation Affecting Children Index
IMD	Index of Multiple Deprivation
LSOA	Lower layer Super Output Areas
NCD	Non-Communicable Disease
NCMP	National Child Measurement Programme
NICE	National Institute of Health and Care Excellence
ONS	The Office for National Statistics
PHE	Public Health England
RCT	Randomised Controlled Trial
SES	Socioeconomic Status
WHO	World Health Organization
YLD	Years lived with disability

1. Chapter 1 - Introduction

This research investigates one of the pressing health issues of our time – why individuals struggle to adopt and sustain healthy lifestyle behaviours. The particular focus of the research is on healthy diet and physical activity, two behaviours widely recognised as having the potential to alleviate the impacts of non-communicable diseases (NCDs) which account for the majority of the disease burden, both in the UK and globally. The development of national guidelines and extensive public education programmes have fallen short of achieving the changes in diet and physical activity necessary to improve the health of the population. The purpose of this study is to provide insight into why individuals find it difficult to initiate and maintain healthy diet and physical activity behaviours.

The research is particularly concerned with addressing diet and physical activity in the context of health inequalities. Low income makes it difficult to access a healthy lifestyle, but the consistency with which poor health outcomes are associated with unfavourable living conditions suggests that there are factors at play beyond individual agency that influence patterns of behaviour. This in turn raises questions about the efficacy of focusing public health responses to NCDs on individual behavioural factors, without considering other influences on lifestyle behaviours. Thus, in this research, health behaviours are considered in a wide context, the individual, their family and the environment where the family lives, to obtain a broad picture of the barriers and facilitators to the adoption of healthy lifestyle behaviours.

This thesis, "Shaping Health", investigates two health behaviours through an in-depth qualitative study of mothers of low socio-economic status (SES) in a West London (UK) borough. In this introductory chapter the sections that follow explain the context of the study, starting with an overview of current patterns and trends in health in England, highlighting health inequalities. The current public health response, to improve health and reduce health inequalities in the areas of healthy diet and physical activity, follows. This contextual background, which makes it clear that current public health measures are not achieving the lifestyle changes required to address health inequalities, particularly in low SES groups, provides the rationale for the study, which is described next. At the end of this chapter the research questions are set out, together with the contribution of the study and the structure of the thesis.

My interest in health behaviours and health inequalities comes from a career working in the medical device industry commercialising new medical technologies. Whilst these are excellent products, they are often high tech and high cost and only benefit a small number of people suffering from a specific disease, making their overall reach small. I have become aware that there are other ways of approaching health care. Changing behaviours through public health interventions has the potential

to benefit a large number of people and prevent or delay the onset of NCDs; many others have of course recommended this approach before me (Coote, 2004; Toynbee, 2002; Wanless, 2002), but for me the awareness was an epiphany, on which I wanted to act. The need for healthier lifestyles in low SES groups is most urgent because the burden of NCDs is highest in this group, hence my interest in this group and in identifying interventions to support the adoption of healthy lifestyles. I chose to focus the research on mothers with young children because they have sufficient years ahead of them to benefit from lifestyle changes and because of their influence on the lifestyle behaviours of their families. An understanding of why it is difficult for low SES mothers to adopt and maintain a healthy lifestyle is required so that interventions can be designed to overcome the barriers. I see this doctoral research as a contribution to the knowledge on health inequalities in low SES mothers and one which can contribute to the development of useful public health interventions for this group.

1.1. Health and health inequalities

Significant improvements in health, measured by increased life expectancy, have been achieved in the late 20th and early 21st centuries. In the period from 1990 to 2013 for example, life expectancy at birth in England increased by 6.4 years (Newton et al., 2015). The Office for National Statistics (ONS), the executive office of the UK Statistics Authority, states that for males life expectancy increased from 70.81 years in the period 1980-1982 to 79.18 years in the period 2015-2017, and for females the increase was from 76.80 years to 82.86 years over the same period (Office for National Statistics, 2015). It is important to note, however, that the ONS data for the end of the study period indicate that the rate of growth in life expectancy, which has been such a success story, is slowing.

This broad picture of improved life expectancy masks two important features. The first of these is that life expectancy is related to SES with individuals of high SES enjoying a longer life than those of low SES (Office for National Statistics, 2014a). Average life expectancy for England in 2018 was estimated to be 83.2 years for females and 79.6 years for males, but the difference in life expectancy between the least and most deprived areas for this period was 7.3 years for women and 9.3 years for men (Public Health England, 2018a). People living in the most deprived areas are four times as likely to die from cardiovascular disease and twice as likely to die from cancer as those living in the least deprived areas (Public Health England, 2018a). The gap in life expectancy for women has increased in the last thirteen years and for men, whilst it has fluctuated, it has not changed (Public Health England, 2018a). In line with the overall decrease in the growth rate for life expectancy, the most recent Public Health England data show that life expectancy is actually declining in the most deprived groups (Public Health England, 2017a) whilst it continues to grow in the least deprived groups, which means that the effect of SES on life expectancy is increasing. This social gradient in

health is not unique to England but applies around the world both within and between countries (World Health Organization, 2008).

The second, and related feature, is healthy life expectancy which is also related to SES. Healthy life expectancy is defined by Public Health England (Public Health England, 2018b) as "the average number of years that an individual is expected to live in a state of self-assessed good or very good health, based on current mortality rates and prevalence of good or very good health". For the population, the number of years of healthy life expectancy is not keeping up with overall life expectancy meaning that individuals are spending a greater proportion of their lives in poor health. The social gradient in healthy life expectancy is larger than that of total life expectancy. In the period 2014-2016 the gap in healthy life expectancy between the least and most deprived areas was 19 years for both men and women (Public Health England, 2018a), more than double the gap in actual life expectancy.

The healthy life expectancy in the population for 2013 to 2015 was 63.4 years for males and 64.1 for females (Public Health England, 2018b) which means that typically people reach the end of their working life in poor health. For women living in the lowest four deciles of deprivation their healthy life expectancy is below the current state pension age (Public Health England, 2018a). This poor health impacts the earning capacity of low SES households and may lead to family members taking on caring responsibilities further reducing earning capacity. These data serve to demonstrate that the burden of morbidity falls more heavily on low SES households than high SES ones.

The forms of ill-health that affect people have changed over time. Whereas in the past infectious diseases were the main causes of illness and death, today it is NCDs (Allen & Feigl, 2017). According to the World Health Organization (WHO) the main NCDs are cardiovascular diseases, cancers, diabetes and chronic lung diseases (World Health Organization, 2018). In the UK 89% of deaths are due to NCDs with cardiovascular diseases accounting for 31% and cancers 29% (World Health Organization, 2014). It is cardiovascular disease, cancer and respiratory disease that are the main contributor to the observed reduced life expectancy of the lower SES groups (Public Health England, 2018b) and the incidence and impact of all these NCDs is influenced by diet and physical activity. Both the risk of developing cardiovascular disease and the associated mortality are strongly influenced by lifestyle behaviours including diet and physical inactivity (Mozaffarian, Wilson, & Kannel, 2008), diet and physical activity influence cancer survivorship (Ligibel, 2012) and are associated with the incidence of certain cancers including breast cancer (Gerber, Müller, Reimer, Krause, & Friese, 2003) and colorectal cancer (Harriss, Atkinson, Batterham et al., 2009; Harriss, Atkinson, George et al., 2009). There is also a relationship between the incidence of respiratory

disease and a low fibre diet (O'Keefe, 2019) and physical inactivity has an adverse impact on lung function (Watz et al., 2014). Morbidity is caused by a wider range of NCDs. For both men and women, the leading causes of morbidity in the UK are musculoskeletal diseases, particularly back and neck pain, skin diseases and depression (Public Health England, 2018c). Whilst not in the top three causes of morbidity, the impact of diabetes on morbidity is increasing dramatically in the population (Public Health England, 2018c) and is of significance for this research because of the relationship between type 2 diabetes and lifestyle behaviours (Dunkley et al., 2014). According to Public Health England the main risk factors for poor health are high Body Mass Index (BMI)[1] and high blood glucose (Public Health England, 2018c), two risk factors which are strongly influenced by diet and physical inactivity, providing further support for the importance of understanding these lifestyle behaviours.

1.2. Understanding health inequalities

To improve health and reduce health inequalities we need to understand why low SES groups have a greater exposure to the main risk factors for NCDs than high SES groups. Poor life style behaviours have a disproportionate effect on all-cause mortality and cardiovascular disease mortality in low SES groups, which is believed to be due to the experience of a combination of these behaviours in low SES groups (Foster et al., 2018). Lifestyle behaviours are however, not only influenced by individuals' immediate and conscious actions and decisions, but also from factors outside their control.

The Shaping Health research takes advantage of a wealth of research into health inequality. Health inequalities were formally recognised in policy in England in the Black Report "Inequalities in Health", commissioned by the Department of Health and Social Security (Black, 1980), and since the publication of this report they have been the subject of much research. Marmot's recent synthesis of knowledge in this area highlights two key dimensions: that health inequalities are the product of the interaction of four categories of factor that influence each other (structural factors, behavioural factors, psychosocial factors and biomedical factors), and that the disadvantage that results accumulates over the life course (Marmot, 2015). The four categories of factors identified by Marmot (2015) have individual and societal components, which interact and are therefore difficult to separate. Thus, for example, for the individual, health is clearly influenced by genes and the medical care received. The effects of genetic background and medical treatment will, however, be modified by the influence of the environment and by diet, physical activity and other lifestyle factors. These influences can start to have an effect as early as immediately after conception. An individual adult is able to regulate some of these factors, but others, such as the space in which they

[1] BMI is defined as the body mass in Kg divided by the square of the body height in meters

live, the location of their home, the location of their work, their routes of travel between home and work, and where they spend their leisure time are more difficult to control (Kahan, Gielen, Fagan, & Green, 2014). Moreover, some elements of disadvantage accrued in childhood are hard to reverse. A second example is, that the health of the individual is influenced by low wages which contribute directly to health inequalities by making healthy lifestyles such as a good diet and regular physical activity difficult to access. Indirectly economic deprivation can adversely impact health through dangerous working conditions, high likelihood of unemployment, dependency on welfare payments and poor-quality housing. Moreover, the uncertainty arising from low wages also increases stress, with negative consequences for health (Lewchuk, de Wolff, King & Polanyi, 2003). Psychosocial factors add a further level of complexity and include the adverse impact on health of the loss of self-esteem from being unemployed and the feeling of loss of control arising from a low income or low status.

The contribution of these functional factors to health inequalities, with their individual and societal components, is considered in more detail in the literature review, but have been briefly presented here to show the complexity, in terms of the range of factors at play, and the interactions between factors, to establish the requirement to collect detailed contextual information to understand lifestyle behaviours in low SES groups. The same functional factors are fundamental to understanding the government response to health inequalities and programmes to improve the health of the population. The Shaping Health research which seeks to understand lifestyle behaviours and ultimately influence them has had to be fully cognizant of these functional factors.

1.3. Improving public health and addressing health inequalities

The practice of trying to improve and maintain the health of the population is “public health”, defined by the World Health Organization as “to prevent disease, promote health, and prolong life among the population as a whole” (Thomson, Bambra, McNamara, Huijts, & Todd, 2016, p2). Public health in England has its origins in the 1848 Public Health Act, which was brought in as a response to repeated outbreaks of cholera (a water born disease) in urban areas. In the 19th and early 20th centuries public health activity focused on the environment (sanitation, air quality and housing conditions) to reduce the incidence of infectious diseases in the population. Today, however, the focus of public health has changed. The objective is still to prevent disease but with a switch in emphasis, from preventing infectious diseases to preventing NCDs.

The extension of public health programmes to include NCDs includes a recognition that the concept of public health has to be extended from reducing mortality to include improving the quality of life (Thompson, 2014). A common feature of all public health programmes whether they are designed

to reduce mortality, reduce morbidity or improve the quality of life, is an acknowledgement of the important role played by the environment in which the individual or population lives (Thompson, 2014). This recognition that the individual is strongly influenced by the environment brings inequalities into the public health arena. The Shaping Health research which seeks to understand lifestyle behaviours in a low SES group supports the requirement for public health practice to consider material inequality (Adams, Amos, & Munro, 2002).

Health promotion is the implementation arm of public health and it is of more recent origin. A key document is the 1986 Ottawa Charter for Health Promotion, which acknowledges the role of health inequalities and introduces the concepts of social justice and equity (Hancock, 2011; Ridde, Guichard, & Houéto, 2007). Alongside the recommendation that healthcare resources should be refocused on prevention of disease rather than treating illness, the Charter highlights the role of government to promote a healthy living environment and to develop individuals so that they can make healthy choices (Thompson, 2014). The Charter calls for "health, income and social policies that foster greater equity" to promote health (Hancock, 2011 p405). The Shaping Health research is supportive of the Charter aims because it recognises that health is influenced by diverse factors, including the impact that structural inequalities have on the day-to-day living conditions of individuals.

The significance of the role played by the wider societal context on health is captured in the socioecological model of health (Stokols, 1992). In this model, there are five layers of influence starting at the centre with the individual, and then moving out to interpersonal factors, institutional features, the community and policy. Other similar models seek to capture the same influences (Schölmerich & Kawachi, 2016). According to these models, effective health promotion needs to address all these levels of influence. In practice, however, this is rarely achieved (Golden & Earp, 2012). Public health interventions remain focused on the individual rather than the other layers of influence (Golden & Earp, 2012). Only when interventions are specifically designed to tackle multiple layers of the model are influences beyond the individual reached (Golden & Earp, 2012).

Whilst the socioecological model of health is well accepted by researchers, policy makers and public health practitioners, governments tend to invest in public health interventions targeting the individual, such as education programmes, because they are low cost and have the potential to bring large rewards to individuals and the state, if the advocated changes are taken up (Thompson, 2014). Intervening at other levels of the socioecological model of health is more difficult and more expensive. Failure to engage with the difficulty and cost of interventions at levels of the model beyond the individual is, however, likely to lead to an overall failure because individuals cannot

make a change, or benefit from a change in behaviour if the underlying structural issues in the environment are not addressed (Bambra, Smith, Garthwaite, Joyce, & Hunter, 2011). Thus, for example, without financial resources, individuals are not able to purchase a healthy lifestyle and freedom from the physical hazards and psychosocial stress arising from a lack of material resources (Bambra et al., 2011), although cultural factors and personal characteristics also play a part (Mackenbach, 2012).

The multiple possibilities of influencing the five levels of the socioecological model of health as well as the structural determinants of health lead to uncertainty as to the best place to invest public health resources. A tension is created between public health interventions driving change through individual agency and those that acknowledge the wider environmental impact. Education based interventions are clear in their focus on behaviour change in the individual, but may ignore other factors. Environment based interventions may also target the individual although this type of intervention usually recognises the wider social determinants of health.

This research acknowledges the importance of material deprivation on lifestyle behaviours but does not try to address it directly. Instead the focus is on understanding the difficulties of trying to make positive health behaviour changes, whilst living in a low SES environment with its structural challenges, from the perspective of the recipients of the public health guidance and interventions.

1.4. Promoting a healthy diet and physical activity to improve public health

The response to the body of evidence on the role of diet and physical activity in the development of NCDs has been the production, in the UK, and in other high-income countries, of public health guidelines with specific recommendations of behaviours for individuals to adopt. These guidelines draw on a similar pool of evidence and, whilst there are national differences, the core messages are the same. For physical activity national guidelines generally follow WHO guidance to undertake 150 minutes of moderate activity per week plus strength training (World Health Organization, 2020). Dietary guidelines encourage the consumption of fruit and vegetables, discourage the consumption of fat and sugar, recommend nutrient rich foods and an appropriate calorie intake, but the details vary between countries. Governments seek to encourage adoption of the guidelines through a range of education programmes, for example PHE's Eatwell Guide designed to help individuals select the right type and amount of food from each food group (Public Health England, 2016a), PHE's five a day campaign to encourage eating at least five portions of a variety of fruits and vegetables every day (Public Health England, 2016a) and the physical activity infographics published by PHE (UK Chief Medical Officers' physical activity guidelines, 2019).

Alongside these education programmes aimed at achieving behaviour change, there is some acknowledgement in policy of the impact of the environment on health behaviours and the need to provide an environment that supports behaviour change. A pertinent example in the UK is the introduction of the soft drinks levy (in April 2018) to reduce the amount of sugar consumed in soft drinks. Other environment-based interventions are being considered; in 2018 the UK government announced a consultation on mandatory calorie labelling for restaurant meals, the idea being to help people make healthy choices (Department of Health and Social Care, 2018b). Both the soft drinks levy and the mandatory calorie labelling are policy based and can therefore be considered to be acting at the environmental level of the socioecological model of health. Nevertheless, the intended impact is on the individual and to elicit behaviour change.

These education and behaviour change based policies are paradoxically serving to increase health inequalities. This arises from two related factors; first low SES groups are more vulnerable to poor lifestyle behaviours than higher SES groups (Foster et al., 2018) which implies that the reduction of inequalities requires public health interventions to be selectively targeted at low SES groups. Secondly, public health interventions, which for the most part are not selectively targeted, are disproportionally taken up by higher SES groups (McGill et al., 2015; Michie, Abraham, Whittington, McAteer, & Gupta, 2009) thus widening the gap between the groups. The obvious explanation is that the current guidance does not acknowledge the difficulties low SES group have in engaging with the guidance, particularly if it is presented in ways that do not reflect their lived experience (Kay, 2016). The Shaping Health research acknowledges the paradoxical effect of current public health guidance and seeks to provide the necessary understanding of the lived experience of one group of low SES mothers to support the development of more effective public health interventions. Current interventions are not reaching low SES groups, or if they are reaching this group they are not being heard. Or perhaps the messages are being listened to, but there are barriers that make responding too difficult.

1.5. The Shaping Health research study

There is a need to develop public health interventions that encourage the adoption of healthy lifestyle behaviours in all groups of the population and particularly low SES groups that carry the greatest burden of NCDs. An EU Joint Programming Initiative in 2010 stated that “The challenge is to understand the most effective ways of improving health through interventions targeting dietary and physical activity behaviours” and recognised that factors including social, economic and gender will influence these behaviours (Saris, 2010, p4). The Shaping Health research is a response to the call for a greater understanding of dietary and physical activity behaviours in low SES groups.

The work of the WHO (World Health Organization, 2008) and Marmot (2010, 2015) has shown that health inequalities arise not from a single source but from many; the individual, their family, the environment where the family lives, their financial position and government policy, indeed from all the levels of the socioecological model of health. To understand how these inequalities influence health behaviours a broad perspective is required. The objective of this research is therefore to increase understanding of the context within which the women are exposed to, and respond to, or do not respond to, public health educational programmes and interventions. The research includes the influence of structural inequalities and the identification of potential ways to overcome the barriers to the adoption of healthy lifestyle behaviours.

To meet this objective, an in-depth qualitative study was carried out, broadly underpinned by the socioecological model of health (Stokols, 1992), and informed by the wider body of scholarship addressing the social determinants of health. The qualitative design provided an appropriate vehicle to understand lifestyles, priorities and attitudes to healthy life style behaviours, to give insights into why current public health guidance is not being adopted and whether there are interventions that a low SES group would find more useful than the current educational programmes and policy initiatives. Repeat interviews were undertaken with the research participants to allow the development of strong relationships to further aid understanding of participants' wider lives and lifestyles.

The research sought primarily to understand the experience of a group of low SES mothers of diet and physical activity with the two lifestyle behaviours being seen not in isolation, but as part of their everyday lives. Secondarily the research sought to understand whether current public health guidance was influencing diet and physical activity and whether the participants had suggestions for public health interventions that they would find helpful. The research questions for the study are therefore:

1. What roles do diet and exercise play in the lives of mothers with young children living in a low SES area of London?
2. What barriers do the mothers face in adopting a healthy lifestyle?
3. What public health interventions would support the mothers in adopting a healthy lifestyle?

To familiarise myself with the lived experience of low SES mothers, I volunteered with HomeStart, a national charity, active in the London Borough of Hillingdon, that supports families with young children that are struggling in some way. I made contact with Children's Centres in the low SES areas of the London Borough of Hillingdon and attended their "stay and play" sessions. These activities

allowed me to meet low SES mothers with young children and create relationships. Some of the mothers that I met agreed to take part in the research.

To address the research questions methods were based in the interpretative paradigm because of the complexity of the material, to manage the many and related interactions and relationships, and to ensure that the knowledge generated was co-constructed with the participants. Elements were also taken from the critical paradigm in the development of the methods because of the research interest in addressing health inequalities. A series of in-depth qualitative interviews were carried out, to produce new knowledge and understanding of diet and physical activity. The research was suffused with a reflexive approach that helped me learn and develop as a researcher over the course of the work. In total twenty mothers were interviewed for the project.

The mothers provided me with all the primary data that forms this research project. I appreciate that as an outsider I cannot share their lived experience, but I have tried to report accurately and in detail what I have learned from these mothers. The work is rooted in the relationships that grew from the multiple interviews and the mothers provided essential feedback on the ideas and concepts I developed over the course of the research. From the first two interviews with the participants, ideas for public health interventions arose, that I was able to discuss with the participants at the final interview.

1.6. Contribution of the research

This research embraces the multiple determinants of health inequalities and considers them in relation to the daily lives of a specific group of low SES mothers living in London. It provides insights into how their responsibilities as mothers, their lives as young women and their homes in a low SES area influence their lifestyle behaviours. The research seeks to understand the response of this group to current public health guidance in the areas of diet and physical activity and whether there are public health interventions that would more usefully support them in adopting healthy lifestyle behaviours.

In “The Health Gap” Marmot (2015, page 93) states that relative social advantage is characterised by the ability to “shape your life”. This research looks at what would help a group of relatively socially disadvantaged women shape their health.

1.7. Structure of the thesis

Following this introductory chapter, chapters two and three review the literature from which this research has grown. There is a large body of literature so the review had to be selective, both in terms of the topics selected and the type of literature. The selection of literature topics was made initially on the basis of their relevance to the research questions and thus some of the topics

presented in this introductory chapter are explored in more detail namely the impact of inequality on health, the role of diet and physical activity on health and public health guidance. Other topics were added to the literature review as their importance for the project became clear, these areas have been alluded to in this introduction, but are explored in detail in the literature review; these are motherhood and health, models of health, and public health interventions, including the use of behaviour change theory in the development of interventions.

Chapter four describes how qualitative methodology was used to address the research questions and how the methods were selected to address the research questions. It opens with a discussion of reflexivity and how this discipline influenced the project and helped me develop as a researcher. The chapter also describes the conceptual framework that I developed to structure the data collection and describes the interview processes I used.

The findings and analysis are reported together in chapters five and six. The findings from the in-depth interviews are presented in the form of themes and sub themes identified in the data. The findings and analysis related to the four major themes are presented in chapter five. The material is illustrated with quotes taken from the interview transcripts and the material is set in the context of the relevant literature and theory. The participant responses to four possible ideas to promote healthy lifestyle behaviours that emerged from the in-depth interviews, and were supported by a separate focus group held with low SES mothers in Slough, are reported in chapter six and again are illustrated with quotes and relevant context from the research literature. The final chapter, seven, presents the conclusions and the opportunities to both use and build on this research to support low SES mothers in the adoption of healthy lifestyle behaviours.

2. Chapter 2 – Literature review 1: Health, inequalities and bringing about change

2.1. Introduction

This research aims to improve understanding of the lives of a specific group of women, to inform and enhance the development of public health interventions. The research is positioned in a field with much scholarship requiring an exploration of the research literature in health, health behaviours and public health interventions in the selected study group. This is a daunting task as health, inequality, diet, exercise, motherhood and public health guidance are all substantial topics enjoying significant coverage in the academic literature, health policy, professional literature and lay media. A wide-ranging review of the relevant literature is therefore required to provide context and inform the research.

The work to search the literature started in late 2014 and continued throughout the research project. As the research questions were formulated, the data collection method determined, and early results came in, new topics were added to the literature research. The initial search of the literature focused on terms such as obesity, overweight, health, diet, physical activity, interventions and socioeconomic status. Later the search was extended to include terms such as motherhood, Ethic of Care, feminist, gender, ethnicity, obesogenic environment and policy.

The initial literature search, which was regularly refreshed, was carried out using two databases PubMed Central and PsycInfo and where appropriate the literature search was extended to include key references from the papers and citations of the papers in these databases. During the course of the research important journals such as the Lancet, Journal of the American Medical Association and BMC Public Health were examined regularly for relevant research. An alert was set up with the Health Evidence Registry[2] that provided regular updates on reviews of public health interventions. Relevant public health websites such as the National Institute of Health and Care Excellence (NICE)[3] and Public Health England[4] were monitored regularly for guidance documents and research.

The literature review is presented in two chapters. This first chapter takes a broad view and analyses our understanding of health, the importance of the biomedical model of health, the role of public health and how new definitions of health have been adopted in recognition of the structural, material, behavioural and psychosocial influences on health. There is a strong health gradient in society and the literature on the size and nature of this gradient is presented together with the

[2] A service provided by McMaster University, Canada https://www.healthevidence.org/about-us.aspx
[3] https://www.nice.org.uk/
[4] https://www.gov.uk/government/organisations/public-health-england

growing literature on health inequalities and the public health responses to address these inequalities. The public health responses rely on behaviour change and the chapter ends with an examination of behaviour change theory. The second chapter takes a narrower approach, and focuses more closely on evaluating material on the lifestyle behaviours related to this project namely diet and physical activity, and the influence of SES on these behaviours. After an investigation of what prevents the adoption of healthy lifestyle behaviours, particularly in low SES groups, and the specific impact of motherhood, the public health guidance and interventions developed to encourage a healthy diet and physical activity are considered. Thus, the second literature review chapter presents the current state of knowledge of health behaviours in the type of population from which the Shaping Health research participants are drawn. It is this knowledge base that the Shaping Health research seeks to extend.

2.2. What is health?

"Health is a broad concept which can embody a huge range of meanings, from the narrowly technical to the all-embracing moral or philosophical" (Naidoo & Wills, 2000 p5). Under this wide-ranging definition an evolving path in understanding of health can be traced (Badash et al., 2017; Huber, 2014; Scriven, 2005; Svalastog, Donev, Jahren Kristoffersen, & Gajović, 2017; Tountas, 2009).

The dominant model of health in the 20th century was the biomedical model of health and it remains influential today (Naidoo & Wills, 2000). In this model health is defined negatively as the absence of disease and the model assumes illnesses together with their signs and symptoms arise from abnormalities in the body. The patient is a victim of circumstance and it is the patient's role to cooperate with the treatment administered by medical professionals (Wade & Halligan, 2004). According to the biomedical model, health is the responsibility of the medical profession whose function is to restore individuals to good health when they become unwell (Bury, 2005; Annandale, 2014). In this context the individual or "patient" is not heard and their knowledge is not valued.

The biomedical view that health is the absence of disease and that disease can be eliminated through medical treatment has been criticised (Badash et al., 2017; Huber, 2014; Naidoo & Wills, 2000). The biomedical view which focuses on specific illnesses and diseases ignores the original meaning of the word health which comes from the Old English word "hael" which means whole (Naidoo & Wills, 2000, p5-6) indicating that health should be about the complete individual and not specific parts that are failing to function. This concept of health was expressed by the World Health Organization (WHO) in 1948 (and not subsequently amended) with a definition of health as "a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity" (Bury, 2005, p. 2). This definition deviates from the biomedical model in two important

respects; first that health is a positive state, as opposed to the absence of a negative, and secondly, an acknowledgement of the impact on health of social and environmental factors. In the preamble to its constitution (signed on 22 July 1946 by the representatives of 61 States and entered into force on 7 April 1948) WHO also states that "Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people" (World Health Organization, n.d.) which in contrast to the biomedical model of health, moves the responsibility for health, in part, from the medical profession to the individual.

The recognition of the role of social and environmental factors on health has grown since the publication of the WHO definition. The much-cited Ottawa Charter for Health Promotion 1986 (World Health Organization, 1986) builds on the importance of non-disease health factors and as was stated in the Introduction to this thesis, introduces the concepts of social justice and equity into the definition of health (Hancock, 2011; Ridde et al., 2007). The Charter lists eight conditions for health none of which deal with disease or treating disease: peace, shelter, education, food, income, a stable eco system, sustainable resources as well as social justice and equity, and makes clear the requirement for the implementation of fiscal and social policies to reduce inequality to promote health (Hancock, 2011).

Despite its longevity and its development by other institutions the WHO definition of health as "a state of complete physical, mental and social well-being" has been criticised as not being useful for the 21st Century (Huber et al., 2011). Criticisms fall into two main areas, the first being over medicalisation. The use of the word "complete" means that many in the population cannot be described as completely healthy making medical interventions more likely and more individuals likely to receive medical interventions even if their condition is marginal (Huber et al., 2011). The second area of criticism concerns the changing patterns of disease and the unsuitability of the definition for the diseases of the 21st Century. When the WHO definition was published, infectious diseases were a major contributor to ill-health. Today NCDs are known to have strong environmental and behavioural components and the absence of these factors in the definition of health appears to absolve those responsible for these influences on health from the need to address them (Huber et al., 2011).

The medical profession has, however, always acknowledged the role of the environment on health and the separate specialism of public health which focuses on these areas has existed since the 19th Century (Naidoo & Wills, 2000). The existence of the public health specialism within medicine has created a source of tension between two different approaches to health. In the early days of public health, practitioners relied on the biomedical model of health but employed social and

environmental interventions to prevent disease from occurring. This was the time of the improvement in water, sewage, air and living conditions (Wohl, 1983). As the specialism developed it changed its focus and concentrated more on medical interventions to prevent disease such as vaccination (Plotkin, 2014). Today the emphasis for public health is on social interventions (Naidoo & Wills, 2000). The two arms of the medical profession have argued about the relative contribution of medical treatments and social changes to the improvement in health of the population with some authorities putting the contribution of medical services as low as 17% (Tarlov, 1996). Even if this is a low estimate, the changing emphasis and increased recognition of the broad range of factors and services affecting health were evident in the 2013 transfer of the responsibility for public health from the NHS to Local Authorities in England (Milne, 2018)

This tension between the medical and the public health view of health has led to further attempts to define and refine the meaning of health. In a conference in the Netherlands reported in the British Medical Journal (BMJ) in 2011 (Huber et al., 2011, p.3) and widely cited in the literature (over 100 citations in Pub Med accessed 27th January 2018) the definition that emerged was health as "the ability to adapt and to self-manage". This broad definition is clearly very different to the biomedical definition of health with no mention of disease. It puts individuals centre stage taking responsibility for their own health. The role of the environment is implicit in the definition. It was however criticised by correspondents to the BMJ for not considering the impact of socioeconomic factors on health (Shilton, Sparks, McQueen, Larre, & Jackson, 2011) and for describing survival as health i.e. not acknowledging the long-term impact of chronic diseases on an individual (Lewis, 2011; Tallini, 2011). Moreover, the optimism of the WHO vision of complete well-being has been lost. Shilton et al. in their letter to the BMJ (2011, p.1) proposed a modified version of the Huber et al., (2011) definition, defining health as "health is created when individuals, families, and communities are afforded the income, education, and power to control their lives; and their needs and rights are supported by systems, environments, and policies that are enabling and conducive to better health".

Shilton et al.'s definition (2011) has received support from public health practitioners (Gentry & Badrinath, 2017) and is in sympathy with earlier social definitions of health. For example, Adams (2002, p.132) working to improve health in a deprived area of Wakefield defined health as "Health is a state of wellbeing. Healthy people feel good, have all their basic needs met and are able to realise their potential and relate well to others". Whilst acknowledging that the meaning of health can be understood in different ways, these social definitions of health have been used as the foundation for the Shaping Health research. They acknowledge the importance of individual, environmental and structural factors for health and the need to support health at multiple levels. The individual is

important and has agency to manage health, but the individual is situated in a context which may support or restrict that agency.

This complexity is also evident in lay understandings of health. Individuals have an inherent understanding that health is complex and much more than being disease free (Herzlich, 2018). Field work carried out by Herzlich in France on the lay understanding of what is meant by health (Herzlich, 1973) revealed that whilst people have a conventional biomedical view of health, they also see health as a reserve held by individuals to deal with adversity, to fight or cope with disease. The study participants saw positive health as inherent to the individual, but with the environment having the capacity to upset the healthy balance, thus acknowledging that there are forces beyond the individual that influence health. There is a social class element in the lay understanding of health, with high SES groups seeing health in a positive light linked to a full and active life, and low SES groups seeing health in a functional context, meaning it provides what is necessary to get through life (Naidoo & Wills, 2000, p17). People without medical training understand the biomedical model of health and are able to discuss health in terms of diseases and treatments, but their deeper held beliefs link health to their life experiences (Naidoo & Wills, 2000). Much of the more recent work on the lay understanding of health has focused on the experience of patients with chronic conditions of their illness and this work has contributed greatly to the medical understanding of these conditions (Lawton, 2003). This does not mean that the concept of the lay expert has not been criticised on the basis that whilst patients might have insights into their own conditions, they are not medical experts (Prior, 2003). For this research the lay opinion of public health messaging is of particular relevance and this literature is covered in Chapter 3 in section 3.6.2, Interventions targeting the individual.

These developments in how health is defined and understood, particularly whether it is considered to be the absence of disease as in the biomedical model, or the well-being of an individual living in an environment in the adaptive model, have implications for both health promotion and public health interventions. In a biomedical model the objective of health promotion is to reduce the incidence of disease in the individual, and to reduce the likelihood of disease occurring, through encouraging healthy behaviours and the elimination of disease risk factors. The individual is advised and supported be healthcare professionals to adopt and maintain a healthy lifestyle. The social model does not dismiss these activities, but it adds to them, an acknowledgement that the individual's behaviours do not occur in isolation. Individuals are part of the community where they live and this community influences health (Sartorius, 2006). It is this understanding of health on which the socioecological model of health (Golden & Earp, 2012; McLeroy, Bibeau, Steclker, & Glanz, 1988; Stokols, 1992) is based.

The term ecology, was borrowed for the health model from biology, and it is used to describe how people are connected to and interact with their physical and social environment. McLeroy et al., (1988) identified five distinct levels for the model: intrapersonal, interpersonal, organizational, community and policy and those five levels are the ones most commonly referenced in the literature although other levels including behavioural, learning and life course processes are also recommended to fully capture all aspects of the socioecological environment (Richard, Gauvin, & Raine, 2011). It is not only the levels of the model themselves that are important, but of equal importance are the complexity and the interactions between the levels, and the notion that benefits will accrue if interventions at different levels of the model can be designed to support each other, particularly if population based public health strategies can be linked to biomedical, individual patient treatment programmes (Stokols, 1992; Stokols, 1996). The use of the model in public health requires an analysis of both individual lifestyle behaviours and the environment in which the behaviours takes place (Stokols, 1992; Stokols, 1996), and for this reason was selected as the theoretical basis for the Shaping Health research. This decision was taken in the knowledge that public health interventions utilising the socioecological model of health are difficult to implement because compared with single level interventions they are expensive, complex and require considerable time to see an effect (Schölmerich & Kawachi, 2016). Even so there has been an increase in the number of physical activity interventions, and to a lesser extent diet-based interventions, that operate at more and/or higher levels of the model (Richard et al., 2011).

The acknowledgement of the role that social and environmental factors play in health means that health depends on where people live and their SES. The impact of these factors is significant and the size of the effect together with possible explanations of why it exists will be considered in the next section which is introduced with a brief examination of the diseases that contribute to poor health today.

2.3. Health patterns and trends

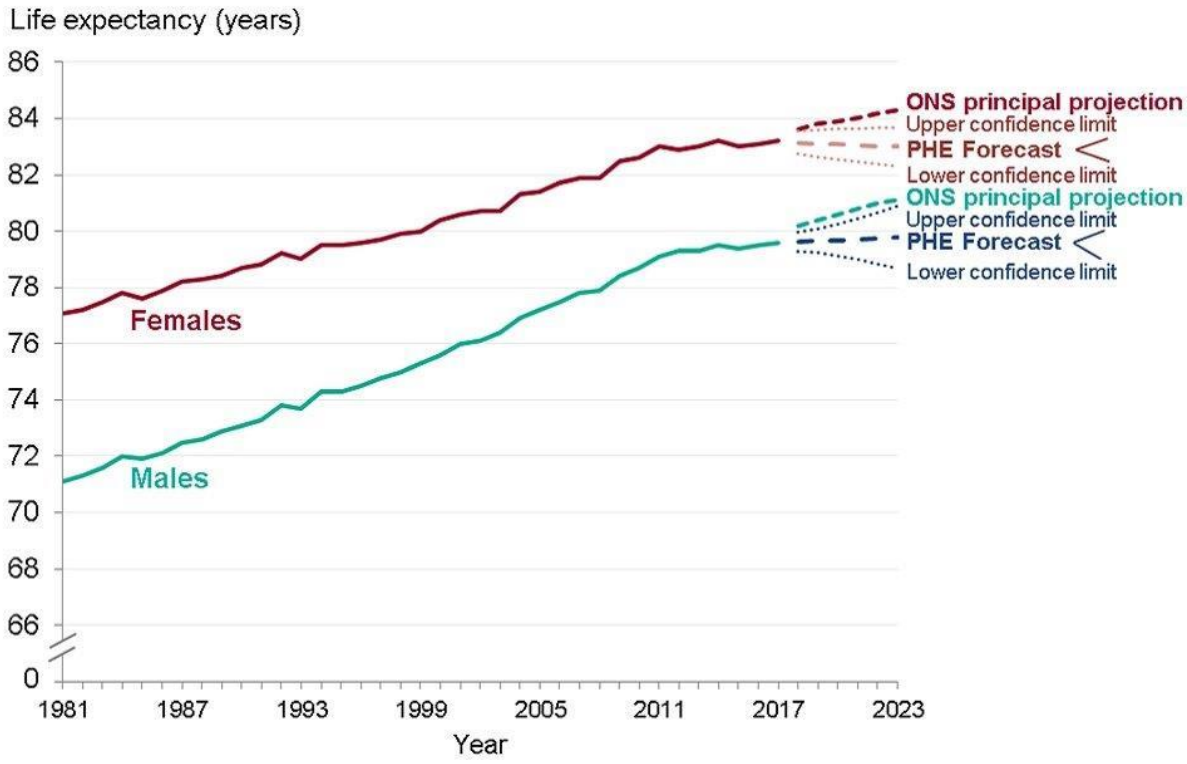
The major causes of mortality today in the UK are NCDs particularly cardiovascular disease, cancer and dementia (Gregory, 2009; Naidoo & Wills, 2000, p27; Public Health England, 2017b; World Health Organization, 2014). The proportion of deaths from cardiovascular disease has been falling for both men and women, but in 2015 heart disease and stroke were still the most common causes of death with cancer being the second most common cause (Public Health England, 2017b). Alongside the reduction in deaths from cardiovascular disease there has been an increase in the number of deaths from dementia in the period 2001-2015, an increase of 60% in males and 100% in females. This is due in part to the aging population but also to the increased recognition of dementia as a cause of death (Public Health England, 2017b). The incidence of NCDs has a strong

behavioural component; dietary risk factors and tobacco smoke contribute most to the development of NCDs, with a smaller contribution from lack of physical activity and alcohol and drug misuse (Public Health England, 2017b).

NCDs are of course a source of morbidity as well as the major cause of mortality. Morbidity in the population can be measured in terms of years lived with disability (YLDs). YLD is a term used by the Global Burden of Disease Risk Factor Collaboration to attribute the burden of morbidity of NCDs (GBD 2015 Risk Factors Collaborators, 2016) and it is a measure of the loss of quality of life based on the prevalence of each disease, defined according to the International Classification of Diseases (ICD 10) and its severity. Between 1990 and 2016 the morbidity in the population in England expressed in terms of YLDs increased from six to seven million, but the age standardised morbidity rate decreased indicating that this increase in morbidity was due to the increase in population size and the aging population (Public Health England, 2018c). Morbidity in the population is expected to increase further as the population continues to age. The greatest morbidity in the population was associated with long-term musculoskeletal conditions and long-term mental health conditions (Public Health England, 2018c). The leading causes of death, cardiovascular disease, cancer and dementia do not feature at the top of the causes of morbidity; of the three, cardiovascular disease contributes the most with 4.4% of the YLD burden (Public Health England, 2018c). As was noted in the introductory chapter the impact of diabetes on the YLD burden is increasing and becoming a significant factor (Public Health England, 2018c).

The health of the population in developed countries including the UK is typically measured in terms of life expectancy. Life expectancy covers all sources of mortality, but with NCDs representing the major cause of mortality for most age groups, trends in life expectancy give an approximation of the impact of NCDs in a population. Life expectancy is a measure of the average number of years of life a new born baby will have if the prevailing mortality rates in the population apply (World Health Organization, 2006a). Data to calculate life expectancy comes from the registration of births, the registration of deaths and census data. Life expectancy has improved steadily since the end of the 19th century albeit the rate of improvement has slowed in recent years (Crimmins, Zhang, & Saito, 2016; Havranek, 2019; Hiam, Harrison, McKee, & Dorling, 2018; Marmot, Allen, Boyce, Goldblatt & Morrison, 2020; Mathers, Stevens, Hogan, Mahanani, & Ho, 2017; Newton et al., 2015). Data from the Office of National Statistics shows that in the period 1980/1982 to 2011/2013 life expectancy at birth increased from 76.8 years to 82.7 years for females and from 70.8 years to 78.9 years for males (Office for National Statistics, 2014b).

Figure 1 (Chapter 2.3): Trend in life expectancy at birth, males and females, England, 1981 to 2017, projections and forecasts from 2018 to 2023, reproduced from Public Health England (2018b), Health Profile for England 2018 Chapter1 Population change and trends in life expectancy.



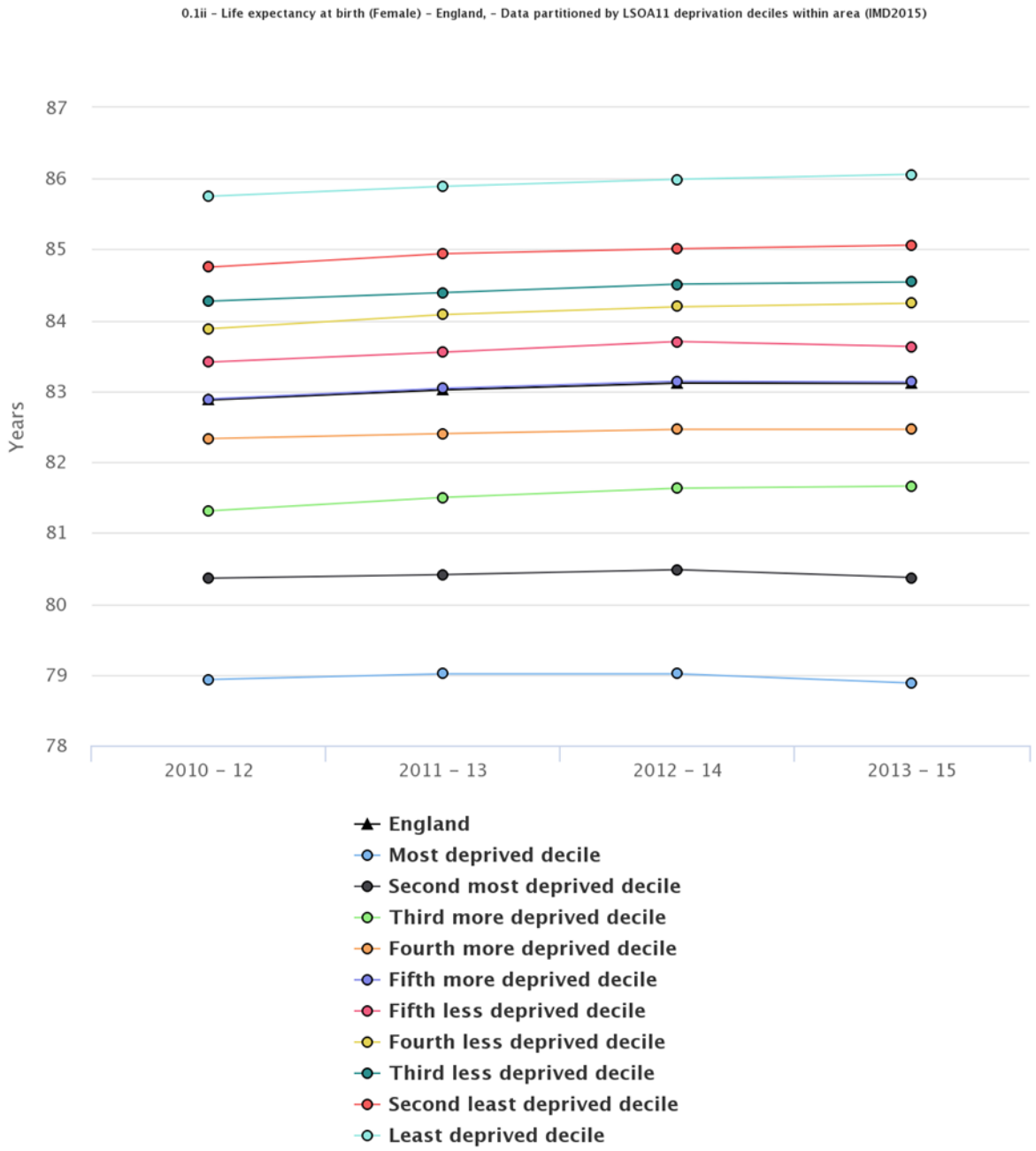
Adherents to biomedical and adaptive models of health offer alternative explanations for the observed increase in life expectancy. Improvements in the environment particularly sanitation, housing and the provision of education were major contributors to the increases in life expectancy in the nineteenth and early twentieth centuries. Medical advances including the introduction of vaccines and antibiotics provided further increases in life expectancy in the mid-20th century. The continued increase in life expectancy from the end of the 20th Century is due to declines in late life mortality (Bury, 2005; Oeppen & Vaupel, 2002). Increases in late life, life expectancy are strongly influenced by the management of cardiovascular disease and diabetes and reductions in tobacco use (Mathers, Stevens, Boerma, White, & Tobias, 2015) demonstrating the significance of both biomedical and social factors.

The increased late life expectancy that has been driving the overall improvement in life expectancy is not seen in the most recent figures from Public Health England for the period 2014-16 (Public Health England, 2018a; Public Health England, 2018b). Analysis of the data shows a decline in life expectancy in women age 75+ and men and women age 85+ (Hiam et al., 2018). This is not due to some natural limit to life expectancy because life expectancy in the UK lags behind other developed

countries e.g. Japan (Hiam et al., 2018). According to Hiam et al. (2018, p.404), “while the causes of this phenomenon are contested, there is growing evidence to point to the austerity policies implemented in recent years as at least a partial explanation” suggesting a role for both biomedical and social factors. Furthermore, whilst there has been an overall increase in life expectancy there is considerable variation in life expectancy between groups. In addition to the longer life expectancy of females shown in Fig. 1 above, SES stands out as a major determinant of life expectancy such that high SES groups have increased life expectancy compared to low SES groups (Allen & Sesti, 2018; Office for National Statistics, 2014a; Rowlingson, 2011; Wilkinson & Pickett, 2011, Chapter 6).

Data from the Office for National Statistics and compiled into Figure 2 below shows the impact of SES on life expectancy at birth and the seven years additional life expectancy for a child born in 2013-15 in the least deprived area decile compared to the most deprived area decile (NHS England, 2018). The data also show that this gap is increasing. This is because whilst longevity is continuing to rise in affluent parts of the country it is falling in the most deprived areas. This pattern of inequality in health with the poorest communities at the bottom and the richest at the top arises from the location where people live, the economic and social policy environment and the unequal distribution of power, income and services (Gregory, 2009; Marmot, 2013; Marmot et al., 2020; Weaver, Lemonde, Payman, & Goodman, 2014; World Health Organization, 2008).

Figure 2 (Chapter 2.3): Life Expectancy at Birth (England)

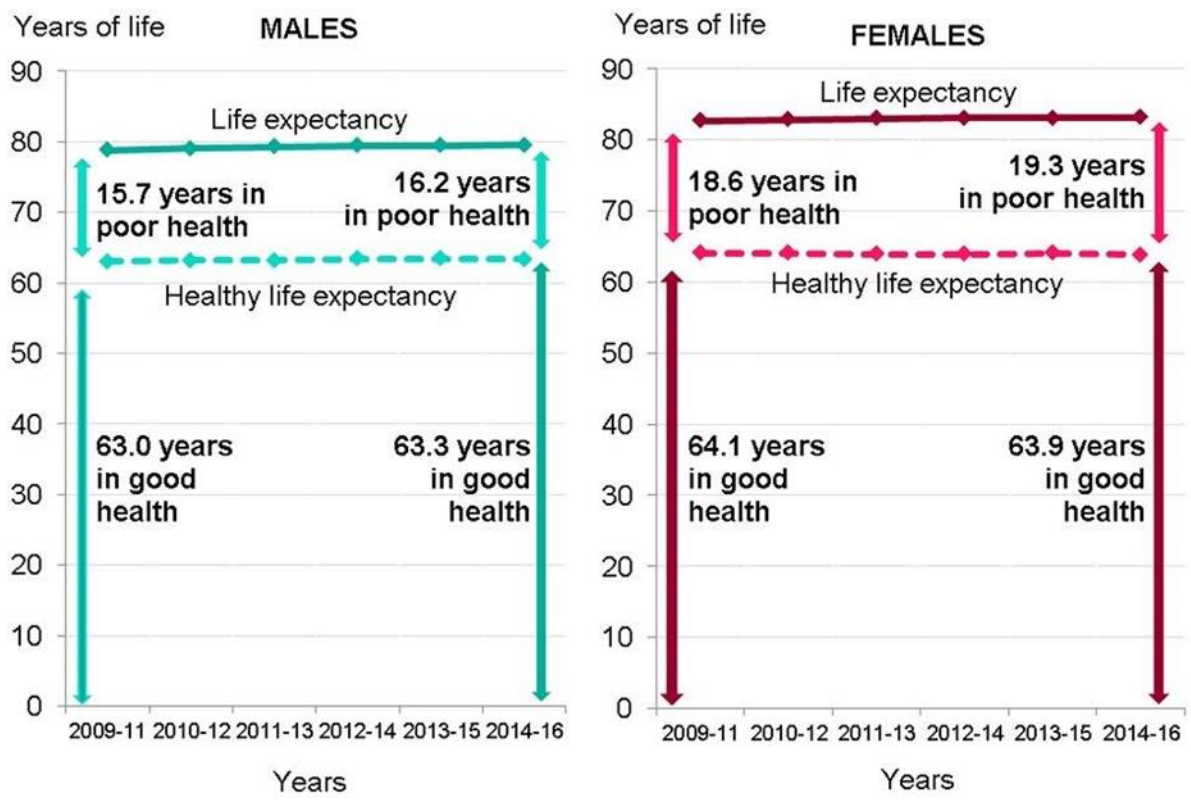


The relationship between health and SES has been recognised for a long time (Gregory, 2009; Scambler, 2012). For example, in 19th century Bath, the life expectancy for the gentry and professional males was 55, whilst boys born into a labouring family could only expect to live to 25 (Smith, 2013). The picture was even starker in some of the industrial towns. In Victorian Liverpool life expectancy in the gentry and professional classes was 35, but only 15 for labourers and artisans, for neighbouring Manchester the figures were 38 and 17 respectively (Wohl, 1983). There was an

expectation that health inequalities would be eliminated with the introduction in 1948 of the National Health Service making healthcare free at the point of delivery but this has not happened (DHSS, 1980; Scambler, 2012) with deprivation and mortality remaining linked (Gregory, 2009; Marmot, Allen, Boyce, Goldblatt & Morrison, 2020). Health inequalities can clearly not be explained by access to healthcare.

Contemporary analysis recognises the wider environmental influences on health and these become more evident if, to assess the health of the population, total life expectancy is replaced with "healthy life expectancy", defined by the WHO as the number of years a new born baby can expect to live in good health, free from disease or injury (World Health Organization, 2006b). Healthy life expectancy is considerably shorter than total life expectancy and is not increasing at the same rate as total life expectancy, so that individuals can expect to spend more years in poor health and a greater proportion of their life in poor health see Fig. 3 below. Men born in 2014-16 can expect to spend 20.4% of their lives in poor health and women 23.2%.

Figure 3 (Chapter 2.3): Trend in life expectancy, healthy life expectancy and years spent in poor health from birth, males and females, England, 2009 to 2011 up to 2014 to 2016 (reproduced from Public Health England, 2018b) Health Profile for England 2018 Chapter 1 Population change and trends in life expectancy)



The literature linking healthy life expectancy to SES is sparse but Head et al. (2018, p267) report that "those in lower socioeconomic groups are doubly disadvantaged by shorter life expectancy and

more years spent in ill health". A longitudinal study carried out in England, following individuals for 24 years from age 50, found that lower socioeconomic groups were more likely to experience multiple morbidities, frailty and disability (Dugravot et al., 2019).

Data collected in the UK support this finding. The figures for healthy life expectancy based on self-reports of health status in the Annual Population Survey, support the Public Health England data and add the SES dimension. In low SES areas a larger proportion of life is spent in poor health. Office for National Statistics data (See Fig. 4 below, Office for National Statistics, 2014b) for women born in 2009-11 show that those in the most deprived decile can expect to spend 26.4 years in poor health or almost 30% of their life. In contrast women living in the least deprived decile will only spend 14.2 years in poor health, 16.5% of their life. Marmot et al. highlight this SES dimension in their recent report for the Institute of Health Equity noting that "the social gradient in disability-free life expectancy is steeper than the gradient in life expectancy" (2020, p. 15)

Figure 4 (Chapter 2.3)

Life Expectancy (LE) and Healthy Life Expectancy (HLE) by deciles of deprivation for females in England, 2009-11

[1] Excludes residents of communal establishments except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

Source: Office for National Statistics

The social gradient in health persists independent of the measure used to classify socioeconomic status including neighbourhood income (Marmot, 2010), neighbourhood deprivation (Black & Macinko, 2008), housing tenure (Jones & Goldblatt, 1996), car ownership (Goldblatt, 1990), north south divide (Shaw, Davey Smith, & Dorling, 2005; Shaw, Dorling, & Brimblecombe, 1998), income (Shaw et al., 2005), Breadline Britain Index (Shaw et al., 2005), life course (Graham, 2002) and

educational attainment (Telfair & Shelton, 2012). It is not unique to the UK, but is seen around the world (World Health Organization, 2008). A recent cohort study carried out in the US suggests that the gradient can be modified because the incidence of cardiovascular disease responded to changes in income, going down as incomes increased and going up as incomes decreased (Wang et al., 2019). The social gradient and the persistence of health inequalities is acknowledged in policy and has led to a need to try to understand the gradient and the situation of people who experience it.

This section has illustrated how life expectancy has improved over time, but that the picture of overall improvement masks a picture of long-term health inequalities. There is a strong relationship between SES and life expectancy and a stronger relationship between SES and healthy life expectancy. Health inequalities have persisted over time despite the introduction of clean water, sanitation, universal healthcare and food security, all of which had been expected to close the gap. Gender also plays a role with social differences and biological factors at play. The desire and need to understand the observed pattern of health inequalities has been the subject of much academic research and different UK governments have commissioned reports to collect this evidence with a view to putting in place policies to address the observed health inequalities. Together these reports present a picture of the factors driving health inequalities, the relationships between them and how thinking has changed over time. The data collected for these reports and the additional data arising from the research interest they created have been extensively analysed and are considered in the next section.

2.4. Public health policy and health inequalities

Investigations in the UK into the relationship between mortality and social class date back to William Farr, the first Supervisor of Statistics at the General Register Office, appointed in 1837 who went further than recording deaths and looked for data that could be used to prevent deaths (Acheson, 1998). Inquiries into health and class continued with the work of Edwin Chadwick in the 1840's who reported on the sanitary conditions of the labouring classes, Joseph Rowntree at the end of the 19th Century and Richard Titmuss during the depression and after the second world war (Acheson, 1998). William Beveridge's renowned report of 1942 which led to the formation of the welfare state and identified the five "giants" of want, disease, ignorance, squalor and idleness drew on this historical understanding of the structural influences on health (Beveridge, 1942).

Current efforts to identify and address health inequalities can be traced back to the 1970s. The first of a series of Government sponsored reports designed to collate information on the factors that determine health over the life course was commissioned by a Labour government in 1977 (Bambra et al., 2011; DHSS, 1980). Chaired by Sir Douglas Black, President of the Royal College of Physicians

the committee drew for its report on evidence from the Office of Population Censuses and Surveys (OPCS), the General Household Survey carried out by the ONS and some limited research data, for example a survey carried out by the then College of General Practitioners published in 1961 on health and class. The evidence showed health inequalities based on socioeconomic status, gender and the north south divide. The evidence base was strong linking SES to measures of mortality e.g. life expectancy and risk of death before retirement. Although more limited, there were data showing increased morbidity and more General Practitioner (GP) consultations in low SES groups.

The report considered four possible explanations of health inequalities. Two of the explanations focused on the individual. One individual based explanation, dismissed in the report as a major cause of inequalities, was that what is measured as health inequalities is actually a data artefact arising from changes in occupation and social position such that older people tend to remain in unskilled occupations with younger people moving up the SES ladder. Social or natural selection was the second individual based explanation. The theory is that this type of selection leads to stronger and/or fitter individuals securing the best type of employment leaving weaker individuals in the less attractive occupations so that the health of the individual is actually the cause of the observed social health gradient. As with the data artefact explanation, social selection was not seen by the report writing committee as being a major contributor to the observed health inequalities. Still focusing on the individual, but acknowledging the influence of the environment, the report recognised the role of culture and behaviour on health. The committee here was referring to the choices people make with regards to diet, physical activity, smoking and alcohol consumption as well as the uptake of preventive health services such as vaccination and contraception. The authors of the report concluded that whilst these factors play a role, they do not provide the dominant explanation for health inequalities. Whilst influences vary over the life course, the most important influence on health, according to the Black report, is material difference, with a direct link between economic deprivation and ill health. This finding moves the explanation for health inequalities away from the individual and towards structural factors with economic deprivation manifested in many ways such as having to work in dangerous jobs, high likelihood of unemployment, poor housing, inability to afford a healthy diet and inability to access leisure based physical activity. The authors also highlighted the importance of interventions early in childhood to disrupt the social gradient in health.

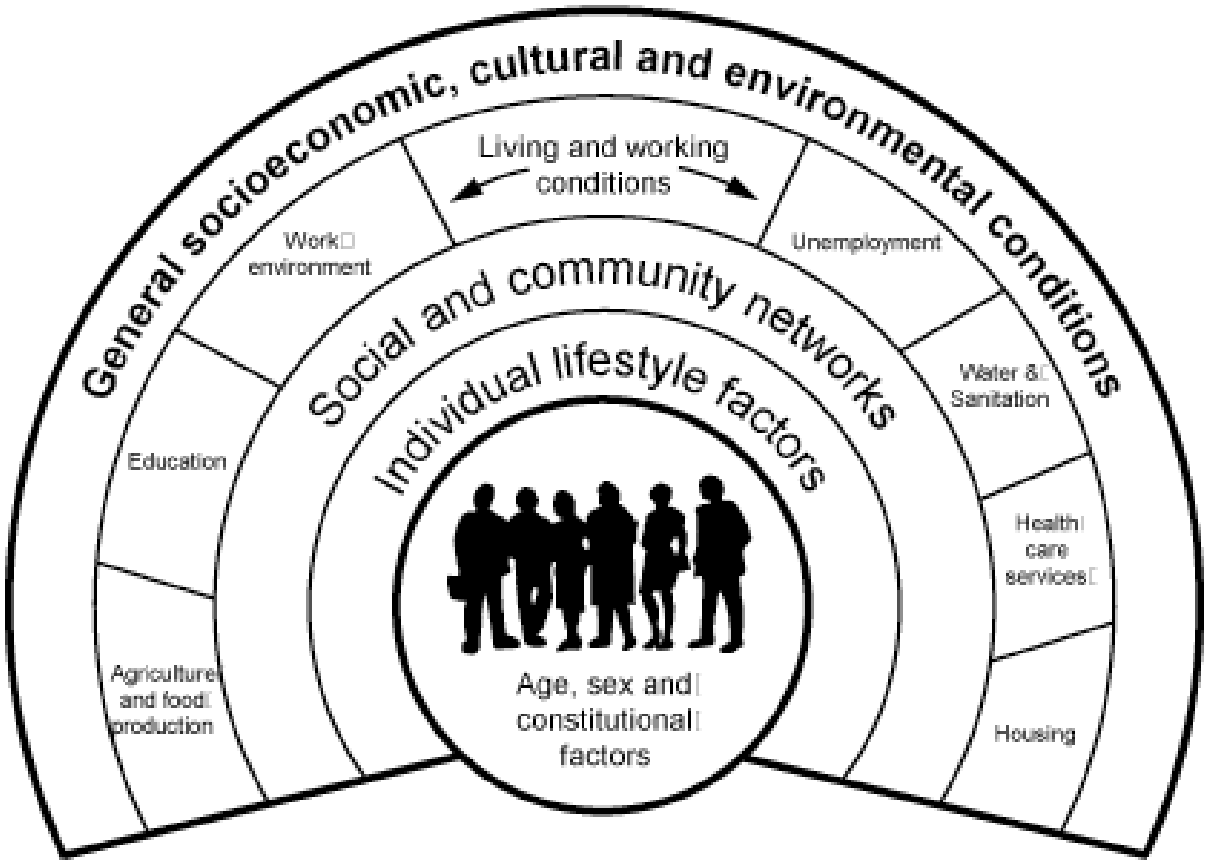
The Black report was published in 1980 when the Labour government had been replaced by a Conservative Government and, as a result, the report's key messages of giving children a better start in life and the implementation of anti-poverty strategies were largely ignored in terms of policy changes (Bambra et al., 2011; Hay & Peet, 2014). The report was however influential; the European

region of WHO introduced a health policy aimed at reducing health inequalities, an updated version of the report was published in 1987 again focusing on inequalities "The Health Divide", there were initiatives from the Chief Medical Officer for England and the Kings fund focusing on inequalities in health particularly housing, family poverty and smoking, and the report had a major impact on the research community inspiring further research on health inequalities in the UK and internationally (Acheson, 1998; Bambra et al., 2011).

The UK Government's second report into health inequalities was commissioned in 1997 by the incoming Labour Government. This report chaired by Sir Donald Acheson, Chief Medical Officer of the UK, drew on the work of the earlier Black report and, by that time, more extensive data from the ONS, General Household Survey, The Health Survey for England published in 1994, 1995 and 1996, and the research literature, e.g. ; Charlton, Wallace & White, 1994; Drever and Whitehead 1997; Illsley & Baker, 1997. The data revealed that in the time between the publication of the two reports the influence of SES on life expectancy had increased (Acheson, 1998). Whilst the morbidity in the population had not changed, the influence of SES had increased with low SES groups reporting more chronic sickness than higher SES groups (Acheson, 1998). The report drew attention to obesity as a risk factor and highlighted its relationship to SES, and also described the relatively poor health of ethnic minority groups (Acheson, 1998).

The Acheson report used the socioecological model of health (Stokols, 1992) as the basis for its recommendations (see section 2.2 What is health, above, for a description of the socioecological model of health), depicting the individual, social and structural factors that influence health as a series of concentric arcs with the individual in the middle and each factor representing a circle around the individual, (Fig. 5) reproduced below (Acheson, 1998). Lifestyle and behaviour which were secondary to material considerations in the Black report occupy the prime position close to the individual in the Acheson report. The structural determinants of health are recognised because the report makes clear that lifestyle and behaviour are strongly influenced by the social environment, social structure, work, early life and culture to which the individual is exposed. Other structural considerations such as unemployment and housing are included, but are positioned further from the individual in the model. Factors that were not specifically included in the Black report, such as social and community networks and general socioeconomic conditions, are now explicitly considered as influences on health.

Figure 5 (Chapter 2.4): The main determinants of health as set out in the Acheson Report 1998



The Acheson report was welcomed by the Labour Government which claimed to be committed to its recommendations to reduce health inequalities (Bambra, 2011). The Department of Health responded to the report with two strategy documents, one in 1999 "Reducing health inequalities: an action report" and a revised strategy in 2003 "Tackling health inequalities a program for action" (Mackenbach, 2010). An analysis of changes that were made however, reveals that the recommendations that looked at lifestyle and behaviour change for the individual and could be tackled through public health interventions were implemented to a greater extent than those that were aimed at the structural causes of health inequalities (Bambra, 2011). Moreover, in the seven years between the two Department of Health strategy documents the emphasis on lifestyle interventions increased (Mackenbach, 2010).

The most recent report on health inequalities was commissioned in 2008 by a Labour government in response to the WHO report "Closing the gap in a generation" on the social determinants of health (World Health Organization, 2008). The report was published under the name of the Strategic Review of Health Inequalities with the title "Fair society, Healthy Lives" (Marmot, 2010). This report drew on the now extensive research literature, the chapter on health inequalities and the social determinants of health cites more than 150 references (e.g. Bartley, 2004; Jefferis, Power, &

Hertzman, 2002; Kawachi, 2000; Mackenbach & Bakker, 2002; Stuckler, Basu, Suhrcke, Coutts, & McKee, 2009), on ONS data, the General Health Questionnaire, the National Equity Panel and reports from groups working on health inequalities including the Joseph Rowntree Foundation and Save the Children. To collect and analyse the research data, nine task forces were set up whose findings were incorporated in the report and the commission members engaged extensively with stakeholders. In a foreword to the report Marmot highlighted the importance of social conditions saying "This link between social conditions and health is not a footnote to the 'real' concerns with health – health care and unhealthy behaviours – it should become the main focus" (Marmot, 2010, p3).

The report presented evidence that the relationship between SES and life expectancy set out in the earlier reports persisted and that whilst overall life expectancy had increased the gap attributable to SES in the period 1995-7 to 2006-8) remained (Marmot, 2010). The relationship between social class and morbidity also persisted with the impact of SES greatest in the 45-64 age group. The report built on the earlier findings reporting specific gradients in the incidence of cancer, cardiovascular disease and mental illness with SES, and also an increase in the risk factors for these diseases along the social gradient (Marmot, 2010). The report emphasised the role of both behavioural factors (smoking, alcohol consumption, obesity and drug use) and social factors (early years, education, work, income and communities) on health outcomes (Marmot, 2010)

The evidence collected in the Strategic Review (Marmot, 2010) supports an explanation for health inequalities rooted in the social and economic inequalities in society with a much-reduced emphasis on the individual. The factors listed as contributing to these inequalities have environmental and structural origins and include material circumstances and the social environment. Lifestyle behaviours and biological factors are recognised as playing a part and a new factor, "psychosocial determinant of health" is introduced. The term psychosocial is not defined in the report but it is used to describe feelings of loss of control in specific environments e.g. the workplace, and feelings of lack of self-worth. An earlier paper by Martikainen, Bartley and Lahelma (2002) did attempt a definition and states that a psychosocial factor requires an interaction between a social determinant of health e.g. unemployment and a psychological factor such as the arising lack of self-esteem. The Strategic Review (Marmot, 2010) emphasises the inter-relatedness of all the identified factors and that disadvantage accumulates over the life course. By making the point that the influences on health are very broad and extend beyond the individual, the report states that actions by the Department of Health and the National Health Service alone will not be sufficient to address health

inequalities. Instead it is argued that action to reduce health inequalities needs to permeate almost all areas of government policy.

The Marmot report was published in 2010 in the wake of the 2008 financial crash and as a Conservative Government came into power committed to austerity in social and welfare policy. This may explain why, in its response to the report, the Government picked up on the psychosocial explanations for health inequalities and focused on activities aimed at reducing stress and increasing happiness rather than on policies to tackle the underlying material structural causes of health inequalities (Bambra et al., 2011). This response was a continuation of the already dominant public health programme emphasising individual lifestyle and behaviour.

Taken together these three reports (Black, Acheson and Marmot) show how understanding of health inequalities has changed and developed over time, both in terms of the recognition of the wide range of factors that contribute to health inequalities and the relationships between them. The reports together present a complex picture; whilst it might be convenient to group factors into categories relating to the individual, the environment and wider structural issues, in reality the factors influence each other. An individual wishing to adopt a healthy lifestyle may be unable to do so because of barriers arising from their family circumstances, an inability to access the right facilities or insufficient purchasing power. The reports have also shown how health inequalities, especially those arising from structural and environmental causes, accumulate over a lifetime, making short term fixes almost impossible.

The Government response to the reports is instructive. Depending on the political position of the Government in power at the time the reports were published, Governments have either accepted or rejected calls to reduce health inequalities by addressing structural concerns and tackling poverty. In practice, even where the Government supports the call to reduce health inequalities by reducing poverty, in practice this has proven difficult to carry out, and instead Governments have continued to implement short term measures to influence individual behaviour to encourage the adoption of healthy lifestyle behaviours. Whilst it is possible to seek to change behaviour through public health interventions acting at the environmental and policy level, most such interventions are aimed at the individual and ignore the wider influencers on health (Golden & Earp, 2012). "Creating sustainable health improvements … is most effective when all of these factors are targeted simultaneously" (Golden & Earp, 2012, p364)

2.5. Individual lifestyle factors and health inequalities

The research knowledge and thinking collected together in the three Government sponsored reports summarised the broad range of factors influencing health and their role in health inequalities.

Another sequence of papers in the literature examines the relative importance of some of these factors on NCDs and the impact of SES. The relationship between individual lifestyle factors and specific NCDs is considered in the next chapter (section 3.2 Diet and health and 3.3 Physical activity and health), but the literature on the direct impact on health of multiple lifestyle factors complements the work that identified the factors that contribute to health inequalities. This literature grew from a ground-breaking piece of work carried out by Marmot, Rose, Shipley and Hamilton with British Civil Servants and published in 1978.

The first Whitehall study (Marmot et al., 1978) was undertaken to try and explain the observed social gradient in cardiovascular disease in the population: mortality was greater in low SES groups than high SES groups, despite the NHS providing free care at the point of need to all groups. The study of Whitehall based Civil Servants (all men) found a clear correlation between job status and cardiovascular health with the lowest grade of staff (messengers) having 3.6 times the coronary heart disease mortality of the highest grade of staff (administrators). To try and separate out the factors that were contributing to the health gradient the authors controlled their results for a range of known behavioural risk factors including poor diet, lack of physical activity and smoking, and found that the correlation between grade and coronary heart disease mortality persisted. At the time this first study was published, which predates the Black report, the authors were unable to explain the differences in coronary heart disease between the socioeconomic groups in terms of known risk factors, acknowledging that SES was influencing health in a way not measured by the study.

A second Whitehall study (Whitehall II, Marmot et al., 1991) considered additional factors that might contribute to the observed health gradient and looked at environmental factors in particular whether a stressful work environment and a lack of social support influenced health. The study covered men and women and investigated the relationship between grade and a number of diseases and found an inverse correlation between job status and electrocardiogram (ECG) abnormalities, angina pectoris and chronic bronchitis. Although this second study looked at morbidity rather than mortality, which was the measure in the first study, the relationship between health and job status was essentially the same. The observed individual based behaviour risk factors such as smoking, alcohol consumption, diet and physical activity again did not explain all the measured health differences. The authors did find, however, that staff in the lower grades were less likely to be satisfied with their employment situation. Staff in lower grades also reported less control over their working lives, less varied work, more stressful life events and money difficulties. The authors comment that their results suggest a relationship between jobs where individuals have little control,

where the work load is high, but without opportunities to learn and develop new skills, and an increased risk of cardiovascular disease. The results suggest that there are environmental factors and psychosocial factors that interact with behavioural factors to influence health.

A more recent analysis of the Whitehall II study group (Stringhini et al., 2010) looked in more detail at the impact of lifestyle behaviours on mortality. The lifestyle factors selected for study were smoking, alcohol consumption, diet and physical activity, and rather than just consider these behaviours as measured at the start of the investigation, measurements at four different time periods over the twenty-four years of the longitudinal study were used. The results showed, as in the earlier Whitehall analyses, an inverse correlation between mortality and grade and, using the measure of lifestyle behaviours at basepoint, that only 42% of the all-cause mortality could be explained by the four lifestyle behaviours. The new finding from this analysis was that by taking into account the changes in lifestyle behaviours over the study period that the all-cause mortality explained by the four lifestyle behaviours increased to 72%. The authors' conclusion was that lifestyle behaviours may play a larger role in mediating mortality and explaining the relationship between life expectancy and position in the social hierarchy than had previously been measured in either the Whitehall study, or indeed other studies that did not take into account the impact of lifestyle behaviour changes over time. This is clearly a problem in studies where lifestyle behaviours are measured at the start of the study, mortality and/or morbidity is tracked longitudinally but without a regular measurements of lifestyle behaviours.

Other groups have reported similar findings for the impact of lifestyle behaviours on health. A major review of life-expectancy across the US, Dwyer-Lindgren et al. (2017) found that 74% of the variation in life-expectancy could be explained by lifestyle behaviours and metabolic risk factors alone, with SES and race/ethnicity only having an additional marginal contribution. Another major US study, a prospective cohort study, examined the role of lifestyle factors on healthy life expectancy and found that an unhealthy lifestyle meant a longer time living with cardiovascular disease, cancer and type 2 diabetes with the influence of lifestyle strongest for type 2 diabetes (Li et al., 2020). An analysis of the incidence of diabetes in the Whitehall II study cohort (Stringhini et al., 2012), in which there were 818 cases of incident diabetes in a follow up period of 14.2 years, found that half of the social gradient could be explained by behavioural risk factors with BMI being the biggest contributing factor. The authors were not able to account for the remaining 50% of the gradient, commenting that it may be due to psychosocial or psychological factors, or arising from exposures in utero or early childhood (Stringhini et al., 2012).

Separating lifestyle factors and environmental factors and trying to measure their discrete influence on health remains difficult (Kivimäki et al., 2008; Marmot, Shipley, Hemingway, Head, & Brunner, 2008). It may be wrong to even try and separate out lifestyle behaviours and their impact on health from the other environmental and structural factors at play, because they may be influencing each other (Bajekal et al., 2012; Kivimäki et al., 2008; Scholes et al., 2012). It is also possible that other lifestyle factors that have not been measured or controlled for in other studies are having an impact. A recent major piece of work published in the Lancet (Foster et al., 2018) using data from the UK Biobank investigated how social deprivation interacted with lifestyle behaviours. As well as the traditional lifestyle factors of diet, physical activity, smoking and alcohol consumption, additional lifestyle factors that are not typically controlled for in studies of SES and mortality were included, these were television viewing, sedentary lifestyle and sleep duration. The study found that low SES groups were more vulnerable to the impact of all lifestyle risk factors when mortality was selected as the outcome. The authors were not able to explain this effect, but suggested that it could be due to the risk factors being stronger in low SES groups i.e. at the extreme end of the effect, or that it could be due to the risk factors interacting with psychosocial stress with the effect mediated by inflammatory markers. Another suggested explanation for the observation was that the risk factors interact with the structural factors associated with low SES e.g. poor access to healthcare and lack of social support. The authors concluded that their finding "clearly strengthens the arguments for government policies that tackle upstream determinants of ill-health and aim to reduce poverty, and for health policies that offer increased support in areas of deprivation" and that tackling lifestyle behaviours in isolation may serve to increase health inequalities (Foster et al., 2018, p.9)

Support for the idea that alongside behavioural factors psychosocial stress plays a role in health inequalities comes from the literature that looks at the health gradient within and between countries. In countries with a wide gap between rich and poor the population is relatively unhealthy and where the gap is narrower the population is healthier. Thus, unequal societies like the US, score poorly on an index of social and health problems i.e. the population is relatively unhealthy, whilst equal societies like Sweden, score well i.e. the population is healthier (Wilkinson & Pickett, 2011). Wilkinson and Pickett (2011) explain this difference not in terms of lifestyle behaviours but in terms of status anxiety, such that those who see themselves below others in the hierarchy, feel that they have little control over their lives, with the lack of control leading to the poor health outcomes. Importantly they argue that it is not just that those at the bottom that suffer, everyone feels their relative status and the steeper the hierarchy ladder the greater the feelings of status anxiety.

By no means all researchers in the field agree that status anxiety accounts for the observed relationship between inequality and health between countries. In a comprehensive review of the role of inequality in health for the Joseph Rowntree Foundation, Rowlingson (2011) finds some evidence to support the status anxiety theory; but she also cites literature showing that actual and not relative material circumstances play a major role in health outcomes. Sommet, Morselli and Spini (2018) using data from around the world and looking specifically at psychological health argue that it is financial scarcity and not income inequality that impacts health.

The mechanisms linking income inequality to poor health outcomes are not yet fully understood. Foster et al., (2018) who conducted a prospective study using data from the UK Biobank, provide a useful summary for this section on the connection between multiple life style factors and health inequalities. They concluded that more work needs to be carried out on the relationship between lifestyle behaviours and SES, and on which combinations of lifestyle behaviours have the greatest impact on health outcomes. The literature reviewed in this section shows that material circumstances, income scarcity and position in the hierarchy are all likely to play a role. Lifestyle factors are influenced both by these structural concerns, and by the multiple levels of the socioecological model of health so that, for example, it is more difficult to access a healthy diet on a low income, in an area where fresh food is hard to come by, and where family responsibilities mean that there is no time to prepare food. A lot of this complexity appears to be ignored in today's public health responses to NCDs. The next section looks at these responses and how despite the evidence relating NCDs to structural inequalities the responses are mainly directed towards individual behaviour change.

2.6. Public health responses to NCDs and health inequalities

The knowledge that has been accrued on the structural causes of health inequalities are not regularly translated into policy initiatives (Kelly & Russo, 2018).

> "Simple causal narratives dominate political and policy discourse about the prevention of non-communicable diseases …… The behaviour, its associated risks, the disease and its prevention are treated as if they are part of the same causal chain" (Kelly & Russo, 2018, p82).

In other words, it is easier to instruct people to walk than to make communities safe for walking, to tell people to eat a healthy diet than reduce the price of fruit and vegetables, and encourage people to cook from basic ingredients than reduce working hours. Where, however, public health initiatives extend beyond education the results have been impressive.

The reduction in smoking in the population is considered a public health success and a major contributor to the reduction in mortality and morbidity from lung cancer and cardiovascular disease. It is an instructive example because the approach taken was not solely based on education and advising the individual to change their behaviour, but tackled the wider determinants of health with interventions targeting the individual and the environment. The number of individuals in the UK that smoke has declined from 19.7% in 2011 to 14.7% in 2018 (Office for National Statistics, 2019). Smoking however remains higher in low SES groups: in 2018, 25.5% for adults in manual jobs compared to 10.2% for people in managerial roles (Office for National Statistics, 2019). To reduce smoking, interventions have been made both at the structural level through taxation, smoking bans, advertising bans and plain packaging, and at the individual level, through education and the prescription of nicotine substitutes (Chaloupka, Straif, Traif, & Leon, 2011; Lindson-Hawley, Thompson, & Begh, 2015; Smith, 2013). The evidence suggests that price related interventions (structural) reduce inequalities whereas media campaigns (individual) increase them (Smith, 2013). This means that in order to address the current contribution of smoking to health inequalities the wider social determinants of health need to be addressed (Smith, 2013).

The need to look beyond the individual and consider fiscal and legislative interventions to improve public health was highlighted by Ebrahim, Taylor, Ward, Beswick, Burke & Davey Smith in their Cochrane review (2011). Changes to the environment can influence more people than attempting to reach individuals and environmental change can have the added benefit of working at the unconscious level by cueing healthy behaviours (Marteau et al., 2015). Changing the environment has been shown to change behaviour in more areas than smoking e.g. changing food labelling to encourage healthy choices (Marteau, Hollands, & Kelly, 2015) and the introduction of a tax on sugar to reduce consumption (Redondo, Hernandez-Aguado, & Lumbreras, 2018; Roberto et al., 2020).

It can take a long time for public health environmental changes to be put into place. Smoking again provides an interesting case study. The first paper by Doll and Hill linking smoking to lung cancer was published in 1950 (Doll & Hill, 1950) but the smoking ban in public places in England did not come into force until 2007 more than fifty years later (ASH, 2017). The tobacco industry used some of the same tactics to resist restrictions on the availability of its product as we see with the food industry today, namely the creation of confusion as to the risks to health and pointing out the freedom of the individual to make their own choices (World Health Organization, 2013). It is in the interest of industry to put emphasis on freedom of choice for the individual and lobby against legislation that would restrict the availability of certain products. It suits the food industry, for example, to suggest that NCDs arise from a lack of physical activity rather than from poor diet, and to focus on individual nutrients rather than the degree to which the food is processed (Freedhoff,

2013). The food industry has significant financial resources with which to make its case and uses a mixture of lobbying, promises of self-regulation and industry funded research to promote its products (World Health Organization, 2013). All this makes it difficult to identify legislative targets for public health interventions that would improve the health of the population and reduce health inequalities.

In contrast to the approach with smoking the focus of many of the public interventions to reduce overweight and obesity through improving diet and increasing physical activity has been at the level of individual behaviour. The success or otherwise of a wide range of initiatives to improve diet and increase physical activity are discussed in section 3.8 (The public health response to poor lifestyle behaviours), but the point to be made here is that the approach is less comprehensive than with tobacco control and that in particular fiscal measures and changes to social norms are not being widely used. The concern is, that without a broad approach to addressing health inequalities, public health interventions will not achieve optimal effectiveness and will not meet their stated objective of reducing health inequalities.

2.7. The prominence of behaviour change in public health

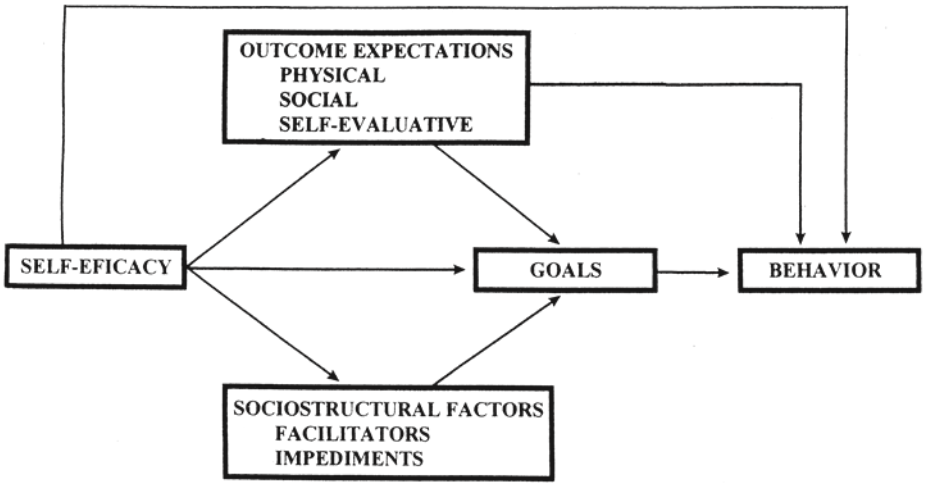
Public health interventions to address NCDs, whether they are aimed at structural or individual change, depend for their success on getting an individual to change their behaviour. Individuals face both barriers and facilitators to behaviour change. A number of important theories seek to explain the factors that govern behavioural change. Most of the health behaviour change theories used in the development of public health interventions are based on the individual including the health belief model (Rosenstock, 1974), the theory of reasoned action (Fishbein & Ajzen, 1975), the trans theoretical model (Porchaska, DiClemente, & Norcoss, 1992) and the theory of planned behaviour (Ajzen, 1985; Godin & Kok, 1996).

The theory of planned behaviour is widely used as the basis for health research (Ajzen, 2011). It extends the theory of reasoned action, which states that behaviours are governed by intentions and that intentions depend on the individual's attitude to the behaviour (how good or bad it is) and subjective norms (social pressure), by adding an additional factor, behavioural control. Behavioural control acknowledges that the conversion of an intention into a behaviour is mediated by the resources available to the individual and the opportunities they have to perform the behaviour. The theory's proponents acknowledge that an individual having formed an intention to carry out a behaviour may be unable to do so for personal or environmental reasons (Godin & Kok, 1996) and that the correlation between intention and behaviour decreases over time (Ajzen, 2011). Critics of the theory take this further stating that whilst health messaging may change intention, that factors

outside the theory of planned behaviour such as age, SES, health status and environmental factors, influence whether a behaviour change is made (Sniehotta, Presseau, & Araújo-Soares, 2014). Moreover, the same critics state that there are other factors influencing behaviour change excluded from the model including habit strength, nudging and planning (Sniehotta et al., 2014). The theory of planned behaviours is "most predictive amongst the young, fit and affluent and when predicting self-reported behaviour over a short term" (Sniehotta et al., 2014, p.3) and may therefore not serve well the interests of those trying to achieve long term and sustained behavioural change in low SES groups. This finding is in line with the evidence that individuals are already well informed about healthy lifestyles and that achieving change requires more than further education because of the upstream factors that are preventing change (Greenhalgh & Carney, 2014). Targeting the individual with more information is unlikely to achieve behaviour change particularly when individuals are not currently suffering ill health as a result of their behaviour.

The limitations of the theory of planned behaviour in the design of public health interventions have prompted researchers to consider alternative behaviour change theories. The social cognitive model of health accepts that "Human health is a social matter, not just an individual one" (Bandura, 2004, p.143). In this model, illustrated below, the pre-conditions for change arise from the individuals' knowledge of both the health risks they are facing and the benefits that will accrue from making a change, but the model also takes into account the ability of the individual to change, or self-efficacy, and the facilitators and barriers in the environment (Bandura, 2004). Considerable emphasis is placed in this model on self-efficacy: "Unless people believe they can produce desired effects by their actions, they have little incentive to act or to persevere in the face of difficulties" (Bandura, 2004, p.144). Individuals with high self-efficacy set themselves challenging goals and are able to overcome barriers in their environment. Conversely individuals with low self-efficacy have low expectations and find it difficult to maintain behaviour change in the face of obstacles. Individuals with a high level of self-efficacy "believe" they have control over their own lives and are more likely to maintain a lifestyle change for example a programme of physical activity (Armitage, 2005). Individuals with a low level of self-efficacy in contrast believe that they have limited control over lifestyle behaviours such as diet (Lawrence et al., 2011).

Figure 6 (Chapter 2.7): The Social Cognitive Model of Health Reproduced from Bandura, 2004, p.146



Outcome expectancy is another factor in the social cognitive model of health that alongside self-efficacy has a major influence on an individual's decision to participate in a health promotion programme. An outcome that is highly valued will have a greater influence on behaviour than a lower valued outcome. The correlation between an anticipated negative outcome and not undertaking physical activity for example, is stronger than the correlation between undertaking physical activity and a positive outcome (Williams, Anderson, & Winett, 2005) suggesting that in order to increase levels of physical activity the best approaches may not be to simply encourage individuals to take part in physical activity, but instead to remove the barriers to participation in physical activity or create environments that encourage participation in physical activity.

The social cognitive model of health behaviour recognises the role of the environment in affecting behaviour change in particular by taking into account the various barriers and facilitators many of which are environmental in nature. Nevertheless, the focus remains on the individual so that the individual with low self-efficacy is given support to "build belief in their ability to exercise control and bolster their staying power in the face of difficulties and setbacks" (Bandura, 2004, p.148). Moreover, the model has been criticised for not recognising the importance of "affect" i.e. the feelings of pleasure or displeasure associated with a health-related behaviour (Magnan, Shorey Fennell, & Brady, 2017). The model has however been widely used in health promotion research providing evidence that high self-efficacy is supportive of healthier lifestyles, but that low levels of social support are a significant barrier to the adoption of healthy lifestyles (Linke, Robinson, & Pekmezi, 2014).

The literature on behaviour change theory provides evidence that to encourage the adoption of healthy lifestyle behaviours public health interventions will have to address more than the individual

level of the socioecological model of health. The structural and environmental barriers to behaviour change will need to be acknowledged and individuals will need support to make lifestyle changes. A framework to determine the nature and type of successful behaviour change interventions has been developed by Michie, van Stralen and West (2011). From behaviour change theory they identified that behaviour change requires motivation, capability and opportunity and from an extensive review of the literature on the frameworks used to classify interventions they isolated nine "intervention functions" and seven "policy categories". These they combined into a wheel, which the authors argue, can be used to classify public health interventions. The same academic team (Michie, Atkins, & West, 2014) has published a guide on applying the framework to the development of public health behaviour change interventions. The behaviour change wheel has been very influential with the 2011 paper cited 775 times on Pub Med (accessed 30th May 2019). The behaviour change wheel has been widely adopted by health practitioners but it does not benefit from universal acclaim. It has been criticised in the academic literature for being over systemised and based on a relatively small number of publications (Ogden, 2016).

2.8. Chapter 2 summary

This chapter has covered how, in the literature, the definition of health has changed and adapted over time. The biomedical model persists, but alongside it, researchers now use alternative models that are described as "social" or "adaptive". These models acknowledge structural and environmental influencers and recognise the responsibility of the individual for determining their own health. Despite the introduction of the NHS in the UK in 1948, large inequalities in health persist, and the considerable research that has been carried out to identify and understand the causes of health inequalities point to multiple factors comprising individual, social, psychosocial, environmental and structural elements, and the accumulation of inequality over the life course. Nevertheless, in the UK, public health responses to NCDs and inequalities tend to focus on changing individual behaviour at the expense of the other factors. The emphasis on the individual as the target for polices to reduce health inequalities is strengthened by the use of behaviour change theory to assess interventions because these theories give their attention to the individual and discount the role of the environment and social factors.

In Chapter 3 the literature covered will move the discussion from health inequalities and the public health response to a more specific focus on the behaviours studied in the Shaping Health Research namely diet and physical activity.

3. Chapter 3- Literature review 2: Lifestyle behaviours, barriers, guidance, interventions.

3.1. Introduction

This chapter examines and challenges the literature on the behaviour change public health response to NCDs and inequalities in the context of the two behaviours with which this thesis is primarily concerned, namely diet and physical activity. The chapter opens with an examination of the literature on diet and physical activity in relation to health because first, the public health responses use this evidence base and second, a strong demonstration of the influence of these two lifestyle behaviours on health underpins the Shaping Health research. Diet and physical activity are separate behaviours, have their own literature and are dealt with individually to allow sufficient attention to detail. Next the specific interest of the Shaping Health research is developed by looking at the relationship of these two health behaviours to SES. Having established that poor diet and lack of physical activity have an adverse effect on health, particularly in low SES groups, the literature on the barriers to the adoption of healthy lifestyles is reviewed. Mothers are a specific group that can be distinguished in the evidence on SES and lifestyle behaviours, and this literature, which is of prime importance for the Shaping Health research, is considered with specific reference to the Ethic of Care. Finally, in this chapter the literature on the public health responses to encourage the adoption of healthy lifestyles is examined.

3.2. Diet and health: Contested terrain

The influence of diet on health is well known; according to Mozaffarian (2016, p2) in a major review of the literature on diet and NCDs citing more than 400 references "Diet related diseases are amongst the leading priorities of our time". Diet exerts its influence on health through diet quality, nutrients and micronutrients, and through the amount of food that is consumed. Knowledge of how different foods influence health has grown considerably over the last twenty years leading to changes in understanding of what constitutes a healthy diet. The literature is extensive and many areas remain controversial. Diet is a contested, complex social phenomenon with conflicting data on both diet composition and healthy body size published in the academic press. There are multiple stakeholders and tensions between them as food manufacturers, governments and health campaigners pursue different objectives. This literature is considered below, starting with diet composition.

One of the least contentious areas about diet concerns micronutrients. Micronutrients are chemical elements or substances required by the body in trace amounts for normal growth and development. The role of some of these in the diet has been known for some time e.g. the need for iron in the diet to prevent anaemia (DeLoughery, 2017) and vitamin D to prevent rickets (Carpenter et al., 2017) and

all the major vitamins were identified by the middle of the 20th century (Mozaffarian, Angell, Lang, & Rivera, 2018). Whilst it has proved possible to demonstrate a straightforward relationship between certain micronutrients and a disease state, the position is more complex when it comes to macronutrients (foods required in large amounts in the diet), and in particular fats and sugars. The role different macronutrients play in influencing the onset and development of NCDs remains contentious. The demonization of fats in the diet is a pertinent example. An early major cohort with participants drawn from seven countries showed that saturated fats and monounsaturated fats in the diet are associated with all-cause mortality (Keys et al., 1986). This is an influential study much cited in the literature (155 citations in PubMed accessed 27th May 2019) and more recent work has supported this finding, for example Liu, Ozodiegwu, Nickel, Wang and Iwasaki (2017), in a study of almost 3,000 individuals, found a relationship between a poor diet, high in fats and calories, and poor health. Much of the more recent research however, rejects a single macronutrient focus and instead argues that the relationships between macronutrients in the diet are complex, interdependent and influenced by genetic and lifestyle factors and that single macronutrient theories are inappropriate (Billingsley, Carbone, & Lavie, 2018; Mozaffarian et al., 2018). The evidence from across the literature suggests that eating a range of different foods is important and calorie counting alone does not lead to a healthy diet (Mozaffarian, 2016). From this work has come diets that reduce cardiometabolic risk factors, for example the Mediterranean diet and the DASH diet (Dietary Approaches to Stop Hypertension), both of which are rich in fruit, vegetables, legumes, nuts and olive oil and low in red meat and processed foods (Mozaffarian, 2016). The Mediterranean diet has been shown to have multiple health benefits particularly increased longevity and a reduction in the incidence of NCDs (Liu, A. et al., 2017; Martínez-González, Soledad Hershey, Zazpe, & Trichopoulou, 2017; Martinez-Lacoba, Pardo-Garcia, Amo-Saus, & Escribano-Sotos, 2018; Romagnolo & Selmin, 2017). Vegetarian and vegan diets provide a similar balance of food types and are also associated with a lowering of the risk factors for NCDs (Sofi et al., 2016). Micha et al. (2017), in a major review of the literature identified ten foods and seven nutrients linked to cardiometabolic health. They found that diets low in fruit and vegetables and high in red meat, sugar and sweetened beverages were linked to coronary heart disease. Conversely diets that are high in fat, sugar and processed foods lead to abdominal adiposity which is associated with metabolic syndrome (defined by the NHS as a combination of diabetes, high blood pressure and obesity (NHS, 2019)) and type 2 diabetes (Mozaffarian, 2016). The importance of diet for health is demonstrated by the NHS estimate that one in three adults over 50 in the UK has metabolic syndrome (NHS, 2019).

Stuckler and Nestle (2012) in a commissioned paper for the PLOS Medicine series on Big Food argue that today's food systems are focused on profit not health and that low SES groups are encouraged, by its low price, to eat highly processed foods lacking in nutrition. Whilst initially the processing of food was seen as useful in combatting food scarcity and ensuring adequate consumption of micronutrients, since the 1980's food processing has been extended to include new types of food that are tasty to eat but manufactured from poor quality ingredients (Monteiro, Moubarac, Cannon, Ng, & Popkin, 2013). Typically, these foods are energy dense and high in sugars, fats and salts and their consumption interferes with the body's satiety controls (Monteiro et al., 2013) thus linking diet quality with quantity. This consumption of highly processed food is a driver in the growing incidence of NCDs (Moodie et al., 2013; Poti, Braga, & Qin, 2017) and has been shown in France, in a cohort study, to be linked to all-cause mortality (Schnabel et al., 2019). This is because diet quality not only influences health through the proportion of different nutrients but it also plays a role in BMI. In an ecological, cross-sectional study, Monteiro et al., (2017) correlated the percentage of food energy obtained from ultra-processed food (a proxy for a poor diet) in 19 EU Counties and compared it with the incidence of obesity in each country. They found that Portuguese households had the lowest contribution of ultra-processed foods to total energy at 10.2% compared to 50.7% for the UK where the contribution was greatest. They found a correlation between obesity and the percentage of energy intake from highly processed foods across the nineteen countries even when they corrected for known confounders such as physical inactivity. This study shows that the quality of the diet is related to BMI and this is significant because there is considerable evidence that BMI, in turn, influences health.

BMI which was presented in the Introduction Chapter as a measure of body mass is in itself a controversial measure. In the following paragraphs BMI is used, as it is in much of the health literature, as a way to distinguish between underweight ≤18.5 kg/m², healthy weight 18.6-24.9kg/m², overweight ≥25 kg/m² and obesity ≥30 kg/m². This literature should be considered in the light of the known limitations of BMI which were summarised by five experts (Hansen, 2018) and centre around the inability of BMI as a measure of healthy weight to distinguish between body fat and muscle, or the location of the body fat. The five experts also criticised BMI as measure of health because the relationship between body weight and health is itself complex (Hansen, 2018).

There is a large body of evidence linking being overweight or obese with health problems (Expert Panel, 1998; Grundy, 1998; Khan et al., 2018; National Institutes of Health, 1998; Ogden, Yanovski, Carroll, & Flegal, 2007; O'Neil & Nicklas, 2007; Riaz et al., 2018; Scaglione, Arrgano, DiChiara, & Licata, 2014,). Overweight and obesity are linked to a number of NCDs including cardiovascular disease, type 2 diabetes, osteoarthritis and some common cancers (Expert Panel, 1998; Global

Burden of Cardiovascular Diseases Collaboration, 2018). Dixon (2010) reviewed major clinical papers in the field and provides a table of the relationship between obesity and the incidence of a number of diseases. He considered the relative risk of obesity which is defined as the risk in the exposed population i.e. the obese population divided by the risk in the unexposed population (the non-obese population), and the table from his 2010 publication is reproduced below. The table shows, for example that an obese individual is five times or more likely to develop type 2 diabetes than a non-obese individual.

Table 1 (Section 3.2): The relative risk of some of the comorbidities, conditions and risks associated with obesity. Reproduced from Dixon, 2010, p105.

Relative risk >5	**Relative risk 2–5**	**Relative risk 1–2**
Type-2 diabetes	All-cause mortality	Cancer mortality
Dyslipidemia	Hypertension	Breast cancer
Obstructive sleep apnea	Myocardial infarction and stroke	Prostate and colon cancer in man
Breathlessness	Endometrial carcinoma in women and hepatoma in men	Impaired fertility
Excessive daytime sleepiness	Gallstones and complications including cancer	Obstetric complications including foetal abnormalities
Obesity hypoventilation syndrome	Polycystic ovary syndrome	Asthma
Idiopathic intracranial hypertension	Osteoarthritis (knees)	Gastroesophageal reflux
Nonalcoholic steatohepatitis	Gout	Anaesthetic risk

Further evidence for the relationship between body size and the likelihood of developing NCDs comes from epidemiological studies that show a correlation between overweight/obesity and a number of chronic diseases with a BMI of 25kg/m² identified as the upper limit for a healthy weight (Caleyachetty et al., 2017; Lassale et al., 2017). Patel, Hildebrand and Gapstur (2014) in a longitudinal study of more than 900,000 people in the USA followed for 28 years, found that mortality was increased in underweight, overweight and obese individuals compared to the normal weight group (BMI 18.5-25kg/m²). The authors commented that the association between overweight and mortality was strongest in individuals that were non-smokers and without a prevalent disease. They postulate that smokers and individuals with a prevalent disease tend to be of lower weight so that in other studies, where these factors are not specifically controlled, the inclusion of smokers and chronically ill individuals in the normal weight group will increase the mortality in the normal weight group, which will make normal weight appear less healthy than if these groups were excluded. The findings of Patel et al., (2014) are in line with an earlier major review of 19 prospective studies involving 1.46 million adults from around the world, which found that the BMI associated with the longest life was 22.5kg/m² to 24.9kg/m² with individuals with lower and higher BMIs, all having increased mortality compared to this group (De Gonzalez et al., 2010). For individuals that had never smoked and with no underlying disease at the start of the study, the BMI associated with the greatest longevity was 20.0kg/m² to 24.9kg/m². In physically active

individuals the optimal BMI extended slightly upwards. The authors reported a linear relationship in hazard ratio for BMIs from 25kg/m² to 40 kg/m² indicating that both overweight and obesity are detrimental to health. Further evidence for a healthy BMI being below 25kg/m² comes from a major study published in the Lancet in 2016 which analysed data from 189 studies and 3.9million participants from across the world all of whom had never smoked and were not suffering from chronic diseases at the start of the study. The relationship between BMI and mortality was strongest at BMIs below 18.5 kg/m² and above 30 kg/m² but the study also reported a correlation between overweight and mortality in participants that were in the overweight range i.e. above 25 kg/m² (Berrigan, Troiano, & Graubard, 2016; The Global BMI Mortality Collaboration, 2016).

The relationship between body size and the incidence of NCDs is however more complex than these correlations imply. Two of the large-scale studies referenced above (Caleyachetty et al., 2017; Lassale et al., 2017), show that there is also a strong correlation between morbidity and mortality from heart disease for individuals in the standard weight range (BMI 18.6-24.9kg/m²) if they have metabolic syndrome. This means that an overweight individual with no other risk factors may be at lower risk from some chronic diseases than a standard weight individual with metabolic syndrome. Kuk, Rotondi, M, Sui, Blair and Ardern (2018) investigated this further in a large meta-analysis and found that individuals that were obese, but with no other metabolic risk factors (6% of the obese population in the study) were at no increased risk of disease. This finding of the significance of metabolic syndrome as a risk factor for NCDs, and not just BMI alone, brings the argument back to diet quality, because metabolic syndrome is related to the quality of the diet (Liu, A. et al., 2017).

The difficulties in separating out the role of diet quality and being overweight and obese on the development of NCDs led to multiple voices, making a wide range of recommendations, in the literature. The Association for Size Diversity and Health, for example, comprising nutritionists, dieticians, sociologists and psychologists[5], is against a focus on BMI and draws attention to the dangers of "weight cycling" (repetitive cycles of weight loss followed by weight gain, that occurs in many dieters), diet composition and the disinclination to participate in physical activity arising from stigmatisation. Instead it advocates a health at every size (HAES) approach (Bombak, 2014). Some HAES supporters take the argument further and claim that the health risks of obesity are not established because studies that seem to show a link between health risk and obesity have not controlled for SES, diet quality and physical activity (O'Reilly & Sixsmith, 2012). This argument made by the HAES supporters relies on a small number of studies and in particular that of Flegal, Legal, Graubard, Williamson and Gail (2005), which used US data from major health and nutrition surveys.

[5] https://www.sizediversityandhealth.org/

Flegal et al., (2005) calculated excess deaths (compared to expected deaths) by looking at the relationship between death and BMI in three data sets (a total of 8849 deaths) collected for the National Health and Nutrition Examination Survey and applied the relationship to all the deaths in the US in the year 2000. They found that whilst the extremes of weight, both underweight and obesity were associated with increased mortality, being overweight did not have an impact on mortality. The authors however, did not fully investigate the effect of smoking on body size, and as Patel et al., (2014) demonstrated, smoking has the potential to distort the results.

Even if it could be definitively established whether it is both obesity and overweight, obesity alone, or overweight and obesity in the presence of metabolic syndrome that is detrimental for health the best treatment response to increased BMI is unclear. There is evidence from a meta-analysis of randomised controlled trials (RCTs), including patients that were both healthy and unhealthy at baseline that weight loss in obese individuals (BMI≥30 kg/m²) has a beneficial effect on all-cause mortality (Ma et al., 2017). This review, which was restricted to studies of obese individuals, and looked at the impact of a weight reducing diet on all-cause mortality, mortality from cardiovascular disease and from cancer, found a protective effect from weight reducing diets that were low in fat and low in saturated fat. The authors commented that most of the interventions in the trials in their analysis included an exercise element but they did not try and separate out the value of undertaking exercise. Thus, whilst this data analysis shows a health benefit of a low-fat diet it is possible that the change in diet composition and increased physical activity were responsible for the decreased mortality, rather than the weight loss itself. The data can, therefore, also be used to support a HAES approach. In contrast, an earlier review of prospective clinical trials by Harrington, Gibson and Cottrell (2009) including subjects that were both healthy and unhealthy at baseline, found that weight loss does not reduce mortality in healthy obese individuals; they found that exercise and diet quality were more important factors. In this review the benefit for weight loss on mortality was restricted to unhealthy obese individuals. The picture is made more problematic to interpret when the paradoxical adverse effects on health of trying to lose weight are considered. Weight cycling is linked to increased all-cause mortality and to increased morbidity from cardiovascular disease and diabetes (Mann et al., 2007).

It therefore remains very difficult to separate out the effects on health of diet quality and raised BMI. Whilst survey data from England confirm that obese and overweight individuals (measured by BMI and raised waist circumference) are more likely than normal weight individuals to suffer both limiting long standing illnesses and non-limiting long standing illnesses (Health and Social Care Information Centre, 2013) it is not clear whether this morbidity arises from the raised BMI or from

other diet or activity factors. What is clear however is a strong relationship between body size and SES.

3.2.1. Diet, body size and low SES

The Health Survey for England (HSE) points to a clear inverse relationship between body size and socioeconomic status. The survey data is reported by income; for three measures of body size obesity measured by BMI, overweight measured by BMI, and raised waist circumference, and for all three it is the fourth SES quintile, that is the one, one up from the lowest SES quintile, where body size is highest (Health and Social Care Information Centre, 2013).

The HSE data are supported by a substantial published research literature. A review of 35 articles on obesity and socioeconomic position from the UK supports the finding that there is an inverse relationship between obesity and social class (El-Sayed, Scarborough, & Galea, 2012). The same review also shows that poor socioeconomic position in childhood is shown generally to be associated with adulthood obesity (El-Sayed et al., 2012). The relationship between obesity and social class therefore appears to start early in life. The National Child Measurement Programme (NCMP, 2013) for England for the 2012/13 academic year showed a strong positive correlation between deprivation and obesity for the two school years studied (reception and year 6, children aged 4-5 and 10-11 respectively). The measure of deprivation was based on the area in which the school the children attended was located and the area where the children lived. The link continues into adolescence with the relationship between SES and overweight and obesity strongest in girls (Noonan, 2018).

The literature shows that whilst at the very bottom of the income curve there may be people that do not have enough to eat, in general, lower incomes are associated with larger body size. The explanation provided in the literature for this distribution of body size is the availability of cheap, energy dense food and the diet consumed by different SES groups. In self-reported surveys, one proxy for a healthy diet that is often used, is the number of portions of fruit and veg that are eaten each day. The HSE uses this measure and in 2008 (Health and Social Care Information Centre, 2009) only 25% of men and 29% of women reported eating the recommended five or more portions of fruit and vegetables per day and this was a decrease on the figures reported in 2007. Eating fruit and vegetables was related to SES with 39% of women in the highest equivalised income quintile eating five or more portions compared with only 21% in the lowest quintile. The HSE 2016 data shows very little change compared to the earlier data with 28% of women eating five portions of fruit and vegetables per day (NatCen Social research & UCL, 2017). Other studies add to this picture of poor diet with data that unhealthy foods are more likely to be consumed by low SES groups. Data

from the UK Cohort Millennium Study, for example, showed that low SES adolescents have a high intake of fast foods and sweetened drinks compared to high SES adolescents (Noonan, 2018).

Other measures of a healthy diet such as consuming less fat and consuming low-fat milk are also correlated with SES (McLaren, 2007). In a review of 30 studies, from across the international literature, Darmon and Drenowski (2008) found a relationship between diet quality and socioeconomic status. Individuals in high SES groups were more likely to eat a variety of fresh fruit and vegetables, lean meat, fish, low fat dairy and whole grains than individuals of low SES. Diets of the lower socioeconomic groups were also lower in micronutrients and, to a limited extent, associated with consumption of unhealthy types of fat (Darmon & Drenowski, 2008). The review however, did not find a significant relationship between SES and total calorie intake. This may be because of the difficulties in measuring total calorie intake because of under reporting by individuals of calories consumed (particularly prevalent in lower socioeconomic groups) and wastage of food purchased (particularly prevalent in higher socioeconomic groups) (Darmon & Drenowski, 2008).

Another way of studying the relationship between SES and diet is to compare food purchases across different areas. A study carried out in Scotland using food purchase data showed there is an inverse correlation between energy density of the diet and socio-economic status (Barton, Wrieden, Sherriff, Armstrong, & Anderson, 2014). Energy density was lowest in those households that met recommended targets for fat, fruit and vegetable consumption (Barton et al., 2014). Darmon and Drenowski (2008) attempted to explain the observed relationship between diet quality and SES through cost of food, access to healthy food, education, and culture, but concluded that cost was the main factor driving low SES groups towards an energy dense diet. The same research team found, in France, that energy dense diets provide energy at a lower cost than diets comprised of lean meat, fish, whole grains fruit and vegetables (Darmon, Briend, & Drenowski, 2004).

Cost, however, may not be the only explanation for the observed differences in diet by SES. One obvious explanation is that the unhealthy behaviours are pleasurable such that over eating or eating energy dense foods have positive effects on mood, and the cost in terms of perceived well-being of giving them up is high (Backett, Davison, & Mulen, 1994; Pampel et al., 2010). Another possible explanation is that the chronic stress of living in disadvantaged conditions triggers overeating and other unhealthy behaviours (Pampel, Kruger, & Denney, 2010; Ross & Hill, 2013). Yet another explanation is that people in low socioeconomic groups discount the future such that it is not worth investing in healthy diet behaviours as they have no confidence that they will be able to enjoy the benefits of their investment (Audet, Dumas, Binette, & Dionne, 2017; Backett et al., 1994; Pampel et al., 2010).

Gender adds nuance to the relationship between SES and body size. The HSE data (Health and Social Care Information Centre, 2013) show that the pattern of body size distribution is different for men and women with the inverse relationship between body size and SES stronger in women than in men, a finding of particular interest for the Shaping Health research. The same finding is reported in El-Sayed et al.'s (2012) literature review and this review also found that the relationship between childhood deprivation and obesity in adults is stronger in women than in men. Sobal and Stunkard (1989) in a seminal review of the literature found that there was an inverse relationship between obesity and a number of measures of socioeconomic status in women in developed societies. Sobal and Stunkard's review was updated by McLaren in 2007. McLaren's review of the literature confirmed the inverse relationship between obesity and socioeconomic status in women in developed countries, although the association was not as strong as in the earlier review. The relationship was particularly strong for some measures of socioeconomic status such as education, neighbourhood deprivation, occupation and a composite indicator of socioeconomic status. The inverse relationship was less strong for other measures of socioeconomic status such as income, employment and assets. McLaren comments on the reduction in the negative association between social class and obesity between her literature review and the earlier review "although women in higher social strata in developed countries may still be more likely to value and pursue thinness, our obesogenic environment may make it increasingly difficult for women of any class group to maintain resistance" (McLaren, 2007, p33).

The evidence discussed has shown a strong relationship between body size and SES in women. Nevertheless, the diet of low SES women is healthier than that of low SES men. The HSE data show that whilst low SES women failed to meet the guidelines for eating fruit and vegetables, compared to men of low SES, women performed better (HSCIC, 2009; HSCIC, 2013). In a major study across 23 countries, using data from a self-reported questionnaire Wardle et al., (2004) found the same gender disparity. Women were more likely to avoid fat and salt, and eat fibre and fruit, than men. They were also more likely than men to diet to lose weight. Other studies have echoed this finding that women are more interested than men in healthy eating and weight control (Westenhoefer, 2005).

The commitment in women to a healthy diet is however contradicted by their choices of snacks and comfort eating. Women prefer to snack on chocolate, cakes and ice-cream (Kanter & Caballero, 2012; Wansink, Cheney, & Chan, 2003) but compared to men, who are more likely choose meat for comfort eating, they feel less healthy and more guilty (Wansink et al., 2003). The evidence suggests that sweet unhealthy food is a treat for women, particularly in low SES areas (Bissell, Peacock, Blackburn, & Smith, 2016) and for some women it may have replaced smoking which has been

identified as a way of coping with difficult life conditions and was prioritised even in times of financial hardship (Graham, 1987).

What women eat not only influences their health but it may also have an impact on the health of the next generation. Pregnancy is a time when women think a lot about their diet (Arden, Duxbury, & Soltani, 2014; Dencker et al., 2016) and maternal diet has an impact on the baby. Maternal obesity and gestational weight gain are believed to result in over-nutrition of the foetus which in turn contributes to obesity and metabolic disturbances in the offspring. The "development overnutrition hypothesis" states that high maternal glucose together with high free fatty acid and amino acid concentrations result in permanent changes in appetite control, neuroendocrine function and/or energy metabolism in the foetus (Drake & Reynolds, 2010, p387). Evidence is accumulating that the environment that the foetus experiences affects life expectancy after birth as measured by telomere length, like DNA methylation a measure of aging (Martens, Plusquin, Gyselaers, De Vivo, & Nawro, 2016). Compared to women of standard pre-pregnancy weight women who are overweight or obese are more likely to give birth to children with shorter telomere lengths, an indicator of reduced life expectancy (Martens et al., 2016). Reducing the incidence of overweight and obese mothers would, according to this research, reduce the likelihood of obesity in the next generation and therefore improve the health of the population.

3.3. Physical activity and health: Less contested terrain

Many people today are sedentary[6] and the sedentary lifestyle is associated with NCDs which adversely affect health (Ekelund et al., 2015). It is not always easy to disentangle the impact on health of a sedentary lifestyle from that of diet, but in this section the evidence of how inactivity can damage health and conversely how physical activity can benefit health, independently of body size, is presented.

The first study to make a connection between a sedentary lifestyle and health, carried out more than 50 years ago, examined the health status of bus drivers and bus conductors the former having a sedentary occupation and the latter an active one, walking around buses and up and down stairs collecting fares. The bus drivers were found to be at an increased risk of coronary heart disease compared to the conductors (Morris, Heady, Raffle, Roberts, & Parks, 1954; Morris & Raffle, 1954). Since the publication of this work the findings have been replicated in many other studies and the relationship between sedentary behaviour and poor health extended to include all types of cardiovascular disease (Lee et al., 2012; Matthews et al., 2012), type 2 diabetes (Lee et al., 2012) and

[6] Defined by the Sedentary Behaviour Research Network as "any waking behavior characterized by an energy expenditure ≤1.5 metabolic equivalents (METs), while in a sitting, reclining or lying posture" https://www.sedentarybehaviour.org/sbrn-terminology-consensus-project/#consensus-definitions

some cancers (Lee et al., 2012; Matthews et al., 2012). It is therefore not surprising that lack of physical activity is linked to reduced life expectancy (Wen et al., 2011).

In the developed world the trend is away from an active lifestyle towards increased sedentary behaviour (Matthews et al., 2012). This is largely due to the type of work that people are doing, the use of private cars, and leisure time behaviours which are often screen based. The evidence is accumulating though, that the adverse impact on health of a sedentary lifestyle can be mitigated by undertaking physical activity (Chau et al., 2013; Ekelund et al., 2016; Jalayondeja et al., 2017). The dangers to health of a sedentary lifestyle are recognised in the UK in current exercise on referral programmes prescribed by GPs and other health professionals (paid for by the NHS through Clinical Commissioning Groups) for individuals with chronic health conditions such as cardiovascular disease, chronic obstructive pulmonary disease and mental health issues including depression and anxiety. As part of their public health responsibilities many local authorities run "exercise for all programmes" with a range of low-cost activities such as walking, ballroom dancing and gardening. Employers are being encouraged to break up long periods of sitting for their staff and support a physically active commute (Jalayondeja et al., 2017).

Not only does physical activity protect individuals from the dangers of a sedentary lifestyle it has specific benefits for health. This can be seen both in terms of a positive influence on the risk factors associated with cardiovascular disease and diabetes, such as hypertension and impaired glucose tolerance (Hardman & Stensel, 2003; Kokkinos, Sheriff, & Kheirbek, 2011), and in how individuals report their health and well-being (Bacon, Stern, Van Loan, & Keim, 2005; Mensinger, Calogero, Stranges, & Tylka, 2016; Scully, Kremer, Meade, Graham, & Dudgeon, 1998; Stubbe, de Moore, Boomsma, & de Geus, 2006). The benefits of physical activity extend to individuals with other health related risk factors, for example, cardiorespiratory fitness protects against the development of cardiovascular disease, even in obese individuals (Blair & Church, 2004; Gaessar, Angadi, & Sawyer, 2011). The term fitness here is important because a sedentary lifestyle with occasional episodes of activity seems not to be the right combination to protect against the development of NCDs: exercise has to be maintained to have a protective effect (Hardman & Stensel, 2003). It is however beneficial for health, if physical activity is undertaken continuously across the life course or taken up in middle age (Saint-Maurice et al., 2019). For some diseases physical activity alone is not enough to protect an individual, it is not, for example, sufficient to overcome the danger of central adiposity in the development of type 2 diabetes (Weinstein et al., 2004).

In a comprehensive review of the literature for the development of the 2018 Physical Activity Guidelines in the USA, Piercy et al. (2018) provide a full list of the benefits of physical activity to the

health of adults. As well as reducing all-cause mortality, preventing weight gain after weight loss, improving bone health and improving quality of life, physical activity protects against the risk of developing cardiovascular disease, type 2 diabetes, some cancers, dementia, depression and anxiety (Piercy et al., 2018).

The conclusion to draw from this wide-ranging literature is that the adverse effects of a sedentary lifestyle on health and the beneficial effects of physical activity are well understood and are not considered controversial. Moreover, there appears to be agreement that a dose response relationship exists for the benefits of exercise on health. Ascertaining the amount of physical activity that represents a healthy lifestyle behaviour is important to provide appropriate guidance to the public so the literature on the amount and type of physical activity required to accrue health benefits is considered next.

In a review covering the benefits of physical activity on reducing the mortality risk of cardiovascular disease Kokkinos et al. (2011) conclude that physical activity of 1,000 Kcalories a week is required to reduce risk factors by 20-30% with larger reductions in risk factors seen with further increases in physical activity, but with a limit on the benefit of physical activity such that very high energy expenditure could be harmful to some individuals. A similar evidence base to that reviewed by Kokkinos et al. (2011) was used to develop the current UK and US government guidelines on physical activity which recommend a minimum of 150 minutes of moderate physical activity per week plus strength training (Office of Disease Prevention and Health Promotion, 2018; UK Chief Medical Officers' physical activity guidelines, 2019).

The UK public health guidelines assume that physical activity is being undertaken as a leisure time activity or as part of daily activities such as travelling to work or work around the house. More difficult to assess is the health value of physical activity undertaken as part of daily paid work. Despite the overall trend toward more sedentary lifestyles some individuals still have physically active jobs. There is evidence that, for health benefits, not all physical activity is equal and that physical activity undertaken in the course of work does not provide the same health benefits as leisure time physical activity. A large-scale study of Danish employees (Holtermann, Hansen, Burr, Søgaard, & Sjøgaard, 2012) showed that whereas leisure based physical activity was associated with a reduction in long term sickness absence, the opposite relationship was seen with occupational physical activity. Indeed, there was a dose response relationship between occupational physical activity and long-term sickness absence. This finding is supported by a review of the literature carried out by Li, Loerbroks and Angerer (2013); they found that leisure based physical activity was cardioprotective but occupational based physical activity had a small positive association with

cardiovascular disease. These differences may be due to the nature of the physical activity itself. Work based physical activity usually involves heavy lifting, standing for long periods and repetitive activities whereas leisure based physical activity is associated with the dynamic use of multiple, large muscle groups, increased body metabolism and the opportunity to rest (Holtermann et al., 2012). Leisure based physical activity is more likely to occur in high SES groups (Beenackers et al., 2012; Gidlow, Johnstone, Crone, Ellis, & James, 2006; Kirk & Rhodes, 2011; Salmon, Owen, Bauman, Schmitz, & Booth, 2000).

3.3.1. Physical activity and low SES

The relative value for health of work and leisure based physical activity is of relevance for population health because the likelihood of undertaking leisure time physical activity depends on SES (Beenackers et al., 2012). In the one million individuals in England who participated in the Active People Surveys (Farrell, Hollingsworth, Propper, & Shield, 2013) there was a strong relationship between physical activity and SES for all leisure based physical activity including activities that are inexpensive to access such as walking. More than 30% of the lowest income group were considered to be physically inactive compared to less than 10% of the highest income group (Farrell et al., 2013). Moreover, for all ethnic groups except Chinese, women were less active than men. The pattern was established in young adults and increased with age (Farrell et al., 2013). A similar pattern of results was seen in the 2012 HSE (HSCIC, 2013) which measured the number of respondents that achieved the recommended 150 minutes per week of moderately intensive physical activity and found that whilst 63% of women in the highest quintile for income met the guideline this fell to 47% in the lowest income quintile. The same pattern is seen in the international literature, see review by Gidlow et al., 2006. Delving further into the relationship between leisure time physical activity and SES reveals that across Europe, it is education level rather than occupation that is the determining SES parameter, with less well-educated individuals less likely to participate in leisure time physical activity than people with higher educational levels (Mäkinen et al., 2012).

The literature provides a clear picture that the adoption of healthy diets and participating in physical activity would improve the health of the population and particularly low SES groups where less healthy behaviours are more common. Public health interventions have sought to support the adoptions of healthy lifestyle behaviours, but without significantly impacting the social gradient in health. There must therefore be barriers in place that prevent the adoption of healthy lifestyle behaviours by low SES groups and these are considered next with studies on women prioritised.

3.4. Barriers to the adoption of healthy lifestyles

A variety of research methods have been used to collect data on the barriers to the adoption of healthy lifestyles: quantitative surveys, focus groups and semi-structured interviews. Research with

low SES women finds that lack of time is often cited as an explanation for poor diet (Andajani-Sutjahjo, Ball, Warren, Inglis, & Crawford, 2004; Barton, Kearney, & Stewart-Knox, 2011; Buckman et al., 2014; Inglis, Ball, & Crawford, 2005; Kamphuis, Van Lenthe, Giskes, Brug, & Mackenbach, 2007; Lawrence et al., 2009; MacFarlane, Abbott, Crawford, & Ball, 2010; Peterson, Schmer, & Ward-Smith, 2013; Shaw, 2012) and for low levels of physical activity (Burton, Turrell, & Oldenburg, 2003; Chinn, White, Howel, Harland, & Drinkwater, 2006; Peterson et al., 2013). Alongside lack of time to eat a healthy diet women from low socioeconomic groups report that they do not enjoy the taste of healthy food (Barton et al., 2011; Dammann & Smith, 2009; Eikenberry & Smith, 2004; Heading, 2008; Inglis et al., 2005; Kamphuis et al., 2007; Waterlander, De Mula, Schuit, Seidel, & Steenhuis, 2010; Withall, Jago, & Cross, 2009), they have insufficient knowledge of healthy food (Andajani-Sutjahjo et al., 2004; Heading, 2008; Teuscher et al., 2015; Waterlander et al., 2010), that healthy food is difficult to prepare and that they do not have the appropriate cooking skills (Dammann & Smith, 2009; Eikenberry & Smith, 2004; Inglis et al., 2005; Lawrence et al., 2009) and that they do not value healthy eating (Lawrence et al., 2009). Similarly, for physical activity, women report that they do not enjoy sport (Chinn et al., 2006) and that poor health (Brown, Brown, Miller, & Hansen, 2001) or being overweight or obese (Meadows, 2014) prevents them from exercising. Women that are overweight feel stigmatised and not welcomed by organizations providing physical activity (Burton et al., 2003; Cleland et al., 2014) and this can lead to exercise avoidance (Vartanian & Shaprow, 2008). Women report that it is difficult to change behaviour (Buckman et al., 2014; Chang, Nitzke, Guilford, Adiar, & Hazard, 2008; Eikenberry & Smith, 2004; Heading, 2008; Kamphuis et al., 2007; Withall et al., 2009) and that they have no desire to change their behaviour (Andajani-Sutjahjo et al., 2004; Buckman et al., 2014; Cleland et al., 2014; Dammann & Smith, 2009; Kamphuis et al., 2007; Peterson et al., 2013; Withall et al., 2009) because the family preference is for the current lifestyle behaviours (Burton et al., 2003; Chang et al., 2008; Eikenberry & Smith, 2004; Lawrence et al., 2009; MacFarlane et al., 2010; Peterson et al., 2013; Romeike, Abidi, Lechner, de Vries, & Oenema, 2016; Waterlander et al., 2010; Withall et al., 2009). Women may not receive support from healthcare professionals for healthy lifestyle behaviours as discussions on weight and obesity may be avoided by healthcare professionals (Peterson et al., 2013). Low SES women may find it difficult to access information on physical activity opportunities in their area (Bove & Olson, 2006; Burton et al., 2003; Cleland et al., 2014).

Several studies based on surveys, focus groups, structured or in depth interviews, report on the perceived cost for low SES women in accessing both a healthy diet and physical activity (Bove & Olson, 2006; Cade, Upmeier, Calvert, & Greenwood, 1999; Chang et al., 2008; Eikenberry & Smith, 2004; Heading, 2008; Inglis et al., 2005; Inglis, Ball, & Crawford, 2008; Kamphuis et al., 2007;

Lawrence et al., 2009; Peterson et al., 2013; Waterlander et al., 2010; Withall et al., 2009). Whilst a certain level of income is required to purchase healthy foods and gym membership, SES impacts health behaviours at other levels of the socioecological model of health. A low SES area may, for example, provide easy access to unhealthy takeaway food outlets (Barton et al., 2011; Inglis et al., 2005;, Inglis et al., 2008; Kamphuis et al., 2007; Withall et al., 2009) and conversely difficulty in accessing shops selling healthy food (Bove & Olson, 2006; Eikenberry & Smith, 2004; Inglis et al., 2005; Inglis et al., 2008; Lawrence et al., 2009; Peterson et al., 2013; Withall et al., 2009) and difficulties accessing physical activities (Andajani-Sutjahjo et al., 2004; Bove & Olson, 2006; Burton et al., 2003; Chinn et al., 2006; Cleland et al., 2014; Peterson et al., 2013). Women living in a low SES area may fear leaving home to undertake physical activity (Chinn et al., 2006; Cleland et al., 2014; Kamphuis et al., 2007; Peterson et al., 2013; Withall et al., 2009).

These studies together show that low SES women face multiple barriers in adopting healthy lifestyles. These barriers operate at different levels of the socioecological model of health and because of the complexity and the interaction of factors they are best explored through qualitative work. One such study (Greenhalgh & Carney, 2014) carried out in the US challenged the prevailing view that the higher rate of obesity in Hispanics is due to ignorance about the benefits of healthy eating and exercise. Hispanics are characterised in the public health literature as being "lazy, irresponsible and a drain on social services" (Greenhalgh & Carney, 2014, p268). This categorisation, however, ignores structural factors that contribute to the high rates of obesity such as nutrient poor food environments, poor exercise environments and unregulated marketing of unhealthy foods to children. In the study, data was collected from Hispanic women through ethnographic essays and qualitative interviews and it was found that all the participants knew what was required to eat healthily and exercise. The authors found that the reasons for unhealthy choices were that unhealthy foods were affordable and convenient; their partners preferred the unhealthy food options and the women found themselves isolated and stressed as a result of their low wages and multiple responsibilities in the home. Two qualitative studies carried out in the Netherlands with low socioeconomic status groups (Romeike et al., 2016; Teuscher et al., 2015) also found that unhealthy meal choices were dictated by children and other family members. These studies in the Netherlands found that overall knowledge of what constituted a healthy diet was good, although there were some misconceptions on how diet influenced health. Similarly, the benefits of exercise were understood but lack of time and isolation (no one to exercise with), were major barriers to participation in physical activity.

The evidence as a whole on the barriers to the adoption of a healthy lifestyle demonstrates that unhealthy food is perceived by individuals of low SES to be cheaper, tastier, easier to obtain and easier to prepare. If stretched financially the focus for low SES groups may be on quantity of food rather than quality. Low SES individuals are less likely to participate in physical activity as they do not anticipate benefits, have to overcome more barriers and receive less encouragement. The citing of accessibility, cost and motivation by participants in research as reasons for unhealthy behaviours, however, may be masking an underlying behaviour which is not to prioritise healthy eating and exercise. In women this may be because they prioritise their caring role and because they are influenced by their relationships with others, including family members as well as by external social pressures.

The literature reviewed so far in this chapter has demonstrated the impact of diet and physical activity on health and the influence of SES on these behaviours. It has also shown the impact the health of mothers can have on the next generation. This thesis is particularly concerned with the health of mothers of young children and motherhood has its own impact on health and lifestyle behaviours. This is explored in the next section.

3.5. Motherhood and health

In the UK women assume the larger part of the burden of caring for partners, children and parents and as a result are likely to have lower incomes than men and to be of lower SES (Matthews, 2015; Read & Gorman, 2010). Women occupy a high proportion of low paid and insecure jobs and there are fewer women than men in senior professional roles (Bosworth & Kersley, 2015). Men with children have higher employment rates than men without children but the opposite is true for women (Office for National Statistics, 2013). Women are over represented in low pay jobs despite females out performing males in school and higher education (Bosworth & Kersley, 2015). The gender pay gap increases across the life course and grows with age, marriage and parenthood (Bosworth & Kersley, 2015; The Fawcett Society, 2018). The effect on health of lower SES is compounded in women by greater stress, as women are often constrained by family arrangements with limited choice of where they live and work outside the home (Read & Gorman, 2010) leading to less control over their lives and lower self-esteem (Denton, Prus and Walters, 2004). The higher levels of depression seen in women illustrate the increased stress they experience (Read & Gorman, 2010) although to a certain extent the stress is mitigated through women having better support networks than men (Read & Gorman, 2010). Women's health is also influenced by the neighbourhood in which they live. Women living in an area of multiple deprivation are more influenced by their environment than men, possibly because they spend more time in the residential environment (Stafford, Cummins, MacIntyre, Ellaway, & Marmot, 2005).

Thus, it appears that the health of women is more adversely impacted by SES than men's health and that women's roles as carers is an important part of the explanation. Whilst it might seem counter intuitive, adding additional duties through working outside the home, can overcome the poor health associated with a full-time caring role (Cooper, 2002). In a longitudinal study in the US of working mothers that investigated the effect on health of working full time outside the home, being a stay at home mother, working part time or working intermittently, Frech and Damaske (2012), found a positive relationship between working full time outside the home and health, that persisted after controlling for SES. The stay at home mothers appeared to suffer from a double burden comprising the stress of the caring role and the lack of financial resources without paid work. In this study low SES women were the least likely to be in full time or regular paid work outside the home. The authors suggest that isolation, poor social networks and low self-esteem from the lack of recognition of the work undertaken in the home may explain why there are health benefits from regular work outside the home.

Another explanation for the poor health experienced by mothers is the adverse impact on health of pregnancy and childbirth. Mothers may find it difficult to return to a healthy body weight after child birth. Mothers that do not return to their pre-pregnancy weight within six months of giving birth are more likely to become obese and post childbirth weight retention is more likely in low SES women, those that were overweight prior to the pregnancy and mothers that have more than one child (Amorim Adegboye & Linne, 2013). Pregnant women are unlikely to meet guidelines for physical activity (Richardsen et al., 2016) despite physical activity being shown to have health benefits in pregnancy (Piercy et al., 2018) and this lack of exercise may exacerbate weight gain. Meeting physical activity guidelines in pregnancy is particularly low in groups with a low level of education and in South Asian groups living in Europe (Richardsen et al., 2016).

The mother's role in giving birth to children and then the caring role that follows the birth thus has a significant effect on health. In the literature the caring role is considered in the light of the theory of the "Ethic of Care" and this theory together with its impact on the health of mothers is discussed in the next subsection.

3.5.1. The Ethic of Care

According to the theory of the Ethic of Care, the difference in health between men and women may be traced to their different life paths. A fundamental difference between the paths that men and women follow in their lives was described by Gilligan in 1982. She described the path that women follow as an "Ethic of Care" whilst men follow an "Ethic of Justice" path. She states that this means that whilst men are seeking increased detachment and fairness, women in contrast, are seeking to make more connections, are driven by a desire to prevent hurt to others and measure their worth in

terms of the care they provide to others. As a result, women place the needs of their relationships above their own needs as an individual:

> "Women's place in man's life cycle has been that of nurturer, caretaker, and helpmate, the weaver of those networks of relationships on which she in turn relies" (Gilligan, 1982, p17).

The pursuit of the Ethic of Care has implications for the health of mothers. Many mothers sacrifice their own needs to those of their children and partners (Bialeschki & Michener, 1994; Currie, 2004; O'Brien, Lloyd, & Riot, 2017; Sutherland, 2010). In their book "The mommy myth: The idealization of Motherhood and how it has undermined all women" Douglas and Michaels (2004) make it clear just how difficult it is for mothers to take time for themselves in this environment:

> "…if you were a plain regular mother, and you made the mistake of having a couple of your own needs and desires, ones that actually had nothing at all to do with your children, then you were a threat to your own children and to the institution of motherhood itself" (p143).

Qualitative research finds that women pursing this ideology feel guilty if they choose to be away from their family pursuing their own activities (O'Brien et al., 2017). Moreover, the investment of time and energy mothers put into their families often means that they do not have the capacity to take on activities outside the home (O'Brien et al., 2017). Women living according to this ideology do not blame the home for absorbing all their time and energy, instead they view themselves as lazy for not having sufficient energy to take on these additional activities. They feel that as mothers they do not have an entitlement to leisure time (O'Brien et al., 2017; Shaw, 1994). As a result, mothers do not have the time to pay attention to their own health needs:

> "Good Mothers will remain on call, putting their own needs on hold" (Currie, 2004, p226).

Mothers often describe childcare and their household work as an all-encompassing occupation taking up all of their time. Whilst women acknowledge the importance of leisure, they do not feel able to indulge themselves by taking time off from their other roles whilst they have responsibilities for childcare (Bialeschki & Michener, 1994), and they may experience conflict if they switch focus to their own needs (Henderson & Allen, 1991). Whilst these last two observations are more than twenty years old the more recent literature cited above indicates that little has changed.

If for some reason mothers do not have to attend to childcare, in many cases they use the time to catch up on household chores. Some mothers are so bound up in their childcare and household responsibilities that they have lost the ability to use their time differently. A qualitative study carried out with women with dependent children living in low SES areas of Dublin revealed that when the children were taken away on holiday, some women used the time for themselves to

explore the city and engage in new activities, but many did not know what to do with their time and described themselves as lonely and unhappy in the absence of their children (Quinn, 2010). This means that women often wait until their children are older before returning to, or taking up physical activity (Koca, Henderson, Asci, & Bulgu, 2009), and even then they may need to negotiate with their partners or other family members for the time away from the home and other responsibilities, for example by explaining that participating in physical activity will make them better able to undertake all their caring work (Koca et al., 2009). High SES women appear to be more able than low SES women in negotiating time away from their childcare and household responsibilities to undertake physical activity (Brown et al., 2001).

A range of different types of studies, quantitative and qualitative, show that whilst women with children want to be physically active, they find it difficult to do so (Brown et al., 2001; O'Brien et al., 2017; Prince et al., 2016). Parenthood has the greatest negative impact on the likelihood that a woman will exercise and married women with children are the group least likely to exercise (Brown et al., 2001; Verhof, Love, & Rose, 1993) particularly if their children are under five years old (Hamilton & White, 2010). Moreover, mothers with children that do find time for physical activity may be insufficiently active to derive health benefits from the activity (Brown et al., 2001). In this field low SES women are an under researched group, but the research that is available suggests that low SES women exercise less than more affluent women (Santos, Ball, Crawford, & Teixeira, 2016) and that they need to negotiate with their families for the time and money to undertake physical activity (Koca et al., 2009). A number of factors have been identified that determine the likelihood that mothers will take part in physical activity including support from their partners with childcare and housework (Hamilton & White, 2010), encouragement from friends (Hamilton & White, 2010), sufficient funds available (Brown et al., 2001) and a determination to overcome barriers to exercising (Jackson, Handcock, Burrows, & Hodge, 2006). Some mothers are able to carve out from their busy day, time for physical activity. These women report pleasure in participating in physical activity and relish the "non-mum" time (O'Brien et al., 2017).

The prevalence of the Ethic of Care and the need for mothers to justify having time for physical activity away from their childcare and home responsibilities runs counter to today's ideas of sharing and equality in relationships, with both partners shouldering the responsibilities of managing the home and childcare. The reality for mothers is that they continue to take on the burden of the childcare (Kay, 1998; Park, Allegra Smith, & Correll, 2008) and the preparation of family meals (Parsons, 2014; Parsons, 2015). Whilst it is accepted that women can perform well in the work place the ideal mother is expected to be always available for her children (Hodges & Park, 2013), even if caring responsibilities take a toll on the women's health (Artazcoz et al., 2004).

The evidence presented in this section shows that the relatively poor health of women and mothers arises first because they are more likely than men to be of low SES, to a large extent because of their caring roles, secondly directly through the impact of pregnancy and childbirth, and thirdly indirectly through the adoption of a life course where caring responsibilities take priority over personal needs making it difficult to adopt healthy lifestyle behaviours. In the next section the current public health response to encourage the adoption of healthy lifestyle behaviours and reverse this disadvantage is considered.

3.6. The public health response to promote healthy lifestyle behaviours

Despite the differences in men and women's health outcomes and health behaviour, and the different contexts within which this occurs, at national level the public health approach has not been gender specific. Instead interventions to encourage the adoption of healthy lifestyles are provided to the whole population, for example there is official guidance as to what constitutes a healthy diet and the appropriate amount of physical activity. The drive to achieve adoption of these guidelines is supported through public health promotional activities designed to reach the whole population. Alongside this guidance there are specific public health interventions targeting either the individual or the population as a whole, and again these are only rarely gender specific.

3.6.1. Public health guidance on diet and physical activity

Public Health England provides guidance on the constituents of a healthy diet for adults (Public Health England, 2016b). This guidance covers total calories, macronutrients and micronutrients and is the basis for the calculations of recommended daily amounts on food labelling. The gender difference is acknowledged in this advice in terms of the total number of recommended calories and the amount of each macronutrient that should be consumed. The Department of Health provides guidance on physical activity for adults, with no gender difference (UK Chief Medical Officers' physical activity guidelines, 2019). The guidance recommends 150 minutes of moderate intensity activity such as brisk walking or cycling a week and suggests 30 minutes activity on at least five days to achieve this. The guidance also recommends strength training twice a week which can be achieved by using weights in the gym or by daily activities such as carrying groceries. Finally, the guidance recommends against sedentary behaviour. Guidance issued in other countries is similar (France physical activity factsheet, 2018; Füzéki, Vogt, & Banzer, 2017; Office of Disease Prevention and Health Promotion, 2018)

Despite the ubiquitous nature of public health guidance on diet and physical activity it is not without its critics. This criticism however, focuses on the nature of the guidance and the evidence on which it is based, rather than on its relevance for women and in particular mothers. In the area of diet, the focus on BMI rather than other indicators of health has been criticised, as has the emphasis on

calorie balance and the replacement of carbohydrates for saturated fats in the diet (Hann, Frawley, & Spedding, 2017). The Public Health Collaboration (2016) takes issue with the current guidance on diet, recommending instead that saturated fats should not be avoided provided they are part of whole food, that fats should not be restricted to 35% of total calorie intake, again provided they are eaten as part of whole foods, and that the amount and type of carbohydrate should be regulated in the diet to restrict glycaemic load. Groups that support and disagree with the current guidance concur that the current guidelines are confusing for example recommending fruit which if eaten in the form of smoothies may lead to significant sugar intake (Hann et al., 2017). Mann et al., (2016) counter this by arguing that the current guidelines can accommodate a wide range of healthy eating options and that the criticisms of the guidance serve to confuse both lay people and medical professionals. This too though can be problematic as Forouhi, Misra, Mohan, Taylor and Yancy (2018) argue, saying that current dietary advice may not be sufficiently detailed to prevent the development of diabetes because people are not being given the right information on the macronutrient content of the diet. For physical activity it has been argued that whilst the guidelines are evidence based recommending 150 minutes of physical activity is seen as an unobtainable target by some people and not worth trying to achieve, and that low intensity physical activity should also be referenced to encourage the inactive to undertake some physical activity (Füzéki & Banzer, 2018). This approach may be particularly valuable for groups that have difficulty accessing formal exercise programmes including low SES groups and women (Füzéki & Banzer, 2018).

Backett et al. (1994) in an early qualitative study in Scotland Wales involving men and women identified a degree of distrust in the message, and cultural reasons that prevented the adoption of healthy behaviours. Arden et al. (2014) in a more recent qualitative study where data was collected from UK parenting forums and focused on women, found the same distrust of the health promotion messages, in this case for weight gain in pregnancy, and the need for a more personalised health behaviour message. Following all public health advice may be seen as impossible and instead people make the decision to trade off good and bad behaviours for example eating some healthy food as a trade-off for eating a lot of junk food (Backett et al., 1994). Reporting on social media often focuses on small risk factors rather than major risk factors with the unimportant messages crowding out the important ones (Ioannidis, 2019). People realise that advice changes and that the situation is complicated so they may reject simplistic health messaging and are pleased when the authorities appear to have got something wrong and have to change their advice (Frankel, Davison, & Davey Smith, 1991). To be effective public health messaging needs to be presented in a way that is meaningful to the lay population and provides the information needed to make an informed choice taking into account cultural values (Allmark & Tod, 2006; Arden et al., 2014).

No published research in England has looked specifically at the response of low SES women to general public health messaging on diet and physical activity. One UK study which collected information from Intranet chat rooms and an assumed middle class audience (Arden et al., 2014) on healthy weight before, during and after pregnancy, grouped the reasons that women did not follow official advice into three areas: lack of control, risk perception and confused messages, and concluded that women want "personalised, practical advice delivered sensitively" (Arden et al., 2014, p8). A qualitative study from Canada with data collected from semi-structured interviews on the response of a group of older women to public health messaging on the benefits of a healthy diet and physical activity (Audet et al., 2017) found that low SES groups are less likely to invest in weight management and physical activity than high SES women. The explanation for this difference response to the public health messaging was that low SES women invest time and effort in dealing with short term needs and do not have sufficient resources to also invest in the future and did not believe they had the capacity to change their behaviour (Audet et al., 2017). Another interview based Canadian study working with women from disadvantaged backgrounds to increase community participation in public health programmes found that individual agency could be increased if women were welcomed when they joined the programme, treated with respect and fully supported (Ponic & Frisby, 2011). Even so the study revealed that there were many factors at play and that both structure and agency had a role to play in determining whether women chose to access the programmes (Ponic & Frisby, 2011). This is in line with work carried out in Southampton with young women of low SES for which an intervention "Healthy Conversation Skills" was designed to support healthcare professionals working with young women to encourage self-efficacy skills so that the women could be empowered to overcome structural barriers to behaviour change (Barker et al., 2016; Barker et al., 2017; Barker et al., 2018). Barker et al.'s study (2016) takes advantage of pregnancy as a special time at which women are particularly susceptible to advice on adopting healthy lifestyle behaviours.

A further concern with public health guidance is the interpretation of the guidance in public health campaigns. There should be a linear progression from the research on which the guidelines are based, through to policy, marketing strategy and promotional messages (Piggin, 2012). In a study of the UK Department of Health's campaign "Change4Life" introduced in 2009 to encourage healthy lifestyles, Piggin (2012) finds many instances where this was not the case. For example, whereas the research and policy had recommended separating out messages about diet and physical activity the two behaviours were combined in the marketing strategy and messaging to the extent that they were joined together in the main campaign slogan "Eat well, move more, live longer" (Piggin, 2012). He found examples where the messaging was in direct conflict with the research, such as the

messaging blaming obesity on modern life when the research had showed a significant element of individual agency (Piggin, 2012). Even if the messages are based strongly on the research and policy base, they can become muddled in the promotion phase. Knox, Biddle, Elsiger, Piggin and Sherar (2015) investigated public health campaigns to reduce sedentary behaviour and found that the messaging confused reducing sedentary behaviour and increasing moderate to vigorous physical activity, connecting the two behaviours and implying that not being sedentary contributes to physical activity targets, rather than communicating that sedentary behaviour was a health risk in its own right.

Despite these limitations public health campaigns are used extensively to implement public health guidance and change health behaviours by exposing large populations to the messages (Wakefield, Loken, & Hornik, 2010). In a major review of the international literature Wakefield et al. (2010) found that public information campaigns are more likely to be successful in inducing one-off behavioural change, for example attending a medical screening appointment, than a long-term change in habit, for example, adopting a healthy diet. They also found that public health information campaigns were more likely to be successful if the information was accompanied by other supportive activities, for example for diet, by the provision of healthy foods, or for stopping smoking, with price increases and the prevention of smoking in public places (Wakefield et al., 2010). Kelly and Barker (2016) argue that the situation is more complex and that education programmes underestimate the difficulty in achieving health related behaviour change. They argue that it is not enough just to give people information without tackling the structural and commercial forces that are supporting the behaviour the health campaign is trying to change (Kelly & Barker, 2016). They make the point that behaviours are embedded in social life and individuals have their own reasons for persisting with a behaviour that may appear to the health educators to be irrational (Kelly & Barker, 2016). Kelly and Barker (2016) argue that public health campaigns should empower and motivate individuals rather than provide them with information. All this suggests that providing information to busy mothers is not sufficient to bring about a change in lifestyle behaviour.

The next two sections look at the type of public health interventions that go beyond the provision of information, first interventions targeting the individual and secondly interventions targeting the environment. In the two sections, literature referring to mothers and low SES groups is used where it is available.

3.6.2. Interventions targeting the individual

Despite the acknowledged difficulties in achieving behaviour change without taking into account social, structural and commercial factors, a large proportion of interventions to encourage weight loss, increase physical activity and improve diet are aimed at individuals. These interventions can be

described as one of, or a combination of, weight reduction diet, exercise programme, behavioural therapy or education and counselling, with variable success and response rates. They may be aimed at healthy individuals or individuals that are experiencing poor health, or manifesting the risk factors of cardiovascular disease and type 2 diabetes, such as high blood pressure and increased waist circumference. These interventions are more successful in groups already experiencing disease symptoms than in apparently healthy groups (Brown et al., 2009; Ebrahim et al., 2011; Everson-Hock et al., 2013; Wakefield et al., 2010) although a systematic review of mostly US studies found interventions aimed at improving diet, reducing inactivity and/or increasing physical activity in healthy individuals led to modest improvements in metabolic health and improved health behaviours (Patnode, Evans, Senger, Redmond, & Lin, 2017). Whilst the systematic reviews include mixed and single sex groups, the results are rarely reported by gender although there are more female participants in the studies so it can be confidently stated that the findings apply to women.

Low SES groups have the most to gain from behaviour change interventions but a mixed methods literature review found that interventions are less successful in low SES groups, the most likely explanations being the cost of accessing a healthy diet and exercise, poor access to amenities, lack of knowledge and skills, insufficient time and desire to conform to social norms, although a failure to address the deeper-level social, psychological and pragmatic concerns of the participants may also play a part (Everson-Hock et al., 2013). Everson-Hock et al.'s (2013) review did not report results by gender but again there were more female participants in the reviewed studies, so the results apply to women. If interventions are not reaching low SES groups, public health interventions targeting individuals may be contributing to health inequalities because the messages are disproportionately taken up by higher socioeconomic groups (McGill et al., 2015; Michie, Jochelson, Markham, & Bridle, 2009).

A number of approaches have been tried in an effort to encourage behaviour change in low SES groups, one of which is to provide a financial incentive. In a review of 34 studies, Mantzari et al. (2015) found that financial incentives did lead to positive health behaviours in some parameters, including weight loss, but not increased physical activity (the effect of gender was not analysed in this review). The weight loss effect lasted for up to 18 months but weakened over time and disappeared on withdrawal of the financial incentive. Individuals from low SES groups were more likely to change behaviour in response to financial incentives than individuals from high SES groups.

There is evidence that by working with groups and by including people in the development of the interventions that their efficacy can be increased. Quantitative and qualitative studies have suggested that in disadvantaged communities, group and community interventions may be more

successful than interventions targeting individuals because the group and the community have a strong influence on the individual's agency (Broeder, Uiters, Hofland, Wagemakers, & Schuit, 2018; Casey, Eime, Ball, & Payne, 2011; Cleland, Tully, Kee, & Cupples, 2012). Diet and exercise interventions that work with groups, in a critical appraisal of original research, have been shown to be successful in low SES women when they are both peer led and healthcare professional led (Moredich & Kessler, 2014). Moredich and Kessler's review (2014) found that low SES women benefit from working together in a group and in a space they consider safe. Qualitative research, in a predominately female group, has shown that low SES individuals with access to support groups experience a health benefit in belonging to the group (Cattell, 2001). In the commercial sector, research carried out by the health club chain Virgin Active found that women are more likely to exercise if they exercise with friends rather than alone and that with friends, they push themselves harder (Daily Mail, 2013). Commercial weight loss programmes like Weightwatchers and Slimming World exploit this effect and use group support to encourage weight loss alongside the provision of diet information and recommendations. Commercial weight loss programmes exploit the power of the group further: Weightwatchers provides a member only online community[7] and Slimming World promotes the value of the group to support weight loss encouraging members to help each other change habits and share healthy ideas [8]. The benefits of the group in providing appropriate contacts and acceptance to individuals wishing to lose weight, which may not be so easily found outside the group, are clear (Haire-Joshu & Hill-Briggs, 2018). A qualitative study in 76 people, mainly women, by Thomas, Hyde, Karunaratne, Kausman and Komesaroff (2008) showed, however, that there can also be disadvantages arising from a group of people getting together to try and lose weight, including a culture of self-blame and low self-esteem. If the purpose of the group is to lose weight, individuals who are either more successful than average in the group, or conversely less successful, may feel guilty, and therefore may not get benefit from group membership (Thomas et al., 2008). Outside of the worlds of weight loss and gyms the power of groups has been harnessed by a number of organizations working in England to improve the health of disadvantaged groups. Examples include Well North[9] which is working in ten towns in the north of England to reframe public health working closely with the people in the community and Health for All[10] working in Leeds to reduce health inequalities through increasing community participation, supporting 250 local groups each year.

[7] https://www.weightwatchers.com/uk/how-it-works
[8] https://www.slimmingworld.co.uk/amazing-support/amazing-support.aspx
[9] https://www.wellnorth.co.uk
[10] http://www.healthforall.org.uk/

Further support for the individual can come from changes to the environment that support individual behaviour change. Interventions targeting the environment can act at various levels, fiscal, social and structural and the literature in this area is reviewed in the next section.

3.6.3. Interventions targeting the environment

Changing the environment is a controversial area for public health interventions as it is seen as a difficult area to tackle, requiring the cooperation of multiple players and a large budget. Great advances in public health have however been achieved with interventions that have tackled the environment. Examples include the provision of clean water (Wohl, 1983) and the fiscal steps to control tobacco usage through taxation, labelling, restricting availability and the ban on smoking in public places (Chaloupka et al., 2011; Smith, 2013). Whilst environmental interventions to encourage healthy eating and physical activity have not had the major impact of these two examples, there are some interesting examples of environmental interventions in this field.

Denmark, Finland, France, Hungary, Mexico and some states in the USA have all introduced taxes on unhealthy foods and beverages with varying degrees of success (OECD, 2014; Redondo et al., 2018; Roberto et al. 2020). More recently the UK has followed this course through the adoption of the soft drinks levy. Experience in Mexico and the US has demonstrated that with the right degree of government support these measures can be well received by the population, even in the face of strong opposition from the food industry (OECD, 2014; Redondo et al., 2018). In Hungary the introduction of the tax led to reformulation of products to avoid the tax which can be viewed as a success, but in Denmark the tax was abolished a year after its introduction, in part because it was found to be regressive (OECD, 2014). There is a concern that these fiscal measures disproportionately affect low SES individuals because their diets contain a larger proportion of these "unhealthy" foods and because they are less able to afford the higher prices, although a review of experimental studies of fiscal changes did not find a consistent response by socioeconomic status or gender on food purchasing in response to price changes (Mizdrak, Scarborough, Waterlander, & Rayner, 2015). A systematic evidence review of studies mostly from the US (no studies from the UK were included) indicated that whilst increases in prices reduced the consumption of unhealthy foods, subsidies to increase the consumption of healthy foods had a bigger effect on diet; gender was not analysed in this review (Afshin et al., 2017).

Environment based approaches have had mixed success in the UK. A programme was put in place to change the composition of food for the population and increase physical activity called the "Responsibility Deal", an initiative of the 2010-2015 coalition government and now closed. Under the Responsibility Deal organizations were invited to commit to pledges to improve the health of the

nation by, for example, reformulating food products to make them more healthy, and by promoting physical activity in the workplace (Department of Health, 2018). The Responsibility Deal was criticised for failing to bring about real change and particularly for allowing businesses to pay lip service to public health whilst maintaining their commercial interests (Ginn, 2011; Braillon, 2017; Durand et al., 2015; Knai et al., 2016,) demonstrating the difficulties in effectively implementing this type of intervention.

The UK levy on soft drinks announced in March 2016 and introduced in April 2018 is based on the volume of soft drinks that are manufactured or imported and is set at two levels depending on the amount of sugar in the drinks. Small producers, milk and pure fruit juice are excluded. A two-year period prior to the introduction of the levy allowed manufactures a chance to reformulate their products to reduce the sugar content should they so choose. The manufacturers are able to pass on the cost of the levy to consumers. The objective of the levy is that through both reformulation and increased price, the consumption of sugar will be decreased and that this will have a positive impact on obesity, and in particular childhood obesity. The funds raised from the levy are being used in England to support sport in primary schools (ringfenced until 2020).

Independent modelling supported the Chancellor of the Exchequer's (UK government's chief financial minister) view, that if products are reformulated by industry, and if the additional cost arising from the levy is passed on to consumers, that there will be significant health benefits particularly for children (Briggs et al., 2017). No assessments of the health benefits of the soft drinks levy have yet been made, but modelling studies show that price increases will reduce consumption (Smith, Cornelsen, Quirmbach, Jebb, & Marteau, 2018) and commentators expect that the levy will have an impact in reducing obesity particularly in younger age groups (Evans, 2018). Studies have also shown that further benefits could be obtained by extending the levy to sweet snacks (Smith, Cornelsen, et al., 2018). None of these analyses has looked at the likely effects specifically on women. There is a degree of public support in the UK for the health benefits of the soft drinks levy, but the public is concerned about government interference in choice of soft drink and mistrustful of government motives, seeing it as a revenue raising measure rather than a health improvement policy, with the evidence drawn from both a predominantly female sample (Swift et al., 2018) and a more gender neutral sample (Thomas-Meyer, Mytton, & Adams, 2017). Some consumers have also expressed health concerns about the artificial sweeteners used to replace the sugar in soft drinks (Swift et al., 2018).

There are a number of other public health interventions in existence or under consideration for delivery at the environmental level, but designed to support the individual wishing to adopt healthy

lifestyle behaviours. One set of interventions concerns the labelling of food. The UK has a voluntary food labelling scheme that combines traffic light colours with nutritional information (Department of Health, 2013). At present this applies to packaged food sold in shops, but the government conducted a consultation (September to December 2018) on the introduction of mandatory calorie labelling for restaurant meals, which it is currently analysing[11]. A recent Cochrane review finds that such an approach does reduce the calories purchased (Crockett et al., 2018). Whilst the reviewers set out to analyse the effect of gender, the data quality of the included studies did not allow them to do so (Crockett et al., 2018). Other ideas are under discussion and include negative front of pack labels to highlight the inclusion of unhealthy ingredients. A more direct approach than labelling to improve the healthiness of packaged food is for the food industry to accept a voluntary gradual reduction in the sugar content of processed foods, which would parallel that which has been achieved to reformulate products with less salt, and educate the palette of the nation to accept less sweet food products (MacGregor & Hashem, 2014). A report from PHE (Tedstone et al., 2018) shows only limited success with a voluntary sugar reduction of 2% in the first year against a target of 5%. A second set of interventions concerns the advertising of food. There are industry group restrictions on the advertising of food to children (www.cap.org.uk); in England the advertising of foods that are high in salt, fat and sugar around programmes aimed at children is banned. There is however no such ban on advertisements at times when children may be watching television for example before the 9pm watershed. Since July 2017 the voluntary restrictions (www.cap.org.uk) have been extended to the advertising to children of unhealthy foods on-line and on posters close to schools.

Overall for public health interventions on diet it appears that compared to tobacco control "Governments have been more reluctant to use regulation and fiscal levers because of the complexity of the regulatory process, the enforcement costs involved, and the likelihood of sparking a confrontation with key industries" (Sassi, 2010, p. 19). This may be because in capitalist societies "nutritional excess is structurally embedded" (Wells, 2012, p. 268). Diet is difficult for government to control because trade policies and liberalisation of markets have allowed the development of global food companies that control the production, distribution, pricing and marketing of food (Wells, 2012). Some commentators believe that the situation is unfair because the global food companies benefit from the profits of food sales, but they do not have to bear the costs of the health problems associated with over nutrition, as these are socialised (Albritton, 2009). More controversially, there is some evidence that food companies actively encourage over-consumption

[11] https://www.gov.uk/government/consultations/calorie-labelling-for-food-and-drink-served-outside-of-the-home. Accessed 23rd February 2020.

through the use of addictive ingredients in their products such as sucrose and caffeine (Albritton, 2009; Wells, 2012).

The need to consider public health interventions at the policy level, rather than direct targeting of the individual, was taken up in a series of papers in the Lancet in early 2015, that argued that obesity should be thought of as "a consequence of the reciprocal nature of the interaction between the environment and the individual" (Roberto et al., 2015, p. 1). The point being made is that individuals may try to act to control obesity, but their actions are often undermined by environmental factors (Roberto et al., 2015; Swinburn et al., 2015). Paradoxically, because obesity is seen as an individual problem there is no pressure for public policy actions to tackle it (Roberto et al., 2015). Governments see introducing policies to restrict food choice as unpopular and are therefore not motivated to introduce such policies (Hawkes et al., 2015). There are however, opportunities other than labelling, reformulation and advertising restrictions to support individuals wishing to adopt a healthy diet (Hawkes et al., 2015). Low SES areas are often characterised by poor quality food in local shops and difficulties in accessing shops providing good quality food (Hawkes et al., 2015). Governments, if they chose to do so, could increase the availability and affordability of healthy food through subsidies, a practice that has been shown to benefit women, and could encourage healthy food retailers to enter low income areas by providing incentives (Hawkes et al., 2015). The government could also choose to increase taxes on unhealthy foods (Hawkes et al., 2015). The food industry could choose to make changes that would support behaviour change by individuals such as changing merchandising practices so that healthy foods become more attractive to customers (Hawkes et al., 2015; Jacobson, Krieger, & Brownell, 2018). To date however in the UK, as we have seen, very few of these measures have been taken and the onus for managing diet remains with the individual (Kleinert & Horton, 2015).

It might be expected that without the vested interest of the food industry to resist change, policies to encourage a supportive physical activity environment would be easier to implement. The evidence from the literature is however, that this is not the case, and that as with diet most public health interventions to increase physical activity are targeted at the individual or group rather than the physical environment (Hillier-Brown et al., 2014a; Hillier-Brown et al., 2014b; Waters et al., 2011). Nevertheless, there are UK government policies to encourage walking, cycling and the use of public transport, as well as ensuring access to attractive outside space. A lot can be done to make the physical environment more attractive to undertake physical activity. These include the provision of facilities to take part in sport, developing the transport system to encourage walking and cycling and lower dependency on cars, provision of areas for recreation to encourage walking and other

outdoor pursuits (Evenson & Aytur, 2012). The wide range of stakeholders involved in making changes to the physical environment to encourage physical activity makes it difficult to implement change (Das & Horton, 2016; Evenson & Aytur, 2012). The problem is compounded because the evidence base to support interventions designed to improve physical activity, through environmental change, in the population is poor. In a review of the literature published in 2016, Reis et al. found only nine peer reviewed publications of scalable physical activity interventions in high income countries aimed at the adult population. More interventions were known to researchers but not reported in the literature (Reis et al., 2016). Unsurprisingly the authors found that successful scalable interventions have to focus on the needs of the community, have a good fit in the setting in which they are being implemented and for partnerships to be put in place that extend beyond the healthcare sector (Reis et al., 2016).

3.7. Chapter 3 summary

The literature reviewed in this chapter provides some insights into why low SES women experience relatively poor health and find it difficult to adopt healthy lifestyle behaviours. The reasons why some groups appear not to take up the recommendations to make healthy lifestyle changes are complex, multi-factorial and multi-level, and low SES mothers are not well served by the current interventions. The limited qualitative work in this area, makes it clear that it is not lack of knowledge that is the main barrier to the adoption of healthy lifestyles, but rather that low SES mothers put the needs of others before their own and do not prioritise their own health.

Diet and physical activity have a major impact on the incidence of NCDs and on life expectancy. Numerous studies indicate that if public health measures are to increase life expectancy and reduce the impact of NCDs then steps need to be taken to encourage a healthy diet and physical activity. There is already considerable activity in this area with national guidelines and a wide range of interventions mostly aimed at the individual but some designed to act at the environmental level.

The Shaping Health research has been influenced by Greenhalgh and Carney's (2014) work with Hispanic women in the US and their finding that the contributors to the research understood well the importance of physical activity and what constituted a healthy diet and body weight. These contributors reported that they were trying to meet these requirements, but failing because of insurmountable structural barriers. Whilst studies have explored with low SES mothers in the UK the barriers they face in adopting healthy lifestyles, there is very little data on how these barriers could be overcome. Moreover, any barriers that lie outside behaviour change are not recognised in the public health response

Much of the work on interventions in low SES mothers points to this group dealing with competing priorities with no clear desire to change their lifestyle behaviours. The Ethic of Care ensures that their own needs are not prioritised. If this is the case interventions that are designed without a full understanding of the challenges faced by low SES mothers in managing their day to day lives are unlikely to be successful. The Shaping Health research seeks to address this lack of understanding through an in-depth analysis of the barriers and facilitators faced by a group of low SES mothers to the adoption of healthy lifestyles. The Shaping Health research aims to not only understand these lived experiences, but also to collect feedback on the type of intervention that would be beneficial to support healthy lifestyles and how such an intervention could be usefully delivered in the community.

4. Chapter 4 - Methodology and methods

4.1. Introduction

I brought to this research project, two master's degrees (in natural sciences and information science) and more than 30 years business experience working with, and interpreting, data. I quickly discovered, that despite all this, I did not have the right expertise to answer the Shaping Health research questions, and that I needed to commit to researching and learning a new research methodology. I was fortunate to have the support of my two supervisors who understood that with my natural science background, qualitative research was unchartered territory, and they guided me until I was able to determine the appropriate methodology and methods to address the research questions. I have learned that qualitative researchers do not seek objectivity, but instead work with a number of alternative epistemologies (Peter, 2015), and I will set out in this chapter the epistemologies I have used to address the research questions. I will show how the methods evolved as I worked through the project, knowing that this is a right and proper approach to qualitative inquiry (Peter, 2015). Most importantly, I know that I, as the researcher, have been part of the research process and have influenced the findings, and that my role in the research needs to be explicit. I have therefore chosen to start this chapter by exploring how I have influenced the research by looking reflexively at the research.

Reflexivity is something I have learned about throughout my time as a doctoral student. Like Thelma Sumison (in McKay, Ryan, & Sumison, 2003) I started the research work as task orientated, with an action list that I was keen to work through. This gave me little time for reflexivity. As the research progressed, I developed as a researcher, and was able to add the recording of thoughts and feelings to my action orientated work for the day, and it is this later, more reflexive researcher who took on the task of writing up the research as a thesis. I am aware that reflexivity is not something that can be learned quickly, it is a skill that develops over time and with experience (McKay et al., 2003), so I acknowledge that in this, as in other respects, I remain a novice researcher. I am also aware that as a part-time researcher and with an action orientated job I do not always have the time that a full-time researcher would have available for the necessary internal dialogue (Ballinger, 2003). I believe that this awareness is in itself an advantage, and helps me to focus on this important area.

4.2. The adoption of a reflexive approach

Reflexivity is an inner conversation that the researcher has throughout the research project (Archer, 2010), and more specifically, an active awareness of the importance of the relationship between the researcher and the participants (Brackenridge, 1999; Finlay & Gough, 2003; Mansfield, 2007; Pink, 2004). Qualitative research demands that the researcher acknowledges the way their behaviour

impacts the research (Finlay & Gough, 2003) and reflexivity will reward the researcher with better insights from the research data (Finlay & Gough, 2003).

In a qualitative research project, data is generated by the researcher, by the participants and the interaction between the two (Finlay, 2003a); reflexivity supports a circular relationship between the researcher and the participant resulting in collaborative knowledge construction (Probst, 2015). This means that a different researcher would generate a different data set and different findings (Finlay, 2003a). It is therefore important for a researcher to make visible for the reader the researcher's position in relation to the research (Gough, 2003a). Stating the researcher's position is not enough; the researcher has to consider the impact of their position on the findings otherwise their prejudices will dominate the findings (Finlay, 2003b; Gough, 2003b; Letherby, 2002). Self-examination by the researcher is a difficult task to get right; a balance needs to be achieved between self-awareness which is good, and narcissistic self-absorption, which is not (Delamont, 2009; Probst, 2015). There is a difference between being aware of self, and admiring of self (Brackenridge, 1999). As Finlay says (2002a, p209), if reflexivity is applied inappropriately a researcher can become stuck in the muddy swamp of "interminable deconstructions, self-analysis and self-disclosure". Adopting a reflexive approach is however, more than explaining and clarifying the researcher role. By making clear how the researcher influenced the findings the quality of the work is improved (Maso, 2003; Probst, 2015). According to Probst (2015), reflexivity stands alongside theory as a measure of the rigour of a piece of qualitative research although she reports that it is not regularly referenced in academic publications. Reflexivity certainly provides rigour by justifying the partial nature of qualitative research, but it may also be used to criticise work on the basis of the highlighted partiality (Lumsden, 2012). This complex area requires detailed consideration and I have used Finlay (2003a) who identifies five variants of reflexivity to examine how reflexivity has informed and contributed to this research project.

4.2.1. Introspection and research purpose

The first of Finlay's (2003a) variants is introspection; this refers to the personal choice of what to research. A strong interest does not necessarily make for better research, but it is important to consider what that interest has brought to the research (Probst, 2015). Researchers are drawn to data that resonates with them and with which they feel comfortable (Chappell, Ernest, Ludhra, & Mendick, 2014; Medico & Santiago-Delefosse, 2014). Brackenridge (1999) explains how her personal agendas mapped on to her scientific research (in her work on sexual abuse in sport), and this resonates with me, as a mother interested in healthy lifestyles, conducting research with mothers on lifestyle behaviours. Whilst acknowledging that it is not always easy to access one's motivations and biases (Probst, 2015), I explained in the introduction to this thesis that I have

developed over many years, a strong interest to find public health-based solutions for the prevention and management of NCDs. In this research I have sought to balance my long-term involvement working in NCDs with a strong desire to find solutions that are free from the use of drugs or medical devices; I am looking for low cost opportunities to impact the health of large numbers of people. I recognise, however, that I should not let my passion for the subject and experience in the area dominate the participant voice (Finlay, 2002a). I followed the advice of Finlay (2002a, p215) to be "more explicit about the link between knowledge claims, personal experiences of both participant and researcher, and the social context". Thus, I selected diet and physical activity as the lifestyle behaviours for my research because these are universal; to be healthy everyone has to eat properly and exercise. I was also influenced in my choice by what I know from personal experience. I now strive to eat healthily but this has not always been the case. As a student and working mother my priorities were cost and convenience. I made changes to my diet when I was expecting my third child. I started eating whole foods and in particular more fruit and vegetables. When I embarked on this work, I was interested in whether other mothers had had similar experiences and whether together we could find a way to use what we had learned to benefit others.

My experience of exercise is different. As a child exercise happened naturally, mainly from walking to school and playing outside with bikes and roller skates. At university it was a conscious decision to take up a sport because that was what everyone else did. I continued with sport until I had children and then I stopped. I had enjoyed exercising, but as a mother I had other priorities. I did not start again until I changed to working part time in 1999, and since then I have been exercising regularly, mainly aerobics classes but also walking and dancing. Now I cannot imagine a life without regular exercise, although I went many years without it. I understand how difficult it is to include exercise in a busy life and I am not sure how mothers with young children can achieve the current exercise guideline. This is a problem that needs to be addressed and to my mind makes this research essential. I therefore went into this research with the hope that my personal insights and experiences would serve, as Finlay (2008, p13) suggests, as a "springboard" to a full exploration of diet and exercise behaviours in mothers of young children.

Introspection also refers to the critical examination of the researcher's beliefs and values (Bryman, 2008). I have learned that qualitative researchers need to be equally scientists and artists, meaning that they have to both collect data and shape the data into something of value (Holloway & Biley, 2011), and with my strong positivist background I have found the latter role more difficult. I know that my views have matured as I have carried out this project and I have tried to stand back from the

environment and the data and let my ideas develop. For example, at the start, I was aware that an individual's agency was strongly influenced by the environment in which they lived; during the study my understanding of the difficulties individuals face has grown, whilst at the same time learning that individuals have a strong beliefs in their own agency and are loath to accept that the environment is influencing them (Lundell, Niederdeppe, & Clarke, 2013).

This research has always had a clear purpose and my values have influenced the research. I am concerned that low SES mothers live shorter lives than their more well-off counterparts, and that they will live a greater proportion of their life in ill health, and I want to do something about it. I want to find ways of helping low SES mothers adopt healthier lifestyles and the participants knew this from the participant information leaflet that they received at the start of the research and from my interest in ideas for interventions to support healthy lifestyle behaviours. This research has always had a direction, the identification of more useful public health interventions, so in this sense my values have driven the research. I discovered that many of the participants actually shared these values. They want to lead healthier lives and are looking for ways to do this, so we had a common purpose in wanting the research to succeed.

4.2.2. Intersubjective reflection and relationships with the research participants

Intersubjective reflection, Finlay's (2003a) second reflexivity variant, has allowed me to consider what I have in common with my research participants, but also led me to consider our differences. As Holloway and Biley (2011) explain, it is possible to have empathy with research participants without ever fully understanding their lived experience. I would describe myself as coming from a white British middleclass background in north west London where I attended the local comprehensive school before sitting the entrance examination for Cambridge University. I experienced a difficult period of adjustment at Cambridge University and a second difficult period when I found myself as a single mother of a baby boy, but overall, I have lived a privileged life in terms of income and housing. My research participants live in below average SES areas (i.e. in Index of Multiple Deprivation [IMD] deciles of five or below) whereas where I live, is above average (IMD decile 7). I have experienced times when money was tight, but for most of my life, I have had enough money to buy the food I want and to pay for physical activity (e.g. squash club and gym membership). Another important difference is age; I am significantly older than my research participants. Whilst these differences are important and awareness of them has influenced how I conducted the research, I believe that the empathy I have with the participants based on the experiences that we have in common, as mothers, helped me overcome the areas of difference.

My being female was a major advantage for conducting this study. It allowed me to operate in the almost exclusively female environment of the Children's Centres and it meant that most of the participants were comfortable talking to me in their own homes. I encouraged the participants to see me as a friend rather than an authority figure and spending time in the field also meant that I was seen more as a supporter and being on their side (Lumsden, 2012). I believe some saw me as an ally against the unrealistic expectations of the public health guidelines. Nevertheless, I also acknowledge that there were mothers that I met at the Children's Centres that chose not to participate in the research, perhaps because after reading the participant information they were worried that I would hold them up as a bad example. I also acknowledge that a degree of inequity remained in the relationship (Probst, 2015) despite my attempts to reduce it and ensure an ethical treatment of the participants (Medico & Santiago-Delefosse, 2014).

Intersubjectivity also influences the analysis of research data. First, as a friend or ally of the participants the temptation is to look for data that supports their view (Lumsden, 2012). My data were very variable and whilst some participants were critical of the public health guidelines others were keen to demonstrate how despite difficulties, they had found ways to adhere to them. My broad themes encompassed this variation and I made sure that I selected examples from the interview transcripts of the full range of views and experiences described to me. I also found that some participants were more interesting than others, painting vivid pictures of their lives with powerful examples. Whilst I have used some of this material in my analysis, I have been careful not to let it dominate and have striven to ensure that all the participants, and the full range of experiences, are presented. Secondly, whilst self-disclosure and sharing experiences with participants can help build trust and reduce the power imbalance, there is a danger that the researcher presence is too strong (Probst, 2015), leading to bias towards the researcher's views in the data collection. I used field notes to record any examples where I thought this had inadvertently occurred and interpreted my data accordingly. I actually found with my stronger participants that if I expressed a strong view they were as likely to challenge it as agree with it. Thirdly, and perhaps most obviously, the researcher is, as Medico and Santiago-Delefosse (2014, p350) describe, an "instrument of research" who makes choices when coding material and needs to be aware of their own biases. I agree with these authors that it is very difficult to both fully respect a text and avoid self-projections. In the identification of ideas for potentially useful interventions which I worked on towards the end of the data collection phase I found Mansfield's 2007 paper describing the work of Norbert Elias and the importance of achieving an appropriate balance between involvement and detachment illuminating. Following this advice, I maintained sufficient involvement to understand

what the interviewees were saying and remain sensitive to the environment I was working in, whilst being simultaneously aware of my own interests and beliefs (Mansfield, 2007).

4.2.3. Mutual collaboration and participant voice

Mutual collaboration, Finlay's (2003a) third reflexivity variant, is about how the participants contribute to the analysis. In projects involving interviews this is typically achieved by asking the participants to review and reflect on transcripts and findings and in this way provide further material and insights. I did not ask my participants to review transcripts as I felt they were more interested in talking than reading. I based this assumption on their apparent lack of interest in the written participant information I provided them about the study. Nevertheless, the multiple interviews with individual participants allowed us to go over what had been said previously and develop some of the areas in greater depth. I also used the second and third interviews to share informally, material collected from other interviewees providing opportunities for the participants to give their input.

All the material reported here comes from the participants, but I feel that the biggest contribution made by the participants to the output of the research was in the area of ideas for potential public health interventions all of which were suggested, not by me, but by the participants. I see this as a major area of mutual collaboration.

The data reported here are specific to me and my research participants and they would be different with a different researcher, different participants and indeed at a different time point in the lives of the participants and me as a researcher. I appreciate that I am in a privileged position because as the researcher I have selected and integrated the material from a number of accounts and set them in the context of the literature (Letherby, 2002). My account I believe speaks on behalf of the participants whilst they remain anonymous (Letherby, 2002).

The participants, or some of them at least, felt that they had benefited from being involved in the research. They told me that they had had the opportunity to think about diet and exercise and through talking about their experiences they felt motivated to do things differently or at least feel better about the behaviours they currently adopt, a finding reported by others (Letherby, 2002). Some qualitative research takes this concept further and seeks to guide the participants to a new way of thinking (McCabe & Holmes, 2009). According to McCabe and Holmes (2009) an interview can be either repressive, if the participant feels that they are in an aberrant state, or liberating, if the participant feels that they have had an opportunity to explore new ideas and develop new thinking. In this context the researcher needs to be aware of the needs and agenda of the participant. In the Shaping Health research, the participants did not have a strong agenda, other than perhaps to be helpful, but they clearly had major needs which ranged from wanting someone to talk to, to getting

advice on cooking and recipes, and information on physical activity opportunities available locally. Whilst it was outside the scope of the research to provide the help and support the participants were looking for, these needs were acknowledged and were fed into the later stages of the research and into the recommendations.

4.2.4. Social critique and handling difference

Social critique or functional reflexivity, the fourth of the reflexivity variants (Finlay, 2003a; Gough, 2003a), concerns the power imbalance between the researcher and the participant. Fontes (1998, p54) says that the "researcher is always more powerful than the participant" because they are choosing to carry out research at a particular time and can leave the research setting as and when they choose. The differences in SES and age set out above contribute to the power imbalance in the Shaping Health research, but more important for this research, is the status of the researcher, with the authority of a university, compared to the participants who are speaking for themselves. Many qualitative research projects are carried out with similar power imbalances but the Shaping Health research had a specific additional source of inequity. Whilst I did not set out to recruit participants with a particular body size, many of the participants, as is typical of low SES women, would be considered on the basis of their BMI to be overweight or obese. I am slim and was seen by some of the participants as being in a stronger position than them because I had the socially approved body size.

I maintained an awareness of all these sources of power imbalance and tried not to draw attention to them during the interactions with the participants. If the participants raised them, I strove to achieve balance by talking about their strengths in terms of what they were bringing to the research process and emphasising their accomplishments. Ballinger (2003) found that she could break down power relations by dressing as a student rather than a medical practitioner when interviewing hospital patients. I tried to do the same by wearing clothes similar to those worn by my participants. Because many of the participants did not have a car, I parked my car a small distance from the Children's Centres and participants' homes so that they did not see me getting in or out of the car. I did not mention where I lived in the interviews and whilst I talked about my children, I avoided saying anything that would indicate my income, such as holidays or cultural events. I did not find this difficult or artificial as when I was talking to the participants, I was concentrating on what we had in common and not what was different. In some interviews I went further and as described by Riley, Schouten and Cahill, (2003) I hid my own values so as to better communicate with the participants. I felt that this was not dishonest but rather a sensitivity to the multiple vulnerabilities experienced by the participants, that I did not share, such as the stress of poor health, managing a new baby, sick children, the demands of more than one young child, housing problems and financial concerns.

I was careful with my use of language during the interviews. I only speak English and all of my participants spoke English, most as a first language and some as a second language. When I was speaking to those that were not native English speakers I tried to speak clearly and reduce the use of metaphors to make my speech easier for them to understand. I checked regularly for understanding, both ways, their understanding of what I had said and my understanding of what they had said.

It is possible that my concerns over power relations were misplaced and that I overestimated their importance in this study. The participants may have felt themselves the stronger partner in the relationship; the interviews took place at their convenience, in their own homes; if they needed to change the meeting time at short notice I complied happily. The interviews were held on the participant's terms, they chose what to disclose and thus they held considerable power (Declercq & Ayala, 2017).

4.2.5. Ironic deconstruction and managing authority

Ironic deconstruction, Finlay's (2003a) fifth reflexive variant, refers to the researcher's role to challenge identification with an authority voice, in this case the government guidelines for healthy eating and physical exercise, and ensure that all points of view are heard and respected.

It was important for me in this research not to be associated with an authoritative position although I have to acknowledge that I was not able to completely escape from this persona with some participants. I presented elements of public health guidance to the research participants as part of the research, but was careful not to be seen as representing the guidelines. If the participants challenged the guidance or expressed ignorance of it, I readily accepted their view point. I did not seek to explain the guidance to them. If asked for advice and support I sought to deflect the question as I wanted to be seen as a student seeking the expert input of the participants not as some kind of expert or advisor. This was not easy as some of the participants had entered into the research, I believe, expecting to get guidance and support. I consciously chose not to intervene when the opportunity arose to correct something factual a participant said (Ballinger, 2003). If asked directly a question about diet, physical activity or public health guidance I did my best to answer it, although I tried to avoid such questions. In this way I tried to ensure that my personal experience was kept in a secondary position, with data collection and the subsequent analysis occupying the primary position in the research (Delamont, 2009; Probst, 2015). Holloway and Biley (2011) recommend that researchers use their experience to guide the study design and research questions and not data collection or the analysis. I followed this recommendation and endeavoured to make sure that when I was selecting data to report that I did not simply echo my own voice. My aim was to achieve the relationship of reciprocity described by McCabe and Holmes (2009), albeit outside their context

of emancipatory research, where I encouraged the participants to self-explore and seek out more information for themselves rather than be given information by me. This does not mean that I was detached from the participants; like Brackenridge (1999) I still sought to change the world for their benefit.

4.3. Reflexive diary

Gough (2003a) recommends keeping a reflexive diary to record thoughts and experiences. This I did starting in February 2015 and I used it to record my feelings and learning around meeting my participants and the actual interviews, discussions with my supervisors and the input they provided (this was in addition to the more formal supervision reports which were submitted after each meeting), the difficulties I experienced as I set about undertaking the research (and the occasional triumphs), interesting research papers that I came across outside of my formal literature searches and learning from attending seminars and conferences. To give a flavour of the last, an entry dated 10th March 2015 after attending a seminar at Brunel University London, given by Maria Tamboukou from the Centre for Narrative Research at UEL, in which I noted that real life stories as opposed to literary narrative are not carefully constructed, they are chaotic, fragmentary and contradictory, full of silences and lies. They are a mechanism for expression, they do not represent an individual. I found this insightful as I struggled to understand what my participants were telling me. Another entry from April 2016, describes the highs and lows of interviewing on a single day describing a visit in the morning to a participant who spoke movingly about her experiences of family life and managing her weight, who was very enthusiastic about the research and offered to introduce me to other Children's Centres in Hillingdon. The afternoon of the same day was wasted trying to find another participant who had not given me an address but a description of where she lived. I could not find her flat and she did not answer her phone and I had to give up (I did manage to interview this participant at a later date).

The reflexive diary has been a valuable tool for me throughout the research. In it I can trace how I went about undertaking and reporting the research. This was not a linear process and included several false starts and changes of direction. In the following sections I provide an account of these activities and more importantly what I learned about conducting qualitative inquiry. I start with a consideration of research paradigms.

4.4. The influence of research paradigms

My experience with natural sciences and business had given me a good understanding of the positivist research paradigm. In positivist research numerical data is collected, with strict control of variables and without researcher influence. This methodology is of value where the items to be

measured can be separated and their influence on each other controlled. Positivism assumes that there is a real world that can be observed and measured, and that from the measurements, patterns can be recognised and predictions made (Lincoln, Lynham, & Guba, 2013; Patton, 2002). Researchers working in the positivist paradigm acknowledge that it is impossible to completely eliminate researcher bias from a study, but they nevertheless strive to collect value free data. The variables that are measured in positivist social science research e.g. social class and motivation are considered as separate entities and independent (Sparkes, 1992). Experiments are set up to test hypotheses (Finlay, 2006a). Findings are expressed only in terms of the data without personal perspective or value judgements. A single truth emerges as the output of the research (Finlay, 2006b). The goal is to achieve objectivity so that findings can be generalised from the patterns observed (Patton, 2002). In this approach the assumption is, that if a second set of researchers follow the same methodology and analysis, that they would arrive at the same conclusion as the original researchers (Miles & Huberman, 1984); in other words that the research can be replicated.

In the area of health, the methodology of positivism is highly valued for conducting clinical trials where the double blind randomised controlled trial heads the evidence hierarchy (Petrisor & Bhandari, 2007), and it is also used to interpret data from questionnaires, surveys and structured interviews where the goal is to achieve objectivity so that findings can be generalised from the patterns observed (Patton, 2002). In its basic form positivism has a single reality ontology and an objective epistemology (Lincoln et al., 2013). In the social sciences the paradigm is sometimes referred to as "post positivism" a modified form of positivism acknowledging that whilst there is a single reality it is impossible for researchers to describe it because of the limitations of the methods available (Lincoln et al., 2013).

Addressing the Shaping Health research questions meant dealing with complex problems and studying factors in isolation would be unhelpful to the research endeavour because of multiple interactions and intricate relationships (Miles & Huberman, 1994). Positivism or post positivism were therefore not appropriate methodologies and there was a need to consider other research paradigms. Sparkes (1992) identifies two further research paradigms "interpretative" and "critical". Whilst some authors use different names for the same paradigms e.g. Lincoln et al. (2013) refer to the interpretative paradigm as "constructivism", and other authors list additional paradigms, for example, Lincoln et al. (2013) separate out participatory research as a separate paradigm, my reading about research methodology indicated that further exploration of these two paradigms would be helpful in finding an appropriate methodology to address the research questions.

The “interpretative” paradigm is a high-level name given to a wide range of qualitative methodologies including ethnography, phenomenology and constructivism (Sparkes, 1992). In contrast to positivist methodology, in the interpretive paradigm the methodology is explorative; hypotheses may be generated but they are not tested (Finlay, 2006a). The goal of interpretive research is to investigate and understand and not to predict and explain (Finlay, 2006a). In all interpretative methodologies it is accepted that the observer and the observed influence each other which sets them apart from positivist methodology (Appleton & King, 2002; Lincoln et al., 2013; Patton, 2002; Sparkes, 1992). The truth that emerges from interpretative research is based on consensus and coherence, meaning that knowledge is co-constructed (Finlay, 2006a) and there can be multiple truths rather than a single truth (Appleton & King, 2002; Finlay, 2006b; Lincoln et al., 2013; Sparkes, 1992), in contrast to positivist methodologies that seek a single objective truth. Interpretive methodology, in opposition to positivist methodology, acknowledges that the researcher has to be involved in the research environment and the researcher has to “own one’s own voice and perspective” (Patton, 2002, p65).

The research questions for the Shaping Health project require an in-depth examination of the life style behaviours of a number of individual women, all with their own lives and experiences, and as set out above, section 4.2.2 Intersubjective reflection, whilst I shared some experiences with the participants there were many ways in which their lives were different from my own. This type of research can be undertaken in the interpretative paradigm because the underlying ontology is of multiple realities and the epistemology is subjective with the co-creation of findings by the researcher and the participants (Lincoln et al., 2013). As my work on methodology and methods for the research and my involvement in the life of the participants progressed in parallel, it became clear that the interpretive paradigm provided a suitable methodology to address the research questions. At the same time, I became aware that by considering research approaches from other paradigms I could enhance the research.

Critical methodologies are ideology based (Sparkes, 1992). Critical theory looks at how injustice and oppression shape how individuals perceive the world (Patton, 2002). Researchers using these methodologies set out to change the world and remove oppressive structures (May, 2011; Sparkes, 1992). This is clearly different from an Interpretive approach where the researcher is trying to describe the world (Patton, 2002; Sparkes, 1992). Research in the critical paradigm is designed to give power to the research participants. Critical research focuses on how an individual’s position in the social hierarchy influences how they experience and perform in their lives and particularly takes into account issues such as class, gender, race, religion and education (Lincoln et al., 2013; Patton,

2002). Research that follows a critical methodology has to take on areas of injustice and endeavour to change them (Kincheloe & McLaren, 2000; Lincoln et al., 2013; McCabe & Holmes, 2009). The researcher takes on an active role and facilitates the transformation of the research participants (Lincoln et al., 2013). This means that critical research is overtly political, setting out to confront perceived injustice and achieve change (Lincoln et al., 2013; Patton, 2002). Whilst understanding is the primary focus of my research, the last Shaping Health research question has a clear element of change in it, through seeking to understand what public health interventions would support positive lifestyle behaviours, so the critical paradigm is relevant for this project and I kept its tenets in mind as I worked on my methods.

These three research paradigms, positivist, interpretative and critical, can be thought of as three approaches of equal worth, all designed to help us understand and describe our world, but not all researchers see it this way. Researchers working in one paradigm may not accept the worth of the other paradigms. Some positivist researchers see interpretative and critical research as undermining the research process, because the opinions and beliefs of the participants are taken into account and it is accepted that the researcher can influence the findings (Denzin & Lincoln, 2013). This has led to considerable conflict in the social sciences between researchers who support a positivist approach and those who argue that it is not possible to employ such a method in studies of the social world (Denzin & Lincoln, 2013). Positivist researchers set out to establish truth that exists outside of the opinion and values of the researcher and argue that qualitative research using interpretative and critical methodologies cannot deliver findings on these terms (Denzin & Lincoln, 2013). This debate about the legitimacy of the different research paradigms has occupied researchers in the social sciences for some time as the advocates of interpretative and critical ideologies seek to justify their methodologies. How this debate has developed over time is instructive.

Denzin and Lincoln describe seven periods of qualitative research (Denzin & Lincoln, 2000, p3). The first period "traditional" covers the first half of the 20th century and is mainly concerned with objective descriptions of people that are very different to the researchers. In this period researchers followed the approach of the natural sciences in aiming to provide reliable and objective accounts of what they observed with the intention of discovering laws that would explain what was observed. The second period is called "modernist" and lasted from the post war period to the 1970's. In this phase, researchers worked to establish qualitative methods, and whilst there was a drive to reach the underrepresented in society, researchers still sought to express their results in similar terms to those used in the natural sciences. Denzin and Lincoln (2000, p3) call the third phase "Blurred Genres" and state that it lasted from 1970 to 1986. During this period researchers drew on a wide

range of theories, escaping the confines of the natural sciences, and qualitative research grew in stature. In this period qualitative journals emerged to publish the output of this type of research. In the mid-1980s there was a "crisis of representation" and this is the fourth period. At this time researchers focused on the role of the researcher and also specifically on class, gender and race. Researchers were concerned about the difficulty in capturing lived experiences in texts, the difficulties in evaluating and interpreting data and how to effect change. This led to the fifth period "the postmodern" period where the emphasis was on understanding specific local situations rather than seeking grand narratives. Denzin and Lincoln writing in 2000 (p3) say that the sixth and seventh phases are current; the former being the "post experimental" phase and the latter being the "the future". The sixth, post experimental phase, is characterised by researchers from a wide range of disciplines working to make their findings fit the needs of society. Denzin and Lincoln (2000) do not try to predict the "future" but they make it clear that whilst it is possible to trace the history of qualitative research and identify the different periods, the methods of each phase continue into the present, both because the methods remain in use and as a position which researchers can either follow or argue against. Writing subsequently, in 2018, they emphasise the role of the researcher, interacting with the world that is being studied, and say that the seventh and eighth phases will arise from the work of qualitative scholars as they conduct their studies in the light of what has come before (Denzin & Lincoln, 2018).

This research aims to capture the lived experiences, and gain an understanding of, the situation of a number of individual women. The intention is not to produce something of universal value, although by adding to our knowledge of the lifestyle behaviours of a small group of women our understanding of the problems of gaining adoption of healthy lifestyles in low SES women will increase. The research therefore fits into Denzin and Lincoln's (2000) fifth or post-modern period but also the sixth post experimental phase because the research is intended to benefit society.

The above discussion shows that the methodology adopted for this research includes elements of both the interpretive and critical paradigms. Authorities in the field including Yvonna Lincoln believe that the boundaries between paradigms are being blurred and that it is possible to blend the interpretive and the critical paradigm (Lincoln et al., 2013). Moreover action, in this case in the form of a change in lifestyle behaviours, is an accepted outcome of interpretive research (Lincoln et al., 2013) and is seen as a crucial differentiator between positivist and interpretive research (Lincoln et al., 2013). In critical research, knowledge is built in the participants (Killert, 2006; McCabe & Holmes, 2009). Whilst action is outside the remit of the Shaping Health research questions, I hope that there will be an opportunity to build on this piece of work in the future where it would be

appropriate to involve the participants in the development of a public health intervention and through the intervention support them in the adoption of healthy lifestyle behaviours.

There are further methodological issues to consider for this project particularly because the research involves exclusively female participants and the researcher is female. Denzin and Lincoln (2013) identify a number of sub-paradigms under the broader category of the interpretive methodology. One of these is feminist, and whilst this research was not planned with a feminist methodology, as I have learned more about research methodologies, I have come to understand that some aspects of the research may be considered feminist and therefore, I have considered the feminist aspects of the research. Chadha (2016) states that research that is about gender theory and politics is feminist even if "the concept of feminist research is somewhat elusive". Avishai, Gerber and Randles (2012) argue that feminist research exists to effect social change and to give voice to female participants. Thus, according to the arguments of these authorities the Shaping Health research has some feminist aspects, because it deals with health inequalities for a particular group of women. Avishai et al., (2012) also claim that the distinction between feminist methods and other post positivist methods is becoming less distinct and that feminist research is not dependent on a unique methodology, meaning that feminist aspects for the Shaping Health methodology can be claimed.

There are parts of the Shaping Health research that could be considered feminist. Qualitative research allows women's voices to be heard and to be valued particularly if there is an exchange and sharing of information during data collection (Bryman, 2008). Being an "insider" can add to the engagement and understanding of participants, although researchers have to take care not to assume they have things in common with the participants (Cooper & Rogers, 2015). For the Shaping Health research, I am, as a mother to a certain extent an insider, enabling me to identify with the participants, and because of the shared experience mothers feel, able to talk about difficult life events. The feminist researcher brings to this exchange empathy, observation and listening skills (Cooper & Rogers, 2015). This can be taken further in the critical paradigm where the objective may be to bring about change to the benefit of a particular group of women. Researchers employing a feminist methodology seek to engage with their participants rather than exploit them although, as already discussed, it is difficult to eliminate the in-built power relationship in any researcher participant interaction (Bryman, 2008).

There are also some methodological issues and challenges with feminist methodology to consider. Feminist researchers may interpret their findings in terms of their own goals of female emancipation and this interpretation may not be shared by the participants who may be happy with their current status (Bryman, 2008). Avishai et al., (2012) report on three different field studies where there was a

conflict between the political stance of the researchers and the experiences of the "conservative" participants, and discuss the tensions between generating accurate knowledge and achieving social change. There is a concern, expressed in the literature, that reporting on the current lived experiences of a group of women may endorse rather than criticise an oppressive system (Olesen, 2013) and it must be recognised that experience is not the same as knowledge (Olesen, 2013).

In feminist methodologies the participants are invited to be co-researchers which means that the participants are encouraged to think about their role in the research, particularly at the stages of data analysis and evaluation (Finlay, 2002b). The Shaping Health research falls short of this level of participant involvement although the participants were part of the development of ideas for potential interventions and provided input on the ideas suggested by other participants. Feminist researchers want to see a change to the patriarchal relationship between men and women (Travers, 2001) and again whilst this was not a direct motivation for the Shaping Health research, the unequal relationship between many of the mothers studied and their partners had strong implications for the findings and analysis.

From this exploration of epistemologies, what has emerged for the Shaping Health research study is a focus on reflexivity, use of the interpretative and critical paradigms, and a learning from feminist research. The data collected was qualitative, but designed to add to the knowledge base of those designing public health interventions. There is the potential for conflict here, as public health guidance and interventions are developed on the basis of an evidence review, and typically the evidence review uses an evidence hierarchy that values quantitative findings above qualitative ones. For this research to be useful it needs to be able to inform the evidence review. The use of qualitative data in the evidence base for public health guidance development is therefore considered next.

4.5. Qualitative research and public health policy

The influence and established tradition of quantitative research is seen in the status assigned by policy makers to quantitative studies. The evidence hierarchy was first proposed by Cochrane (Cochrane, 1972) for drug trials and was subsequently applied more generally to medicine (Sackett, 1993). The evidence hierarchy which is presented pictorially as a pyramid, has systematic reviews and meta analyses on the top, closely followed by RCTs; case series and case reports are in the middle and in vitro work is at the base of the hierarchy pyramid (Rosner, 2012). There is no real place for qualitative studies in this evidence pyramid; if they are included, it is usually towards the bottom. This hierarchy is used by many policy makers to rank evidence, giving greater significance to evidence derived from studies that belong at the top of the pyramid.

Not everyone agrees that assigning qualitative research to a lowly position in the evidence hierarchy, such that qualitative data is essentially discounted, is the right thing to do (Morse, 2006). The evidence hierarchy was developed for drug trials and whilst it may be applicable to some other types of medical research there is no reason why it should apply to all of health research. RCTs report average results so that results for individuals disappear even though it is an individual that requires a particular intervention. Moreover, because RCTs take place in a controlled environment, the findings may not be applicable in the real world, where the controls do not exist and multiple factors are in play. Qualitative methodology was never intended for use to test the effectiveness of drugs, but because it was included in the evidence hierarchy it was labelled as unsuitable evidence for decision making. An alternative approach is to see qualitative data as complementary to an RCT, because it adds to quantitative effectiveness data, rich data on how a treatment impacts on an individual's life. On this basis it would have been more appropriate to restrict the use of the evidence hierarchy to quantitative data so that qualitative evidence could be considered alongside the numerical data.

Whilst qualitative research is growing in stature in health research, many researchers remain fixated on the evidence hierarchy and downplay the value of qualitative research. This can become a self-fulfilling prophesy as attributing a low status to qualitative research and to qualitative researchers restricts the funding that is made available for qualitative studies (Morse, 2006,) thus perpetuating the status quo.

The National Institute of Health and Care Excellence (NICE, responsible for the development of public health guidance in England) now acknowledges that the traditional evidence hierarchy is not relevant for the development of public health guidance and instead states that public health guidance should be developed from both context free and context sensitive sources (NICE, 2012) where context free data is mainly meta analyses of controlled trials and context sensitive data contains data from a range of sources including qualitative studies on, for example, attitudes of service users (NICE, 2012). NICE argues that using the two sources of information to complement each other can lead to more practical guidance tailored to the needs of specific service users (NICE, 2012).

NICE refers to a third source of evidence to add to the context free and context sensitive scientific evidence, which it calls colloquial evidence (NICE, 2012). Colloquial evidence can either complement the scientific evidence or provide useful data on context that is not captured in the scientific evidence. Colloquial evidence can come from a range of sources, but of particular note for the

Shaping Health research is the inclusion of data on habits and traditions, values and pragmatics, and contingencies.

NICE argues that its guidance needs to consider all these types of evidence, rather than rely on the traditional evidence hierarchy, because of the complexity of public health interventions, and the need to consider the real world rather than a controlled environment with ideal conditions that cannot be replicated in the real world. Thus, the views and experiences of the target population collected in a qualitative study become an important part of the evidence reviewed in NICE public health guidance (NICE, 2012). In reviewing a study, NICE will rely on the researcher to demonstrate that the research is based on sound methodology and is appropriate to the nature of the study.

Qualitative studies can take into account the individual and the community where they live. They can provide insights that are not available from large epidemiological studies. "Even though contextual variables can be introduced into study designs, these approaches are a pale version of the rich insights that can be gathered through ethnographic approaches" (Raphael & Bryant, 2002, p 193). When public health interventions are studied the results that are reported are achieved in a particular context. When another research group seeks to replicate the intervention with another group of participants the context is often lost and the intervention may fail to live up to expectations. The relevant context that is lost may include factors such as funding, motivated teachers and established local networks (Kok, Vaandrager, Bal, & Schuit, 2012), so that what is implemented in practice differs significantly from the intervention for which the claims were made. Researchers looking at the impact of interventions acknowledge that there is a role for both quantitative and qualitative research (Greenhalgh & Fahy, 2015).

This analysis of the use of research in the development of public health guidelines shows that provided the methodology of the study is rigorous, and sound methods are employed, there is no reason why the findings of a qualitative study should be ignored by policy makers, indeed they should be embraced. It may prove necessary to continue to defend the worth of the inclusion of qualitative data for the development of public health guidance and interventions, but there are authorities available to support the case for its inclusion.

The conclusion that a good qualitative study can contribute to the development of public health guidance and interventions leads naturally to the presentation of the design selected for the Shaping Health research.

4.6. The design of the Shaping Health research study

Creswell (2006) describes five methods of inquiry that can be used in an interpretative paradigm; these are narrative, phenomenology, grounded theory, ethnography and case study research. The Shaping Health research draws mainly on the principles of phenomenology with some influence from ethnography.

Phenomenology seeks to collect the experiences of individuals and in this method, it is the experience of a group of people that is the main subject of the enquiry (Kerry & Armour, 2000). It has a strong philosophical base and is associated with the works of Edmund Husserl, Martin Heidegger, Jean-Paul Sartre and Maurice Merleau Ponty (Brinkmann, 2012). In phenomenology the researcher seeks to find the "universal essence" (Creswell, 2006, p58) in the accounts of the research participants and to see the world from the perspective of the participants (Bryman, 2008; Finlay, 2006c), describing what is there to make the obvious, obvious (Brinkmann, 2012). The researcher concentrates on the conscious rather than the unconscious experiences of the participants (Creswell, 2006) with the participants expressing their thoughts directly using their own language (Finlay, 2006c). The researcher's role is to capture the complexity and ambiguity (Finlay, 2006c). In phenomenology, description as opposed to analysis is favoured, although the role of the researcher as an interpreter of the data is acknowledged (Creswell, 2006). Data is collected mainly through in-depth interviews, and multiple interviews with the same participant are encouraged, using a participant group of 5-25 individuals (Creswell, 2006). Other data sources can be used to support the interview data (Creswell, 2006) provided they record life events in both the participants and researcher context (Kerry & Armour, 2000). The output from phenomenology should be animated and rich in narrative (Kerry & Armour, 2000). One of the purposes of phenomenology is to collect data that is of value and use to other groups. All these characteristics of phenomenology and in particular, its objective of describing and understanding lived experience, can be seen in the Shaping Health research.

In phenomenology, the researcher is supposed to set aside their personal experience of the phenomenon being studied in a process known as "bracketing" (Creswell, 2006). This appears to contradict the reflexive epistemology adopted for this research and the acknowledgement that the researcher influences the research. Other authors however explain bracketing differently seeing it as the researcher striving to see the world as the participants do and being non-judgemental of the participant experience (Finlay, 2006c). This alternative explanation is in line with the reflexive approach described at the start of this chapter.

Ethnography offers methods suitable for addressing the research questions and some aspects of ethnography have influenced the Shaping Health research. Ethnography is the study of people in naturally occurring settings, where the researcher is present alongside the participants (Brewer, 2000; Creswell, 2006; Hammersley & Atkinson, 2007) and the researcher is immersed in the environment being researched (Bloor, 2001). Its origins are in attempts to understand, through cultural description, groups of people colonised during the British Empire, and separately in the Chicago school, which studied mainly marginalised groups in US cities in the 1920's and 1930's (Brewer, 2000). Ethnography has been criticised for providing only a description, but its proponents argue that it has a theoretical basis arising from the use of natural settings, researcher participation, the collection of naturally occurring data and the flexible collection of data without imposing fixed categories (Brewer, 2000). Some ethnographers argue that the data they collect is equal to that collected by positivist methods, whereas others reject positivism and state that their data, whilst different, are of equal worth because they are collected in the natural environment which is valid for research (Brewer, 2000). A third group within ethnography practise "post-modern reflexive ethnography" arguing that there is no single reality to capture, that all research is socially constructed and methods are cultural constructs, drawing the conclusion that the researcher must acknowledge the partial nature of the account through reflexivity (Brewer, 2000). An interesting feature of ethnography is that the research design evolves during the study, and the research questions are not necessarily stated up front, and even if they are, they may evolve during the study (O'Reilly, 2008). The focus of the analysis in an ethnographic study is on the interpretation of meaning of individual and group practice (Hammersley & Atkinson, 2007). In ethnography the researcher is interested in depth of knowledge, rather than breadth; nevertheless, it may be appropriate to consider whether what has been learned in depth in one situation can be applied to another set of circumstances, and to develop theories to explain certain aspects of social life (O'Reilly, 2008). Thus, the output of ethnography which requires deep reflection, can be description, explanation and theory, and for some researchers a change for the group and circumstances studied (Hammersley & Atkinson, 2007). Whilst this method had the potential to address the Shaping Health research questions, in practice the time constraints of the project, and in particular the part-time nature of the research, and the difficulties in accessing the group for prolonged periods of observation, meant that this method was not practical for the Shaping Health project. It did however influence the Shaping Health Research and this can be seen in my volunteering for HomeStart, see section 4.8.1, "Recruiting the Research Participants, where I spent significant periods of time being with low SES women and learning about their lives.

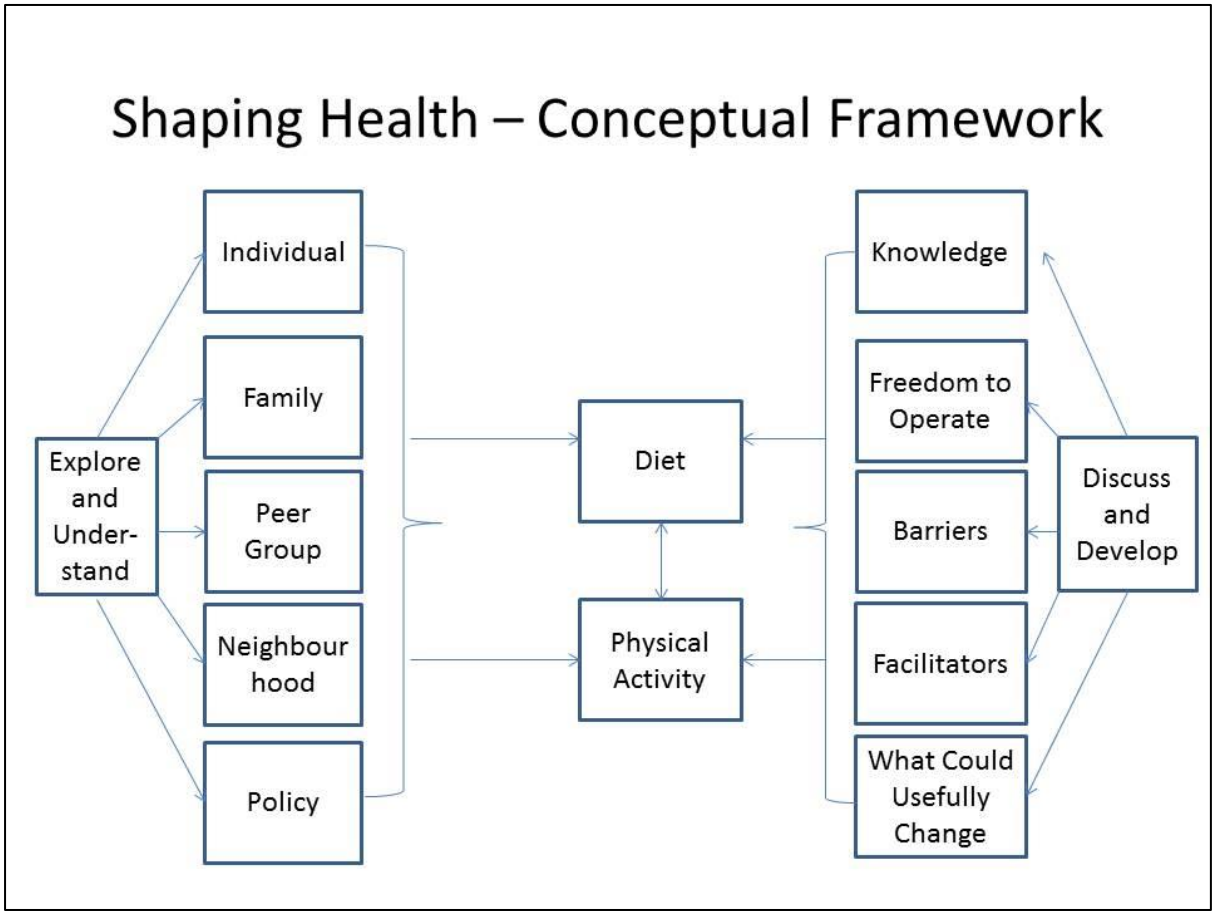
The method for this research was also influenced by a case history approach. This method can use a single, or multiple cases, and may be selected to demonstrate multiple facets of a case (Creswell, 2006). The researcher needs to have access to an appropriate case and usually multiple information sources related to that case, e.g. interview data and documentary data. Whilst the Shaping Health research does not use documentary data and the number of cases is larger than is typical of case history research, the interviews carried out could be described as life history interviews (Taylor & Bogdan, 1998). In life history interviews the emphasis is on the relationship between the story people tell and what they experience (Chase, 2011; Shopes, 2011). This approach can be used to improve the quality of participants' lives (Chase, 2011) as interviewees focus on aspects of their lives with which they are dissatisfied and want to change. In this research there was, for some participants, an immediate improvement in their lives arising from the opportunity to discuss and review their lifestyle behaviours. The research was conducted with the objective of developing ideas for pubic interventions to support low SES women and in this sense too, the Shaping Health research has the purpose of improving their lives.

To address the research questions data on the participant experience needed to be collected. Whilst data collection should be participant led and focus on how they view and describe their experiences, it is useful to identify up-front the areas where it is helpful for the participants to set out their experiences. To guide both the interviews and the data analysis a conceptual framework was developed to address the Shaping Health research questions.

4.7. The development of a conceptual framework

In the selected research area, a lot is known about the health problems and associated lifestyle behaviours particularly the relatively poor health of low socioeconomic status women and the role diet and lack of physical activity play in contributing to poor health in this group. These topics are covered in detail in the two literature review chapters. The literature review also set out how the potential explanations for the health behaviours are multiple, complex and not well understood, but are likely to fall within the boundaries of the socioecological model of health. It was therefore possible to build a conceptual framework for the study, at the outset, to address the research questions. The conceptual framework developed for the research is shown in graphical format below.

Figure 7 (Chapter 4.7) Shaping Health – conceptual framework



This framework makes it clear that the study is limited to two health behaviours namely diet and physical activity. The double headed arrow linking diet and physical activity indicates that these two factors influence each other. The framework also makes it clear that all aspects of the socioecological model of health will be explored with the study participants, and for clarity these are set out on the left side of the framework. Some of these levels of the model can be usefully subdivided, in particular family into children, partner and other adults, neighbourhood into access to shops, facilities, and the environment; and policy into income and taxation. These are not shown on the figure for the sake of clarity in presentation, but were addressed in the interview guide. The factors on the right which are the areas to discuss and develop with participants are also set out to show the scope of the proposed study and the areas where explanations were sought.

4.8. Data collection

The typical data collection method in qualitative studies, is the in-depth interview. Other suitable data collection methods to address the research questions are observation and the focus group. I considered the former and used the latter so these two data collection tools are discussed in this

section. This section starts though with the crucial step prior to carrying out interviews, recruitment of the research participants.

4.8.1. Recruiting the research participants

Low SES mothers are a difficult to reach group because they have busy and sometimes chaotic lives and in the normal course of events I do not interact with low SES mothers of young children. To familiarise myself with the lived experience of low SES mothers and to make opportunities for interviews I undertook two activities. The first was to volunteer with HomeStart, a national charity, active in the London Borough of Hillingdon that supports families with young children that are struggling in some way, by providing volunteers that visit the family weekly, and by giving of their time and experience, support the family. HomeStart supported 36,000 families across the country in 2010-11 (Ghate & Moran, 2013). The charity works with all types of family and is not limited in any way to supporting low SES women, but because it helps struggling families, a significant part of its work is with low SES women. A report by the Joseph Rowntree organization on HomeStart services looking at the work of HomeStart in the South of England and Northern Ireland found that income levels were low amongst service users (McCauley, Knapp, Beecham, McCurry, & Sleed, 2004).

As a trainee volunteer I underwent a training programme delivered by HomeStart Hillingdon over six weeks comprising 20 two-hour sessions covering a wide range of topics relating to family life with many of the examples and case studies drawn from low SES families. On completion of the training course I was matched with my first family that I supported for several months and whilst I have been working on the Shaping Health research project, I have supported six families. Two of the mothers in the families I supported became research participants after my period with them as a HomeStart volunteer had reached a natural conclusion.

The second activity, which followed on from my HomeStart volunteering was to establish relationships with Children's Centres in the low SES areas of the London Borough of Hillingdon. Whilst not all the Children's Centres that I approached allowed me to recruit participants from their service users, my work as a HomeStart volunteer gave me credibility with the Children's Centres' managers and staff. I was able to attend various sessions held at the Children's Centres including "Stay and Play" and baby weighing, and mix with the mothers and talk to them about the research project and what taking part would involve. Meeting and mixing with the mothers in this informal environment gave me further insights into their lifestyles and some of the pressures they face.

At the time of study recruitment there were two types of Children's Centres operating in the South of Hillingdon, most of the centres were managed by Hillingdon Council, but one centre, Cornerstone was independent. Cornerstone is a local charity based in Yiewsley and at the time of recruitment

was a designated Sure Start Centre, Sure Start centres provide a range of services to families and individuals in its community. A major Cornerstone user group was parents with children under five. In contrast to HomeStart, Sure Start has a focus on disadvantaged families with the objective of reducing inequalities in child development and school readiness.

The relationships with the Children's Centres grew over the course of the project. One of the research participants introduced me to the Children's Centre Advisory Board with responsibility for all the Council managed Children's Centres in the south of the London Borough of Hillingdon. I presented the research to the Advisory Board in May 2016. Through the chair of the Advisory Board, David Brough, my research was recommended to the managers of all the local Children's Centres and I was able to expand my visits to more Children's Centres.

At the time of recruitment, the services at the Cornerstone Sure Start Centre and the other Children's Centres were mainly accessed by Mothers who used the drop in "Stay and Play" sessions for children under five and to see midwives and health visitors who were based at the centres (Maisey et al., 2013). I visited six of the Children's Centres in the more deprived areas of the borough and four gave me access to their service users.

HomeStart helped me in one further way. At an event near my home, which I was attending in my capacity as a trustee of the local community association, I met the chair of trustees of HomeStart Slough, Lesley Michaelis, and through her I was able to conduct a focus panel with the service users of HomeStart Slough, an area geographically close to my research area in Hillingdon and with similar demographics. I used this focus panel, not as a primary data collection source, but rather to inform the data collection in the third stage interviews.

4.8.2. Working with the research participants

Not everyone who expressed an interest in taking part in the research became involved in the project. Mothers who said they were interested in taking part and took away a participant information sheet later decided not to take part. Some mothers went as far as to agree an interview, but then cancelled, and did not arrange another date. This is indicative of their busy lives and conflicting priorities.

In total 20 mothers were interviewed for the project, two recruited from HomeStart, eight from the Cornerstone SureStart Centre, nine from the Children's Centres, and one was the sister of another participant. Over the period as a HomeStart volunteer I had established a strong relationship with the two HomeStart mothers and they were keen to take part in the research. The situation was different with the mothers I met at the children's centres. They had to be encouraged to take part

through multiple conversations at the Children's Centres, by text and by phone to earn their confidence and respect. This was a long process with the visits to the Sure Start Centre and Children's Centres starting in November 2015 and continuing to August 2016.

Most, but not all, of the research participants were happy to invite me to their homes for the interviews. Other interviews took place at the Cornerstone Sure Start Centre, in a room provided to me for that purpose by the management, and in coffee shops. I had hoped to interview all the participants twice but it was only possible to carry out 16 second interviews. For two of the mothers the mobile phone number no longer worked and they had stopped attending the Children's Centre. Two were contactable but chose not to do a second interview.

Data collection for this study was through an in-depth interview using an interview guide developed from the conceptual framework. This format allowed me to use the same interview guide and pursue all aspects of the conceptual framework with all my participants, but for the interview to be interviewee led, which meant, for example, varying the order of questions, exploring some questions in more detail than others, and if appropriate, adding in new questions (Bryman, 2008; Taylor & Bogdan, 1998). Some participants were very open and the discussion proceeded more like a conversation than an interview. Other participants were more reluctant to talk and did not respond well to open questions about their lifestyle and family. They wanted to answer specific questions. The interview guide was flexible enough to deal with these different situations.

An alternative approach that would have allowed me to follow my conceptual framework would have been to carry out unstructured interviews, replacing the interview guide with a list of topics to discuss (Bryman, 2008). Whilst this approach is attractive as it puts more emphasis on the participant to direct the discussion and reduces the power relationship between me as the researcher and the study participants, I was concerned that with my lack of experience in qualitative interviewing that I would find this approach too difficult. I believed that I needed the support of a list of broad questions to conduct the interviews successfully. By using an interview guide I ensured that the same topics were covered with each participant, but I was not prevented from addressing specific questions to each participant based on what they told me (Patton, 2002).

Key to the success of an in-depth interview is to allow the interviewee to respond to questions in their own terms. The role of the interviewer is to explore not challenge what the interviewee says; it is to draw out the perspective of the interviewee. Drawing out the interview perspective is facilitated by the development of rapport which means establishing a relationship that encourages the participants to respond fully to the questions from the interviewer (Bryman, 2008). For this

study the rapport grew from the volunteering work and the time spent at the Children's Centres, engaging the mothers, playing with the children, and the texts and phone calls to set up the interviews. In the interviews themselves I maintained rapport through eye contact and friendly behaviours. At the mothers' homes I continued to play with the children and I took small toys with me to the interviews so that I could engage the children. Talking and playing with the children developed my bond with the mothers.

Rapport however has its dangers for the research. Too much rapport can lead to participants telling the interviewer what they want to hear (Bryman, 2008) or what I call, based on my business experience, "prestige answers" where participants give responses that they think will make them look good in the eyes of the interviewer. In this research this means providing examples of positive lifestyle behaviours even if they are not typical behaviours. Bryman (2008, p699) calls this the "social desirability effect". This can be countered by being non-judgemental, not approving reports of positive behaviours and restraining from criticising unhealthy behaviours. Encouraging detail also countered the temptation to provide socially desirable responses.

I learned during the interviews that I needed to be exquisitely sensitive to what the interviewers were saying (McKay et al., 2003), listening carefully to the words and the way they were spoken, and monitoring my own body language and responses to be open, supportive and receptive to what was being said. I was aware that a false move on my part, a hint of criticism, verbal or in my face or body, might close down the conversation particularly when the participant said something revelatory or embarrassing that could be taken to reflect badly on them as an individual.

The research questions required a series of interviews rather than a single interview to collect the data. Multiple interviews allow the relationship between the participant and the researcher to grow leading to the disclosure of more personal information and the discussion of topics that the participant may not wish to cover with someone they do not know well at a first meeting. Multiple interviews also allow the researcher to see if responses are consistent or whether the participant's views and experiences change with time (Johnson & Waterfield, 2004). This was an important consideration with my participants as their lives were changing rapidly with new pregnancies, babies growing into toddlers, children starting school, moving home, partners moving in and out of work, and the participants themselves going back to work after maternity leave. Another reason for selecting multiple interviews to address the research questions was that I anticipated collecting, in the first and second interviews, ideas for potential public health interventions to support the participants in the adoption of healthy lifestyles and I wanted an opportunity to get their feedback on these intervention ideas.

In addition to the in-depth interview I considered two further data collection tools to address my research question, observations and focus groups. I used the latter to support my data collection and below, I set out why I chose not to use observation and why I used a focus group.

4.8.3. Observations

Observation is an accepted technique in qualitative research to record behaviour directly rather than it being reported by the research participants (Bryman, 2008; May, 2011). Observation can collect data that may not be recorded in a semi-structured interview because there may be a gap between what people do and what they say, because people may forget something that they do which is relevant or people may misinterpret a question and not provide a full answer (Bryman, 2008). Observation can also be used to fill gaps and introduce new areas of enquiry that the researcher had not previously considered in the list of interview topics (May, 2011). Observation allows the researcher to see how the participant interacts with the world not how participants interpret their interactions with the world (May, 2011). It is an inductive process with the findings emerging from the data without the researcher having to establish specific lines of enquiry in advance (May, 2011).

As set out in Section 4.8.2, Working with the research participants, I was concerned that my participants would seek to impress me with their answers and for example describe the purchase of healthy food; or conversely shock me by describing a particularly unhealthy diet (see Section 4.2.4, Social critique). Observing them as they shopped would allow me to see what they actually bought, rather than record what they said they bought. Thus, the purpose of observation in my research would have been to provide accurate and factual information about the participants' lifestyle behaviours, and shopping seemed a suitable behaviour for observation. It would have been possible to go shopping with the participants and observe the type of shops they visited, what they bought, whether they read the food labels, whether they were influenced by special offers etc.

The literature supports observation being undertaken by a single observer and observations can be repeated at different times and locations (Adler & Adler, 1998,) both in keeping with my idea of accompanying research participants on shopping trips. It is also acceptable for notes to be made after the observed event (Adler & Adler, 1998) which again fitted my idea of shopping observation. My concern with carrying out this type of observation was with the ethics. I had to decide between carrying out the observation clandestinely to observe a natural behaviour or advising the participants that I was observing them which I thought may lead to them altering their behaviour.

From the literature I learned that many observation studies are conducted without getting the participants' consent to be observed (Adler & Adler, 1998). Even current university standard ethics committees are likely to agree to observation studies, without participant consent, provided the

individuals cannot be identified and their privacy is not being breached in any way. I was, however, uncomfortable with the idea of observing my participants without their consent. I felt it would be dishonest and as I intended to carry out a series of in-depth interviews with my participants, I did not want to undertake any activities that would damage the relationship and trust I needed for in-depth interviews.

Whilst I was considering whether observation would be a useful data collection tool and how to use it in my research, I did accompany one research participant on a shopping trip and made notes after the trip. I felt uncomfortable about the whole process because I did not tell her that I was conducting an observation and decided not to continue with this data collection method. I have not included the data from this one observation in my findings.

I remain conflicted on the value of observation to address my research questions. I believe that if I could have found a way to undertake observation with the consent of my participants that I could have collected some useful data. What I needed was an opportunity to observe shopping behaviour in a group other than my research participants, but setting this up was beyond the scope of this project. I believe that the work I do as a HomeStart volunteer goes some way to address the lack of observation data as it gives me an opportunity to immerse myself in the life of families that have many characteristics in common with my research participants. I have seen how the mothers shop, prepare meals, take the children to nursery and to school, carry out activities and how they work around the home. These informal observations have informed my research and have helped me develop as a researcher, but do not constitute an element of the actual findings. Moreover, as a HomeStart volunteer I have visited three Children's Centres (not centres where I recruited participants) with my families and have experienced the Children's Centre as a service user and met other service users in an informal way. This has provided further insights into the lived experiences of my target group.

4.8.4. Focus groups

A focus group allows for interaction with a small number of participants, usually six to ten, that takes place over a period of one to two hours (Patton, 2002). Focus group members should be from a similar background to facilitate discussion and ideally the discussion held in a natural setting (Patton, 2002 p385). In addition to the interaction between the researcher and each participant that takes place in an interview, there is discussion between the focus group members allowing participants to add to, and modify their response according to what other people say (Bryman, 2008; Patton, 2002). Focus groups can be particularly useful in collecting data from oppressed groups whose voice is not

normally heard, where the participants gain strength from each other to answer the questions posed (Patton, 2002).

A focus group has the advantage of providing data from many participants in the same time frame that it would normally take to do a single interview and the discussion in the focus group enriches the data (Bryman, 2008; Patton, 2002). In addition, the power relations are different in a focus group compared to the in-depth interview because the group can, to a certain extent control the agenda and introduce new topics (Bryman, 2008). There are though some disadvantages compared to interviews such as restrictions on the time available for any one participant to respond, the risk that some participants will not be heard, and the danger that a dominant view of one participant will prevent others with different views from speaking (Patton, 2002).

I selected in-depth interviews as the best method to address my research questions but I remained aware that a focus group would allow me to interact with more people and increase my perspective. When I was asked by HomeStart Slough to evaluate the Healthy Families programme I chose to do a focus group because the data needed to be collected in a short time. The mothers in receipt of the Healthy Families programme had experience of a number of public health interventions and this focus group provided me with an opportunity to get additional input into the ideas for interventions suggested by the interview participants, that I was able to feed back into my third interviews.

Before setting out how I carried out the in-depth interviews and the focus group I will address how I made sure that the research had the appropriate approval from the Brunel University Ethics Committee and how I informed the participants about the proposed research and got their consent to participate in the research.

4.9. Ethics committee approval and funding

The research project was submitted to the Research Ethics Committee of the Department of Life Sciences at Brunel University and with minor amendments was approved by the committee on the 6th August 2015. This application included carrying out observations but as explained above although one observation was carried out observation data are not part of the findings reported.

When the opportunity to conduct the focus group arose, an amendment to the study protocol was submitted to the Research Ethics Committee of the Department of Life Sciences at Brunel University to add focus group as a data collection tool, and again with minor amendments this was approved on 12th June 2017.

The two approval letters from the Research Ethics Committee are provided as appendices 1 and 2.

An application for funding for the Shaping Health research was made to the AL Charitable Trust, based at the London School of Economics and Political Science which is a foundation that supports PhD students. The charity provides a limited number of small grants (up to £1,000) each year. In 2015 the AL Charitable Trust set a priority of research in low SES women and an application for support was made. The application was successful and the Trust made an award of £600 on 1st June 2015. The funds were used to recognise the time the participants gave to the interviews (£20 per participant interview).

A further application was made to the College of Health and Life Sciences for an additional £200 to make payments to the participants for the third interviews. Not all the participants accepted the payment and in total £800 was paid to the participants for 46 interviews.

No payments were made to the focus group participants because they were attending the family support group anyway and the creche service was provided by the HomeStart Slough staff and volunteers.

4.10. Informed consent

Consent is an important consideration in any research project and to my mind considerable thought needs to be given to making sure participants understand what they are being asked to do when recruitment is from vulnerable groups. I wanted to recruit low SES mothers and many would consider these women to be a vulnerable group (e.g. Goodwin, 2016). Despite their vulnerability it is acknowledged that it is important to study low SES groups if the aim is to develop and deliver services to meet their needs (Schrems, 2014). This is my objectives as I hope that through a better understanding of lifestyle behaviours of low SES women that more helpful public health interventions can be implemented.

To be assured that participants are actively consenting to take part in a research study the researcher must make sure the participants understand what taking part will involve and importantly the pros and cons of participating (Smith, 2007). The process needs to be designed to meet the needs of the participants so that the informed consent process is seen to be of benefit to the participants and not the researcher (Schrems, 2014). I made it clear when approaching potential participants that taking part was voluntary and that participation in the study would not influence any other services they received. The study information sheets were written in simple language and I made sure I was available to answer any questions. I explained carefully that they could withdraw from the study at any time. I checked at the beginning and the end of each interview that the participants were happy to continue in the research process, because circumstances may have changed for the participants and it is wrong to presume continued consent (Schrems, 2014). Even if

participants did not specifically say they wanted to withdraw, when I contacted participants for second and third interviews if they appeared reluctant to meet, I took this as a signal that they did not want to continue with the research and did not pursue them. I wanted to make participation in the research a positive experience for the participants and in this I think I succeeded. The interview participants that completed the whole research programme, and the focus group participants, said how much they had enjoyed taking part and were disappointed when the research came to an end. They all said they would have liked the meetings to continue.

When thinking about informed consent it is important to consider the vulnerability of the individual participants not just the needs of the whole vulnerable group (Schrems, 2014). This was brought home to me in the course of my research when one participant who had given her informed consent and had completed the first and second interviews became mentally ill. I felt that she was not in a fit state to say whether she still gave her consent to the research. I talked to her and as a result although we met, I decided not to conduct the third interview with this participant.

Obtaining informed consent may be compromised if inappropriate incentives are offered for taking part in the research (Schrems, 2014). Whilst I decided to make a small financial payment to my participants to acknowledge the time they were giving me for the research, the availability of the payment was not made part of the informed consent process. I felt this was important as in this group of low SES women the payment may have influenced their decision to take part.

I felt it was advantageous that I was not a service professional at any of the sites where I recruited participants for the research, as such a power relationship has the potential to distort the informed consent process (Smith, 2007).

The consent forms and information sheets used with the interview participants and the focus group members are provided as appendices 3, 4, 5 and 6.

4.11. Carrying out the interviews

In-depth interviews were a new research tool for me, but I had the opportunity to use them whilst I was studying the literature for this project, in a separate piece of research (Wittels & Mansfield, 2019) and I was able to carry forward this earlier experience into this project.

An interview is different from a conversation and certain rules need to be followed. How the interviewer responds to what an interviewee says determines the style of the interview and the type of information that can be collected. Britten (1995) provides a scale of directedness for the interviewer which starts from making encouraging noises as the least directed, and then moves through commenting on what the interviewee has said, probing what the interviewee has said,

probing earlier remarks and finally introducing a new subject. In this research project I felt that the best way to collect information was to encourage the participants to talk and for me as the interviewer to be led by the participant. I therefore tried to use the first two stages on Britten's directedness scale, and only use items from further along the scale, when the interviewee had no more to say on a topic, or started to talk about an issue that was clearly not related at all to health behaviours. This was not always easy to judge as the participants often wanted to talk about their children and partners and whilst this could be seen as a digression and moving off topic, it was clear that their children, partners and other family members had a major influence on the participants' lifestyle behaviours, making these data relevant for the research.

I used my reflections on remarks made by the interviewee to check for consistency and where necessary to challenge what was being said if I felt that the participant was withholding information or giving inaccurate information (Cannell, Miller, & Oksenberg, 1981). I relied on the rapport that I developed with the interviewees to encourage full, honest and accurate replies, approaching health behaviour from different directions. I was able to use the second and third interviews to clarify areas where I was uncertain and to check for consistency in responses. I found that participants were remarkably consistent in what they told me, sometimes repeating in the second and third interviews examples and anecdotes they had given me in the first interview, despite several months elapsing between interviews.

As I have explained, Section 4.8.2, Working with the research participants, I used an interview guide to help me during the interviews and to ensure a degree of consistency between the interviews. The guides that were developed for the three interviews are provided as appendices 7,8 and 9. I found after the first three, first round interviews that I was struggling with the interview guide and I therefore, after discussion with my supervisors, made some changes to the guide (it is the revised guide that is provided as an appendix). The first version of the guide had started by asking the participants what they understood by the term health. The participants found this question difficult to answer and the conversation got off to a poor start. The revised version started with questions about the interviewee's family, children and the sort of meals they ate. The interviewees found these questions easy to answer and the interview progressed well from this point. The questions in the revised guide remained open to set the scene for the rest of the interview (Taylor & Bogdan, 1998). The other change I made to facilitate discussion was to provide some visual aids. For example, to talk about diet I provided a visual from the "Five a Day" campaign of different fruits and vegetables. To facilitate the discussion of physical activity I used a poster from the "This girl can"

campaign. For the third interviews I prepared visuals in PowerPoint to illustrate each of the ideas for potential interventions. These are provided as appendices 10, 11, and 12.

I found that at times, in line with the experience reported by Finlay and Gough (2003), both myself as the researcher and the participants were dissatisfied with the interviews. When I played back the recordings of the interviews, I noticed too many closed questions and perhaps more importantly comments made by the participants that I failed to pick up on. I focused on these areas where I thought I had performed poorly when I played back the interviews so that I could learn not to make the same mistakes in the next interview. Over time I improved and I was more relaxed with the participants at the second and third interviews which helped, but there are still too many closed questions and opportunities to explore issues missed. Paradoxically participant dissatisfaction often arose from the open nature of the questions. When I did ask open questions it made them uncomfortable, they did not want to give long descriptions, or perhaps think deeply, they wanted to answer what they saw as straightforward questions about their diet and exercise patterns. When a participant said, just ask me questions, I tried to do what she wanted, but gradually encouraged her to give more thoughtful and in-depth responses.

Whilst I am not a healthcare professional and have no role in advising on diet or physical activity I was seen by some participants, despite my best endeavours, as an expert. My familiarity with the literature and with the public health guidance meant that I did have experience that was of use to the participants and I felt a certain sense of responsibility to them, especially when they reported views and behaviours not in keeping with current recommendations. I tried to get around this conflicted position by remaining neutral during the interview, but if a participant asked directly for advice during the interview, I refrained from answering the question at the time, but offered to come back to it after the interview, and made sure that I did, when all the topics on the interview guide had been covered.

The participants reported that being able to unburden themselves and have someone listen to them was valuable to them and this has been reported by others doing qualitative research for example Nicolson (2003) in her work with mothers experiencing post-natal depression. Nicolson said that in her study the interview itself was seen by the participants as an intervention and this was true of my research. Some of the participants said that the time spent talking about healthy lifestyles made them evaluate their behaviours and decide to adopt more healthy lifestyles. They were anxious to report the positive changes at the next interview. There was a downside here too, with one participant who wanted to lose weight saying she would not participate in a second interview unless

she had lost weight and I was not able to arrange a second interview with that particular participant (presumably because she had not lost weight).

I found Gough's (2003b) analysis of the different persona adopted by interviewers instructive and used it to analyse my behaviour in the interviews. In many of the interviews I was caught between being a detached questioner and wanting to contribute to the conversation. I was in danger of being what Gough describes as a pundit, where the researcher is self-indulgent and summarises what the participant has said and reflects it back to them for further comment. There is a risk with this behaviour, that the researcher will lead and structure the conversation by indicating to the participant what the researcher finds interesting and thereby encouraging them to talk more about that particular topic and adopt the same line. At times I adopted another researcher type identified by Gough (2003b), that of comedian; adding humour makes the interview more like a conversation and there was certainly a lot of laughter in the interviews, but the researcher can be seen as colluding with the participants and encouraging them to describe behaviours that are amusing. The other side of this particular coin is the researcher as a critic (Gough, 2003b) where the researcher confronts unacceptable behaviour. In Gough's example he was concerned about sexism and racism neither of which were issues in my discussions but I did have participants describing unhealthy lifestyles and I found myself laughing with the participants when they described how awful some of these were. As I have already said I avoided giving advice. I found however that challenging descriptions of unhealthy behaviours did lead to interesting discussions often with the acknowledgement by the participant that these were poor behaviours, but with the participant explaining why they were adopted. Gough's last researcher type is the researcher as professional; this researcher hides their true views and feelings and keeps a neutral stance, but without sharing and giving something of herself, the researcher is unable to encourage thoughtful insights from the participants. I tried to avoid being seen as a professional and during the interviews tried to give examples from my own experience of poor and good behaviours to support the discussion. To build trust and encourage self-disclosure it is necessary for the interviewer to reveal something of herself (Rapley, 2004).

All this means that because relationships are developed with participants there is an inevitability with in-depth interviews that some of the relationships will be more successful than others. In line with the experience of other researchers, for example Nicolson (2003), I found that I cared about some participants more than others, either because of the way we interacted together, their particular circumstances or both. As I have already mentioned I decided not to conduct a third interview with one participant because she had developed mental health problems, but I continued

to visit her and offer emotional support and help with her child. This only stopped when she moved to New Zealand.

The data that is collected in in-depth interviews depends not only on the relationship developed between the researcher and the participant, but also on the location of the interview (Atkinson & Delamont, 2006). One can imagine for example that a participant talking about health behaviour may focus on different topics if the interview takes place in a health centre with posters on the wall about healthy eating and exercise, compared to the interview taking place in the participant's home surrounded by their own possessions, or in a coffee shop where cakes are displayed. The interviewee is more likely to give full and honest responses in a relaxing atmosphere and I therefore conducted the interviews in the participants' homes or a venue of their choosing such as the Children's Centre or a coffee shop. Most of the interviews were carried out in the participants' homes. Three participants did not invite me to their homes. I interviewed two participants at the Children's Centre. For one of these participants the second and third interviews were carried out in a coffee shop. For the other participant the second interview was carried out by telephone at her request and there was no third interview. I interviewed one participant at a coffee shop on two occasions and the third interview was carried out at a leisure centre whilst her daughter participated in a gym class.

I anticipated at the start of the project that I would have to find a way to provide childcare so that the participants could focus on our discussion. In the event nearly all the interviews were carried out with the children present. In a small number of cases the children were looked after by another member of the participant's family or the children were being looked after elsewhere (nursery, school, gym class). I discovered that most of my participants did not want to be separated from their children and only used creches or other childcare facilities when absolutely necessary, so separating them from their children would have been a source of anxiety for them during the interviews. Instead the presence of the children made for a relaxed atmosphere and attending to the children's needs introduced natural breaks into the conversation.

The interviews were recorded using an Olympus DS-50 Digital Recorder. To distract from the mechanics of recording the interview the recorder was switched on (with the participant's agreement) at the start of the interview and not referred to during the interview. I did not make notes during the interview for fear of discouraging the participants from talking freely. I did however record brief notes after the interview on relevant topics such as the type of housing and particularly salient points made by the interviewee. The average duration of the recorded interviews was 48 minutes, 52 minutes and 53 minutes for the first, second and third interviews

respectively. The shortest interview was 24 minutes and the longest 72 minutes. The time spent with the participants was longer than the recorded interview length as time was spent at the beginning and end of each interview that was not recorded. The first interview took place in January 2016 and the last in October 2017.

In two cases the Digital Recorder failed to record the conversation. I realised this when I left the interview and, in both cases, recorded detailed notes of the conversation using the interview guide to help me recall the conversation. I have used material from these two interviews in my findings and analysis, but I have not used any quotes from these two interviews as I cannot be sure that I recalled what the participants said exactly.

4.12. Carrying out the focus group

The opportunity to run the focus group arose out of chance meeting with the Chair of Trustees of HomeStart Slough. HomeStart Slough had been successful in getting funding from Children in Need[12] for an intervention called "Healthy Families" and the Chair was seeking help with investigating the impact of the intervention with service users, so that she could provide a report to Children in Need. The Healthy Families intervention is delivered by HomeStart volunteers at regular home visits and at a weekly family support group session and focuses on four lifestyle behaviours of which two are healthy eating and physical exercise. The other two are vaccinations and oral health. There was thus a good overlap with my research interests and I agreed to undertake a focus group with HomeStart Slough service users who had been in receipt of the intervention. For HomeStart Slough I used the data collected to report on all four lifestyle behaviours (Wittels, 2017). For the Shaping Health research the data collected at the focus group was used to inform the ideas for interventions and the focus group participant experience of the Healthy Families programme was used in the third interviews with the interview participants.

The timescale for the project particularly the need for HomeStart Slough to have a report to submit to Children in Need meant that the best tool to collect data was a focus group. The focus group format was useful because it allowed service users to describe and discuss their experiences with other service users with the group discussion providing context and support. The focus group was held at one of the regular family support group meetings so that the environment was comfortable and familiar to the participants. The HomeStart volunteers ran a creche during the focus group so that the participants could give their full attention to the discussion whilst their children were looked

[12] BBC Children in Need is the BBC's corporate charity. It provides grants for projects focusing on children and young people in the UK.

after in an adjoining room. The participants knew the HomeStart volunteers well and the children were familiar with the surroundings so this arrangement worked well for all concerned.

The focus group discussion was recorded using an Olympus DS-50 Digital Recorder. I made notes during the discussion to make sure I could identify who said what during the discussion. The focus group was held on the 27th July 2017.

The focus group had a duration of an hour. The participants would have liked to continue the discussion for longer but the volunteers needed help with some of the children which meant that the focus group had to finish.

I developed a discussion guide to use at the focus group with which I aimed to collect information to support my third interviews and collect the data for HomeStart Slough by encouraging the participants to talk about the four key areas of the Healthy Families Programme. I encouraged them to share their experiences of participating in the programme and talk about what they saw as the strengths of the programme and any areas where it could be improved. The discussion guide is provided as appendix 13.

4.13. The location and the participants

The interview participants were recruited from the London Borough of Hillingdon and the focus group participants from Slough. To address the research questions an effort was made to recruit mothers with young children living in a low SES area. The area where the participants live has a major influence on the findings and it is therefore important to consider the characteristics of the area.

The London Borough of Hillingdon is diverse in terms of SES. The Office for National Statistics uses a geographical area called a Lower layer Super Output Areas (LSOA) to report data including SES. Each LSOA has a population in the order of 1500 and there are 34,753 such areas across England and Wales (Office for National Statistics, n.d.). It is possible to compare areas in terms of SES by looking at the percentage of LSOAs in a specified area that are in the worst 50% nationally. Thus, London has 67% of its LSOAs in the worst 50% nationally and Hillingdon has 57% meaning that Hillingdon is above average for London in terms of SES. There are however some wards in Hillingdon particularly those in the south of the Borough that have all their LSOAs in the worst 50% nationally meaning that they are below average in terms of SES nationally. It was in these wards that the recruitment for the Shaping Health study took place.

The participants were recruited from amongst the service users of HomeStart and the Children's Centres and are therefore self-selected and can be described as a "convenience sample" (Johnson &

Waterfield, 2004). As there was no attempt to ensure that the study participants were representative of all the low SES women in Hillingdon, it is important that the characteristics of the study participants are presented so that readers can determine whether the study results are applicable to other settings. This information is presented in Table 2, in Section 4.15 Participant Demographics below. Here it is important to state that as recommended for this type of qualitative work the study participants reflected the diversity of the population living in the south of the London Borough of Hillingdon and in Slough (Johnson & Waterfield, 2004).

Recruitment of the focus group participants was at the HomeStart Slough family support group. Every service user attending the family support group on the 20th and 27th July 2017 was given an information sheet about the focus group and asked if they would like to participate. Those that were interested in participating then completed an informed consent form. Nine service users agreed to participate in the focus group but two did not attend the family support group on the day of the focus group (27th July) so there were seven participants in total. None of the service users approached declined to participate in the research.

As already stated, authorities in the field recommend a group size of six to eight for a focus group so it was a straightforward decision to recruit that number of participants for the HomeStart Slough Focus group. I expected from my experience of the chaotic lives of my interviewees that not all the mothers that agreed to participate would attend on the day of the focus group hence my decision to recruit nine, anticipating some drop outs.

Deciding how many in-depth semi-structured interviews to carry out was not so straightforward. A qualitative study provides information on the group being studied and for the findings to be useful questions of sampling and generalizability have to be addressed. In contrast to surveys which are based on probability sampling, qualitative studies of processes are based on theoretical sampling (Gobo, 2004). Probability samples are random, systematic and stratified in contrast to qualitative samples which are convenient and purposeful (Patton, 2002). This means that some authors claim that the findings from a qualitative study cannot be generalised beyond the sample studied but Gobo (2004) argues that it is possible to generalise from the results of a qualitative study provided the sample is appropriate for the theory generated or claims made.

Qualitative research produces detailed data on a small number of cases (Patton, 2002), but within this paradigm there is a still a decision to be made on whether to collect very detailed information on a small number of participants or less detailed information on a larger number of participants (Patton, 2002). My interest was to work in detail and over time with a small number of participants.

I wanted to establish a relationship with the participants and get their input on potential public health interventions. This meant that I was looking for "depth" rather than "breadth" (Patton, 2002).

This still does not address the questions of how big the sample size should be. Lincoln and Guba (1985) recommend using the principle of redundancy which means adding more cases until no new information emerges. Patton (2002) recommends a minimum sample size at the outset of the study and then adding further cases if the field work indicates that this would be useful to address the research questions. My previous experience of qualitative research was the interviews I had carried out with participants that had completed the Weigh2Lose weight loss programme in Hounslow (Wittels & Mansfield, 2019). There I had carried out ten interviews. I felt that for that study, the ten interviews did achieve redundancy. The participants all had in common that they had completed the Weigh2Lose programme. I thought that my proposed sample of low SES mothers would have less in common and that therefore more participants would be required to reach redundancy. In the event I interviewed twenty mothers for my research and with this number I think I was approaching redundancy. That does not mean to say that with a larger sample I would not have collected more data but I do not think that new themes and sub themes would have emerged. Sixteen women participated in the second interviews. I would have liked to interview all 20 women twice but was unable to interview four. For the third interviews I wanted to interview participants that were interested in ideas for interventions to support healthy lifestyles. I felt that three participants were not interested in talking about ideas for interventions so did not try to conduct third interviews with these participants because I felt that I could not usefully collect further data from these participants. I tried to set up a third interview with 13 participants and actually carried out ten. One participant had become mentally ill and I therefore agreed with her not to do a third interview. I spoke to the remaining two on the phone and they were both having difficulties with the long-term health of their children and did not feel able to commit to a third interview.

4.14. Diversity and SES

The area of Hillingdon in which the study was carried out is diverse in terms of ethnicity with a large number of recent immigrants. The Cornerstone SureStart Centre from which I recruited eight participants was based in the Yiewsley ward. According to the 2011 census data 66.2% of the population is white, 19.3 % Asian or Asian British and 7.4% Black or Black British (Hillingdon London, 2019a). Of the total population 72.3% were born in the UK, 8.5% in the Middle East or Asia, 8.2% in Europe and 5.4% in Africa. (Hillingdon London, 2019a). In Pinkwell ward from which I recruited four participants the figures are similar with 70% of population white, 25.3% Asian or Asian British and 7.3% black or Black British (Hillingdon London, 2019b). Seventy percent were born in the UK, 14.4%

in the Middle East or Asia, 7.6% in Europe and 6.3% in Africa (Hillingdon London, 2019b). In both wards, but particularly Pinkwell, non-white groups are more predominant in the younger age groups which means that the proportion of women falling into non-white categories in the target population for this study will be higher than the percentages for the wards as a whole (Hillingdon London, 2013). The ethnic make-up of the target population clearly has implications for the research as diet, and to a lesser extent physical activity, is influenced by ethnicity and culture. Whilst this research does not set out to explore differences in diet and physical activity behaviour between ethnic groups it is clear that ethnicity and culture play a role and this is considered in the data analysis.

This research project examines a low socioeconomic status group. Our understanding of what is meant by socioeconomic position is based on the work of Marx and Weber. Marx determined social class in relation to the means of production separating workers and the owners of the means of production. Weber took a more multiple hierarchical position and created groups that share a common position and have similar life possibilities based on education, skills and attributes for social advantage (Galobardes, Lynch, & Davey Smith, 2007). A number of different measures of socioeconomic status are used today for public health studies the most common being income (individual or family,) educational level, occupation, wealth and housing. Working with mothers of young children further complicates the determination of socioeconomic position as many may not have work outside the home or have incomes of their own. Public health studies also use proxy measures such as the level of deprivation of the area in which the participants live (Galobardes et al., 2007).

Within a low SES group, women can belong to one or more subgroups divided for example by age, ethnicity, single or in a relationship, living alone or with a partner, having children, suffering a chronic disease, living with a disabling condition, overweight or obese, physically active or inactive. The difficulties associated with defining SES and the existence of so many subgroups make defining a study population for this research project problematic. The decision was therefore taken to rely on the location of the centres where recruitment took place and to approach all mothers attending those centres. I did not qualify the women for entry to the study by any measure of SES; instead I recruited the women from areas of low SES as measured by the Index of Multiple Deprivation.

The literature research, Section 3.4, Diet, body size and low SES and Section 3.5, Physical activity and low SES, has shown that low SES women are more likely than the population as a whole to be overweight or obese with an inactive lifestyle, so women living in low SES areas that fit this description could have been approached for the study. This approach however would have the

danger of limiting the research to a subset of low socioeconomic status women, those that are exhibiting poor health behaviours and where the poor health behaviour is influencing body shape. The research could have become self-serving because as Giddens (2001) describes, class is a large-scale grouping of people who share common economic resources which influence lifestyle and he references Bourdieu who showed that class divisions can be linked to distinctive lifestyles and consumption patterns. Thus, this research could reinforce stereotypes if only overweight inactive women had been recruited for the study. In order to study the impact of SES on health behaviours women had to be recruited for the study irrespective of their body weight and current level of physical activity, but they had to belong to the category of low SES. To be a socially significant group the women should be as variable as possible whilst fulfilling the role of being low SES women with children. Therefore, women were not excluded or included for this research on the basis of ethnicity, body weight, marital status, age, long term health condition etc.

4.15. Participant demographics

The participant demographics collected as part of the informed consent process are provided in Table 2 below. Culturally sensitive pseudonyms have been used in place of the actual names to protect the identity of the participants (Sanjari, Bahramnezhad, Khoshnava Fomani, Shoghi, & Cheraghi, 2014).

Table 2 (Section 4.15) Participant demographics

Interviewee (number of interviews)	Index of multiple deprivation	IDACI	Household income	Education	Age	Ethnicity	No of children	Living with partner
	Decile	Decile	£s					
Sumi (2)	4	4	25,000	Diploma	39	Indian British	1	yes
Fatima (3)	5	3	24,000	Diploma	25	North African	1	yes
Naseem (3)	3	2	under 16,000	Masters	40	Pakistani Danish	3	yes
Vicki (2)	7	7	75,000	High School	32	White South African	1	yes
Radhika (2)	3	3	n/a	Degree	31	Indian	1	yes
Aahna (1)	3	3	40,000	Degree	29	Indian	1	yes
Eva (2)	3	3	30,000	Diploma	31	White Eastern European	1	yes
Christine (2)	3	2	25,000-40,000	HND	42	Filipino	2	yes
Jade (3)	7	4	55,000	Btec	37	Indian British	2	yes
Rozina (1)	3	3	n/a	Post Grad	32	Indian	1	yes
Shabnam (3)	5	3	50,000	Degree	44	Pakistani British	2	yes
Eisha (3)	3	2	20,400	Part way through degree	24	North African	1	yes
Nori (3)	5	3	18,500	Degree	29	Pakistani British	3	yes
Kirti (3)	4	5	Cash strapped	Degree	37	Indian British	3	yes
Lilly (1)	5	4	40,000	Degree	34	Sri Lankan British	1	yes
Meenakshi (3	5	5	16,500	MSc	32	Indian British	1	yes
Rachel (3)	5	4	n/a	GCSE	41	White British	1	no
Jaswinder (2)	4	4	n/a	Degree	29	Indian British	1	yes
Alison (3)	3	2	50,000	Diploma	43	White British	1	yes
Yasmine (1)	9	7	n/a	Diploma	43	Pakistani British	1	yes
Focus Group								
Katie	5	6	n/a	GCSE	24	White British	1	no
Danika	9	8	n/a	Degree	34	Indian British	2	yes
Gurjeet	5	5	n/a	A levels	34	Indian British	2	yes
Ifedayo	4	4	Benefits	NVQ	33	Nigerian British	3	no
Lisa	3	5	n/a	None	27	White British	3	no
Ashley	7	6	Benefits	A levels	25	White British	3	yes
Deepika	8	6	n/a	Masters	32	Indian British	2	yes

The IMD is derived from the participant's post code and is based on a weighted combination of income deprivation (22.5%), employment deprivation (22.5%) , education, skills and training deprivation 13.5%, health deprivation and disability (13.5%), crime (9.3%), barriers to housing and services 9.3% and living environment deprivation (9.3%) with the data published in 2015 but derived from the 2011/2 tax year (Ministry of Housing, Communities and Local Government, 2015). The income deprivation affecting children index (IDACI) is also derived from the participant postcode and

measures the proportion of children in income deprived homes (Ministry of Housing, Communities and Local Government, n.d.) and is included in the demographics table as the research deals with families. Most of the participants lived in postcodes that were average or below average in terms of the IMD. There were three exceptions in the interview cohort Vicki, Jade and Yasmine. All three of these participants were atypical as they were not recruited from the Children's Centres. Vicki and Jade were recruited through my work with HomeStart Hillingdon and Yasmine was recruited through the recommendation of her sister who is included in the study and was recruited from a Children's Centre. Vicki and Jade lived in very modest homes, similar to the other participants in the study and their properties were atypical of those around them. Yasmine lived in a detached house and her property and circumstances were not similar to the other participants. She, alone of the study participants, cannot properly be described as low SES. I have kept her in the study as, despite not being of low SES, her experience of motherhood and in particular the difficulties she experienced in trying to maintain a healthy diet and take exercise with very little support from her partner, was similar to that of the other participants.

The focus group participants were recruited from those attending the HomeStart Slough family support group and I was surprised by the spread of IMD deciles and that three were above average. The housing in Slough is very varied with large and small properties close together but as I did not visit the homes I cannot comment on the accommodation. The HomeStart Slough team that work with this group of service users described them all as being of low SES. The limited income information provided by the participants supports the understanding of Homestart Slough that all the focus participants were of low SES.

The household income was provided by the participants at the first interview, and at the focus group, in writing, on a demographics questionnaire (appendix 14) and I did not discuss it with the participants or seek to validate it anyway. For those participants living in a multigeneration household I did not ask whether the figure provided referred to the participant and their partner or the larger family unit. Two of the participants experienced significant changes in income during the study that are not recorded here. Vicki reported at the second interview that she was bankrupt and that money was very tight. She said she had to restrict her spending on food for the family for the week to £60. She also mentioned that the family had significant debts. Shabnam's husband was out of work at the time of the second interview and he had not found work at the time of the third interview. Her family income was much reduced as the family was living on benefits. Jade and Alison both reported high family incomes. In the case of Jade this income was based on both her and her husband working full time and Jade worked nights. Jade was on maternity leave at the time of the

first interview but had returned to work at the time of the second interview. Alison did not work and her husband worked nights. Lilly also appears to have a high family income but this was based on both her and her husband working. She and her husband also supported Lilly's mother who lived with them.

None of the Slough focus group participants provided their income. Two said they were on benefits and none were working outside the home. Two of the participants who did not have a partner and were not working outside the home can be assumed to be living on benefits.

The education level of the participants as a group was high. Eight of the interview group and two of the focus group were educated to degree level or above. For some of the women their education did not protect them from a low household income. For example, Naseem with a master's degree qualification was working a few hours a week from home and mainly dependent on her husband who worked as a security guard for the household income. Similarly, Kirti was educated to degree level but did not work outside the home and her husband was out of work at the time of the second and third interviews.

The average age of the interview participants was 34.7 years, based on their completion of the demographic questionnaire at the first interview. The focus group participants were younger with an average of 29.8 years. All but one of the interview participants was living with a partner and four of the seven focus group participants were living with their partner.

The ethnicity of the participants reflected the communities from which they were recruited. Individuals can belong to multiple groups and being a member of one group does not prevent membership of another group. Whilst the participants belonged to a number of different ethnic groups, they all belonged to the group of mothers with young children, and what they had in common as mothers was stronger than what made them different because of their ethnicity. Nevertheless, ethnicity did play a part in health behaviours and this is discussed in Chapter 5, Findings and analysis 1.

4.16. Analysis to find meaning

I approached the analysis of the data collected for this project with the knowledge that a qualitative researcher has to be both immersed in the data and able to stand outside it, to see what is happening, and identify patterns and themes (McKay et al., 2003). I was looking for meaning in the descriptions of lifestyle behaviours that I had collected (Hammersley & Atkinson, 2007; Holloway & Biley, 2011). As set out at the beginning of this chapter on reflexivity (Section 4.2) and later in the chapter on epistemology (Section 4.4, Research paradigms) I was aware that there was no single

reality to capture and that all the data I had collected were actually partial accounts (Brewer, 2000). I tried to reproduce the participant voice and not reflect my own (Holloway & Biley, 2011).

The analysis started with the transcription of the audio tapes of the interviews. I did all the transcription myself to keep what the participants said fresh in my mind and to familiarise myself with the data. I transcribed the interviews verbatim; I included all the ums and errs and did not make any grammatical corrections to the text. I indicated in the transcription if the participant laughed or was interrupted. I tried to do the transcribing as soon as possible after the interview so that I could hear the participant's voice in my head and punctuate what they were saying properly. When I transcribed the data, I took out all names used by the participant or by me as the interviewer. I used a number SH1-20 to identify the interviewees and HS1-9 for the focus panel participants. Later I assigned the culturally sensitive pseudonyms for reporting processes.

The transcribed interview data runs to more than three hundred thousand words and the analysis was a daunting task. I agree with Harper (2003) that the literature offers little help to the novice researcher in how to choose themes. Whilst the themes clearly come from the data they do not really emerge from the data; rather they are developed from the data by the researcher and it is an iterative process of selecting a theme and refining and changing it based on using it and discussions with others, in my case my supervisors.

I entered the transcribed date from the interviews and the focus panel into two separate projects on NVivo v10 (QSR International), after attending a training course on the use of the software. I read and reread the data to familiarise myself with the material and shared some of the transcripts with my supervisors. Overall the approach I took to analysis followed that recommended by Creswell (2006) for this type of study. I started with a thorough review of the transcript text and prepared an initial set of codes. I kept in mind my experience as a researcher and the lived experience of the participants. I organised the material from the interviews under the initial set of codes. Through discussion, further immersion in the data and more data collection, I revised the coding structure and I talked through with my supervisors what I thought were the themes emerging from the data. Over a series of discussions and re-readings my understanding of the data grew more sophisticated. I started off describing the data in terms of what the participants reported identifying topics such as body weight, exercise, eating at home, health problems, shopping, lack of time and collected a total of 30 such themes. Over time and with increasing familiarity with the data and looking at the reflexive notes I had made during the data collection process I was able to group and link these topics until I had four main themes and a small series of sub themes for each main theme. My

analysis followed the principles of thematic analysis (Braun & Clarke, 2006) and the pathway set out by Miles and Huberman (1994 Chapter 1):

- "Coding of information drawn from interviews and the focus group
- Collection of reflexions made during the research process
- Studying materials collected and identification of patterns and themes
- Validating the patterns and themes identified through further field work
- Developing a set of generalizations to describe the data
- Relating these generalizations to existing theory or using them to develop new theory".

I found NVivo to be a very useful tool for managing the large amount of data I had collected. In coding the transcripts using the tools provided by Nvivo I took heed of both the advice of Charmaz "Part of the interpretive work is gaining a sense of the whole….. we can only see fragments on the screen" (Charmaz, 2000, p520-521) and of Rapley "Don't rip the words out of context" (Rapley, 2004 p16). I tried to ensure that when coding the data, I used all the data collected for each sub theme, recording examples that were both supportive and contradictory. I tried to use thick descriptions and where possible retained the participants' actual words through the use of long and short quotes from the interview transcripts for reporting my findings. I need to acknowledge, however, that I used some transcripts more than others as they provided better examples of the selected themes (Harper, 2003).

I took as my guide to the data analysis the advice of Patton (2002 p437) that "thick, rich description provides the foundation for qualitative analysis and reporting". Thick descriptions allow the reader to understand the participants' world and ascribe meaning. My focus was on the issues that were important to the participants. At first, I struggled with what I saw as a conflict between organising the data I had collected in relation to my research questions and according to the main themes identified in the data. As I became more familiar with the data, I realised that this was not a contradiction, but instead, two approaches that were mutually supportive. Because the interview questions were selected to address the research questions, the participant responses organised into themes reflected back on to the research questions. For my analysis I focused first on describing the data, and when I felt that the data was properly organised, worked on interpreting the data.

I learned a lot from the interview participants over the course of the interviews and as a result was able to discuss with them ideas for potential interventions to support them in the adoption of healthy lifestyle behaviours. The ideas for the potential interventions came from the participants themselves and I selected four idea for potential interventions that at least one participant

advocated. I obtained further input on the ideas for interventions from the focus group participants. I kept these ideas for potential interventions broad and did not try to define them carefully so that the four intervention ideas included as many as possible of the ideas suggested by the participants. The ideas for interventions that were discussed with the interview participants therefore arose from the analysis and the reflections of both the researcher and both sets of participants. When analysing this part of the data set, I had a clear purpose (Harper, 2003) which was to use the understanding I had collected of the lived experience of the participants and to use it to identify areas for potential interventions that would benefit the participants.

Important in coding the data was to record the voice of the participants and their experiences to provide an insider's perspective (Patton, 2002). Outsiders often think that it is easy to solve the problems of poor health behaviours in low SES women and they offer advice such as cook from scratch, shop at the market, walk rather than use the car. The analysis I have carried out is different, it comes from the perspective of the participants rather than me as the researcher. In this way I hope that the solutions that emerged will be of value to the target group as they are sensitive to the needs and requirements of the group. Moreover, the multiple interviews with each participant gave me an opportunity to specifically get the insider view on the proposed ideas for interventions. I was able to feed back across the group ideas for interventions that came from individual interview participants and the focus group.

I did not enter my field notes or reflexive diary into NVivo and did not code this data. Nevertheless, the information I gleaned from my field notes and through keeping a reflexive diary informed the analysis. To give just one example this is an extract from my reflexive diary dated 26th June 2017:

> "The last but one interview to transcribe was Naseem and I was struck by something I said in the interview. I said that public health messaging may be focused on women but not on mothers. The need to talk to women as mothers acknowledging the multiple roles they play and the priority they give to others may be a key conclusion of the research"

The final themes that were used for the analysis are shown in Table 3 below.

Table 3 (Section 4.16) Themes used for analysis

Theme 1: The Conflicted Mother	
	This theme explores how the mothers are striving to achieve multiple goals with responsibilities for children, partners, wider family, the home, in many cases contributions to the household income and their own welfare.
Sub-themes	
The guilty mother	In trying to do their best for their children and family, mothers find that they do not have enough time or resources to adopt healthy life styles for themselves. They need to negotiate with their partners for time away from the family. When they take this time away to satisfy their own needs, they often feel guilty. If they fail to both meet their family's needs and adopt healthy lifestyle behaviours, they experience guilt. This sub-theme covers these feelings and the strategies that the women have developed to overcome the guilt.
Mother as a role model	This sub-theme covers the idealistic role that the mothers set for themselves and how they strive to do their best for their children and families through adopting healthy life styles. Two sub themes were identified: modelling diet and modelling physical activity.
The isolated mother	Many of the women are lonely, their partners work long hours away from home and the women stay at home to look after the children. Many do not have peer group support. Material included here covers how this isolation influences their lifestyle behaviours.
The invisible mother	During their pregnancies the women receive a lot of health advice. After childbirth the focus of health care professionals switches to the babies and children. The women feel that their needs are not recognised.
Theme 2: Concerns about the Body	
	Motherhood had a physical impact on the bodies of the participants which they experienced negatively and impacted on their identities as women. This theme examines the dissatisfaction with their bodies that many women experience and how it influences their life style behaviours.
Sub-themes	
Body confidence	Most of the participants are not happy with the changes that have occurred to their bodies. This sub-theme covers the participants' relationship with their bodies as they currently are. It also covers the changes they would like to make.
Managing weight	Weight was an important issue for all the participants with the participants experiencing weight changes due to pregnancy and for other reasons. Not all the participants were trying to lose weight but many were. This sub-theme captures how the participants felt about their weight
Theme 3: Experience of Health	
	This theme captures how the participants view and experience health
Sub-themes	
Health Status	This sub-theme describes the current health status of the participants and their families, and the changes in health they have experienced.
Knowledge of healthy behaviours	This sub-theme covers what participants know in terms of healthy diet and physical activity particularly in relationship to their health. Also, their awareness of guidance in the area of diet and exercise for a healthy lifestyle and whether they follow or attempt to follow the guidance

Cultural dimensions of health	This sub-theme covers how the values and norms of the participants influence their current health behaviours.
Theme 4: External and Contextual Factors	
	This theme captures the factors beyond the immediate family that influence life style behaviours.
Sub-Themes	
Local facilities	This sub-theme covers the features in the immediate environment that impact on lifestyle behaviours such as availability of shops and opportunities for physical activity.
Work related constraints	This sub-theme covers how where the participants work can influence lifestyle behaviours particularly access to healthy food at work and ability to exercise.
Advertising and promotion of food	The participants are exposed to a wide range of messaging both directly and indirectly and these messages influence their lifestyle behaviours. This sub-theme captures the role of advertising and promotion of food in influencing the lifestyle behaviours of the participants
Role of policy	The participants are subject to the wider influence of both local and national policy. This sub-theme captures the way these polices influence their lifestyle behaviours. Three sub themes were identified advertising food to children, soft drinks levy and nursery provision and childcare.

I considered whether I should share the analysis with my participants. Whilst several participants said they were interested in the findings I think they were looking for the findings to be presented in a similar format to the participant information sheet, rather than an academic document. I did not want to intimidate or embarrass them by sending them the findings and analysis section as it appears in this thesis, for review. Instead I prepared a lay summary (appendix 15) of the project to send to the participants and I intend to distribute this to all the interview participants for whom I have up to date contact details when the thesis is complete and the viva has taken place. This is to recognise and acknowledge the role that they played in the research and so that they can see how their interviews were used.

4.17. Ensuring quality

Demonstrating the quality of qualitative research is a difficult area for qualitative researchers. The traditional tools of the positivist researcher particularly statistical analysis and objectivity are not available and the alternatives are not obvious. I have considered my research in the context of some of the approaches recommended in the literature for assessing quality.

Researchers may choose to demonstrate the validity of their findings by demonstrating the adherence to a research methodology, the soundness of their methods and the quality of their data interpretation (Lincoln et al., 2013). Thick descriptions may be used to demonstrate the quality of

the data interpretation and a careful audit trail to show rigorous methods and provide evidence of proper research conduct (Ballinger, 2006). The validity of the data interpretation can also be checked through discussions with supervisors and exposure of the findings in conference presentations (Ballinger, 2006). I have done all of these things and believe that the research has benefited from them.

In the literature there are other suggestions for ensuring quality. For example, the quality of a qualitative research project can be judged on the basis of its underlying philosophy, the use of social theory and how well it is carried out (Seale, 2004). I believe that my research has a sound methodology and I have thought carefully about the methods to apply. I have set out in detail how I collected and analysed the data. The study made use of the socioecological model of health and as the analysis revealed new ideas; I investigated other theoretical constructs such as "The Ethic of Care" in relation to the role of mothers. I maintained a self-critical, reflexive stance throughout the project and used the experience of my supervisors in the hope and expectation that the research output can contribute to the public health debate and more particularly improve public health interventions for low SES women.

Seale (2004) recommends that research quality is assessed on the basis of whether the research is important or relevant, whether in the light of current knowledge the claims are plausible and whether the claims are supported but the evidence collected in the study. My literature review demonstrates clearly the health problems experienced by low SES women and that current public health interventions are failing this group, thus making a study of health behaviours in this group very important. Data were collected following the methodological rules set out in this chapter so that Seale's second and third assessment criteria can be met.

Triangulation, although controversial has been recommended as a method to improve the credibility of research (Patton, 2002). It requires data collection from multiple sources or by different methods to determine whether the findings are the same; the more similar the results the more credible the findings. In some ways this is contrary to the fundamental principles of qualitative research in that there is an implicit assumption that there is a single truth which the researcher is trying to identify rather than accepting that there are multiple realties (Johnson & Waterfield, 2004). In my research the opportunities for triangulation are limited. It could be argued that the in-depth interviews and the focus group are examples of different data sources yielding consistent results so whilst these data sources were not selected to add credibility to the research that fact that the data sets are in agreement and endorse the same intervention ideas does add validity to the findings.

Respondent validation has also been suggested as a mechanism to demonstrate the quality of qualitative research (Bryman, 2008). This refers to the idea of reviewing the research findings with the research participants and seeking their feedback as to the accuracy of the findings. In its simplest form researchers provide the participants with a transcript of the interview and ask the participant to check that it is an accurate account of the interview. In a more sophisticated form, the researcher feeds back his or her findings to the participants and seeks their responses to what he/she has produced (Bryman, 2008). I decided that it was unrealistic to ask my participants to review the interview transcripts as they would not have time in their busy lives to read through so much text. Instead I used the second and third interviews to validate my findings and in particular to seek participant input on the ideas for potential public health interventions. This input has made an important contribution to the findings.

Another technique that is employed to ensure quality is for two or more researchers to code and analyse the same data set. As with triangulation this approach is subject to the criticism that an implied single reality exists rather than accepting that there are multiple realties (Johnson & Waterfield, 2004). In practice it may be difficult to find two researchers that are equally familiar with the data and therefore in a position to code and analyse it. This is certainly the case for this study where I have been working alone, albeit well supported by my supervisors, to collect, code and analyse the data.

I think what I have learned about qualitative research over the course of this research project is that quality is not something that it is checked at the end of the research. Rather it is a property that is integral to the whole research process. This means that quality has to be built in at every stage. There are various checklists available to check quality and I used the one designed by Patton (2003), which is provided as appendix 16, to guide me during this project.

4.18. Methodological self-criticism

I introduced this chapter with a discussion on reflexivity and its importance to the research process. It is appropriate to return to this topic at the end of the chapter and consider with the benefit of hindsight, the way the Shaping Health research was carried out.

I am convinced that the selection of methodology and methods was appropriate and has resulted in the collection of valuable data and has identified ideas for useful interventions. There are though areas that could have been improved. My skills in qualitative interviewing developed over the course of the project and if I had been able to bring to the earlier interviews the sensitivity and depth of questioning that I adopted in the later interviews then the data collection would have been enriched. I think it would have been useful to collect the data over a shorter period and in particular

reduce the time period between the first and the second interviews and between the second and third interviews. This would have increased the participant engagement and involvement in the project and may have led to the collection of more and richer data.

I think that the input from the Slough focus group participants contributed to the project in the area of the interventions. It would have been interesting to carry out a second focus group with the participants when they had had more experience of the HomeStart Slough Family Programme intervention. Unfortunately, the timescale of the data collection for this research meant that a second focus group could not be carried out but this would be useful to do to further validate the feedback on ideas for interventions.

The researcher has to be open to new ideas as they emerge from the research and adopt his/her thinking in the light of the data collected (Lincoln et al., 2013; Patton, 2002). I believe that the ideas for interventions that emerged from the data and were discussed with the Shaping Health participants in the third interviews came from the participants as a result of our joint interest in providing opportunities for healthy lifestyle behaviours.

I know that my exploration of research methodology was an essential pre-requisite to my field research and it gave me understanding, perspective and tools. I also learned that qualitative research is full of ambiguity and that despite my preparation and planning I should, in the words of Linda Finlay "expect to be surprised" (Finlay, 2006a, p3). With this in mind the next two chapters are my findings and analysis, starting with understanding lifestyle behaviours.

5. Chapter 5 - Findings and analysis 1: Understanding lifestyle behaviours

5.1. Introduction

The purpose of the Shaping Health research is to improve our understanding of the lifestyle behaviours of a group of low SES women with young children to inform the development of public health interventions for this demographic. The research process was designed to access the women's own accounts, learn about the details of their everyday lives, collect their accounts of dietary and physical activity behaviours, and the factors that influence them. Importantly, the research approach was designed to allow each individual account to be represented, thus allowing differences to emerge. The presentation of the findings therefore reflects this approach and concentrates on the voices and experiences of the participants, to describe and make vivid for the reader, the diet and physical activity behaviours of the participant group, from their perspective. Care has been taken to ensure that the data sections presented reflect the full range of material collected for each theme; the purpose being to collect a wide range of experiences from the participants. The quotes in this chapter, and the next, are drawn from across the series of three interviews.

The experiences recorded in the Shaping Health research are by their nature specific to the participant group, but where appropriate, references to relevant literature are made. The reporting of confirmatory, contradictory and novel findings is an important aim of the Shaping Health research, but it is not the only one. The socioecological model of health (Linke et al., 2014; Stokols, 1992), which has provided the theoretical basis for this research, emphasises the multiple layers of influence acting on an individual and the interaction between the layers; the individual is at the centre but the individual is influenced by their family, community, the place where they live and the wider policy environment. Many public health interventions set aside this complexity and target only the individual (Golden & Earp, 2012). To allow an examination of the multiplicity and complexity of the factors influencing healthy lifestyle behaviours in the participant group, the Shaping Health findings are considered in the light of the socioecological model of health and the current public health guidance, to examine where current practice is supportive, and where it falls short.

Undertaking the analysis identified the need for further theoretical constructs beyond the overarching framework provided by the socioecological model of health. Additional theories have been introduced to provide context for the analysis. The Ethic of Care (Gilligan, 1982) proved particularly useful for examining the material in "the Conflicted Mother" theme, and the work of Davies and Wardle (1994) and Loth, Bauer, Wall, Berge and Neumark-Sztainer (2011), on the

acceptance of body size change during pregnancy, but not a change in body image ideal, for examining the material on "Concerns about the Body".

The findings and analysis is presented in two chapters. This first, and larger chapter, follows the structure of the identified themes and sub-themes, described in full in the methodology chapter, Section 4.16, Analysis. It examines the women's accounts of their lifestyle behaviours together with the factors that influence and constrain them. The second chapter focuses on the four ideas for interventions that were discussed with the participants. The findings in both chapters are rich with the voices of the individual women living in the south of the London Borough of Hillingdon who generously contributed to this research. To provide some context and to provide the reader with the necessary background information to understand the realities of their lives, the interviewee demographics were provided in Section 4.15, Participant demographics. For interpreting the findings, it is useful to keep in mind that the interview participants lived close to each other. As well as the area where they lived the women shared other characteristics; they all had children, all but one had at least one child under five, and they all had busy lives. Some of the women had chaotic lives.

This first findings and analysis chapter covers four themes, the conflicted mother, concerns about the body, experience of health, and external and contextual factors.

5.2. The conflicted mother

This theme is concerned with the many burdens which the Shaping Health participants have to carry and manage, and how these burdens influence lifestyle behaviours. The material in this theme is organised into three sub-themes, the guilty mother, mother as a role-model, and the invisible mother. All three deal with multiple responsibilities, choosing priorities, striving for healthy lifestyles, and the impact of their current lifestyles on the mothers and their families.

The data that follow, show that the participants, for the most part, feel alone in managing their responsibilities, and neither seek nor receive support from the people and structures that populate the other layers of the socioecological model of health. To understand why the mothers take on this responsibility and to put the findings in a theoretical construct, Gilligan's theory (1982) of the Ethic of Care is helpful. Whilst Gilligan's theory was published more than 35 years ago and it might be argued that there have been important social changes over this period, many studies, published over the years, have supported her theory, showing that not only do women prioritise the caring of others, they question whether they have a right to their own needs (Bialeschki & Michener, 1994; Deem, 1986; McMunn, Bird, Webb, & Sacker, 2019; O'Brien et al., 2017; Shaw, 1994). In the findings reported below, the lens of the Ethic of Care is used to explore how the mothers in the Shaping

Health research are striving to achieve multiple goals with responsibilities for children, partners, wider family, the home, and in many cases, contributions to the household income. When, from their point of view, the mothers fail to achieve both the high standards of care they set themselves and healthy lifestyle behaviours they experience feelings of guilt.

5.2.1. The guilty mother

The mothers in this study are all trying to do their best for their children and their families, and see it as part of their role to provide and model a healthy diet, and do whatever else is necessary to keep healthy, so that they can continue to look after their families. Whilst understanding the need to adopt a healthy lifestyle for themselves, the mothers have insufficient time and material resources to meet their own needs, and those of their children and partners. This results in feelings of what they describe as guilt, both when the mothers perceive themselves as taking time and resources away from the family to follow a healthy lifestyle, and when they fail to follow a healthy lifestyle. For example, Vickie talking about not managing to find time to go to an exercise class:

> "every time I don't go I feel guilty and it's all misplaced guilty you know" Vicki

And Christine talking about how she feels when she deviates from her normal healthy eating:

> "Chinese um after eating that I feel guilty. When I ate too much. Because because it's not my routine eating something very oily takeaway yes I feel guilty" Christine

The women in the Shaping Health research usually define themselves in relation to others. They feel that their primary responsibility is as a mother, and they have high expectations of themselves, which they cannot always meet, which engenders further feelings of guilt. For this reason, the term guilt has been used for the first sub-theme despite its inappropriate pejorative connotations, because it is used by the mothers themselves and by others working in this field (Bialeschki & Michener, 1994; O'Brien et al., 2017,). In expressing "guilt" the mothers are confirming a consistent finding in motherhood research (Sutherland, 2010).

The mothers in this study accepted and did not question the need to put their families first. Whilst they did not use the terminology, they were clearly following an Ethic of Care. By families they meant their children, their partners and in some cases their extended family, such as parents with whom they shared a house. For the mothers this priority was obvious and was not questioned and it was seen as the natural order of things. Mothers described how their needs were secondary to those of their families using phrases such as "being on the back burner" (Sumi, Jade and Shabnam) to refer to their needs. Others expressed the same feeling:

> "so there are days when I don't look after myself because I'm just too tired to do that. I make sure everybody else is fed and then put myself last". Yasmine

And poignantly, Eisha describing her return home from hospital after the birth of her second son who was just a few hours old:

> "When I come from hospital I stand and cook some food for me and for my family". Eisha

This seeming compliance to the Ethic of Care, by mothers with young children has been challenged by researchers in this field. For example, almost thirty years ago, Wearing (1990), drawing on findings from a qualitative study of middle and working class Australian first time mothers, reported that although mothers were putting the needs of their partners and children first, there was an element of resistance to the Ethic of Care. Some of the mothers in her study described being able to negotiate some time for themselves. More recent qualitative research, also from Australia, (Miller & Brown, 2005, p405), found that mothers of young children showed some minimal resistance to the requirement to be always present for their children and partners but that "the Ethic of Care prevails". The mothers in the Shaping Health research are measuring their worth in terms of the support they provide to others which is in line with the literature which describes how women prioritise their children's needs, even if it is at the expense of their own (Bialeschki & Michener, 1994; Currie, 2004; Hey & Bradford, 2006; O'Brien et al., 2017; Sutherland, 2010,).

Data from the Office for National Statistics (2016), shows that women undertake more unpaid work in the home than men and that this difference is greatest in the 26-35 age group with women undertaking 34.60 hours unpaid work in the home per week compared to 16.75 for men; and that overall women from low income households undertake more unpaid work in the home than those from middle or high-income brackets. The participants in the Shaping Health research would not be surprised by these data as they undertook most of the caring, cooking and cleaning and they fall within the groups described as undertaking the most unpaid work in terms of age and SES. Their experience is in line with a recent study of the division of household work in the UK which found that the gendered division of housework and childcare was most traditional when women are not in paid work, or are in part time work, and have children living at home (McMunn et al., 2019). Not performing the task expected of them by their partners engenders further feelings of guilt.

> "if I weren't to cook he would make a big song and dance about it in his own subtle passive aggressive way. It's more kind of the guilt ride". Yasmine

The mothers acknowledged that the prioritisation of their families over themselves had a number of consequences for their own lifestyle behaviours including diet and physical activity, although as will

be shown, the implications are different for the two lifestyle behaviours. In relation to eating the mothers described that their priority was speed, even though they knew that they should be preparing healthy food for themselves:

> "I obviously end up eating something quick and easy, and then it might not be the healthier option". Sumi

> "It's an awareness, it's in the back of my head that I have to eat some foods in order to keep myself healthy but it's not no it's not a priority. Ever since I had him [her son] it's not been a priority…..I think that's purely it why I don't eat healthily because I just want something that's quick, satisfying and then I can forget about it and get on with the day. I think that's why I think I eat unhealthy". Noorie

This contrast between what the mothers knew to be the healthy behaviour, and what they actually did, led to further feelings of guilt. The women were generally well informed about current public health guidance on healthy eating. They were familiar with the advice to eat five portions of fruit and vegetables a day, they knew they should be limiting their fat, sugar and salt intake. They used this dietary knowledge to set themselves targets of the type of food they should be eating and providing for their family, and felt guilty, when in their eyes, they fell short of this objective. A good example of this thinking was their attitudes to eating takeaways. Most of the mothers acknowledged that the family did eat takeaways; for some women these were seen as a treat, but most expressed some sort of guilt about eating takeaways, saying they only bought them because they were too tired to prepare a meal themselves. Nevertheless, they expressed concern that a takeaway was not a healthy meal and that they should have prepared food themselves.

> "I'll probably feel guilty if I sit and eat a takeaway". Rachel

The "failure" to meet their own expectations of providing and eating healthy food has been found by researchers working with other low SES groups e.g. Romeike et al., (2016, p2) reported similar findings from a qualitative study with a group described as "lower educated" in the Netherlands. Shabnam acknowledged what happens to mothers in real life with so many demands on their time explaining why mothers rely on what she called freezer food or brown food (breaded products and prepared potatoes):

> "it's just you know mums are so busy um you know they've got school runs to do little one at home and it's just so quick and easy just to put something in the oven and you know something very very quick and you know instead of standing there and doing something from scratch". Shabnam

A further example of the mismatch between the ideal of healthy eating and what happens in practice comes from eating outside the home. Meenakshi talked about focusing on cooking healthy food at home, but when it came to eating at work or eating on trips out with her child, she relied on buying processed food rather than bringing healthy food from home. She was not happy doing this but her working hours restricted the time she had at home to prepare food and she could not see an alternative. Meenakshi was an example of a participant with a strong food culture who felt that she was failing to live up to the standards of her own food culture outside the home.

All these examples make it clear, that it is not lack of knowledge or ignorance of the current public health guidance, that prevents the women from eating a healthy diet. Instead their knowledge of what is required to have a healthy diet and not being able to achieve one induces negative feelings. It is what the mothers perceive to be a failure to meet an external standard that leads to a feeling of guilt. The constant messages on healthy eating that they receive from the media feed the feeling of guilt, without providing them with any tools to adopt a healthier diet. The guidance and the messaging are perceived as being aimed at them as individuals, they accept the responsibility, but they feel isolated and unable to share the burden of responsibility. In the context of the socioecological model of health, what the mothers reported, was in some cases, more than simply lack of support from other levels of the model; it was actual discouragement. They felt that their family, and aspects of the environment where they lived, made things more difficult for them to adopt a healthy diet. They felt that these difficulties are unacknowledged in the public health messages on diet aimed at them as mothers. Yet they nevertheless felt a sense of guilt because they were unable to overcome the challenges. The difficulties referenced here as arising from the environment are described more fully below under the theme “External and contextual factors”, Section 5.6.

The Shaping Health research identified many instances of expressions of guilt when the mothers failed to live up to the standards of a healthy diet that they had set for themselves and their families, but the women spoke differently about the second health behaviour covered in this study, namely physical activity. The participant group either did not know, or understand, the current public health guidance for physical activity. The mothers, for the most part, were unaware of current physical activity guidelines, although they had picked up the public health message that sedentary behaviour was unhealthy. As women with young children, they saw themselves as active, because they equated being busy with being physically active. They considered that because they were not sedentary, they were doing enough exercise, and that any other official advice had limited relevance for them. They therefore did not feel guilty about a lack of time spent on exercise in the way in which they did about unhealthy eating. In fact, rather than feeling guilty about their lack of

participation in physical activity, most of the participants saw taking time away from their family for individual physical activity as a selfish activity, contrary to the Ethic of Care, and offered that as an explanation for not exercising.

> "So it's either me left holding, holding the baby as it were or him (her husband) left holding the baby. I feel guilty because you think here's the baby I'm going. And you don't want that feeling so you just kind of think, alright then you (her husband) go to the gym". Jade

This finding is in line with the work of McGannon and Schinke (2013) who, drawing on a patriarchal discourse, found that good mothers prioritise their families making participation in physical activity problematic for the good mother, and Miller and Brown (2005), who, in the context of the good mother, found that mothers with young children see participation in physical activity as "selfish time". In the Shaping Health research this was exemplified by the mothers' lack of use of the local Leisure Centres, where again the findings were in line with those of Miller and Brown (2005) who collected their data in Australia. The Leisure Centres in the area where the Shaping Health research was carried out have creche facilities, and the participants were aware that they could leave their children in a creche and exercise. None of the participants however chose to do this and most of those that talked about the creche facilities made it clear that they saw it as their responsibility to look after their children. Moreover, some of the mothers felt it would be inappropriate to spend family money and use their valuable time on what they perceived to be a selfish activity. Childcare facilities were used by the women who worked outside the home, but this was for a serious activity, essential for the operation of the family unit, and therefore acceptable.

There were two women in the study group (Aahna and Rozina) who were regular gym users, and they had both found a way to meet their own need for exercise, without impacting on their family responsibilities, and therefore they could talk about their exercise regime without conflict with the Ethic of Care. These women had managed to incorporate exercise into their daily routine without damaging their position as a good mother by making participation in physical activity something they did for the family's benefit (Miller & Brown, 2005), so that rather than challenging the Ethic of Care, they were demonstrating its dominance. The experience of these two mothers, was similar to that reported by O'Brien et al. (2017, p225) with middle class mothers in Australia, who reported undertaking physical activity as another task, or "third shift" rather than an enjoyable activity in its own right. The "third shift" concept was described by Dworkin and Wachs (2004, p610), the first two shifts being paid work and unpaid work in the home and extends the duties of the Ethic of Care to include being fit and healthy.

> "I don't feel like going every day. But I have to go just to keep myself fit. It is really very tiring though. Going to the gym every day. It's very tiring." Aahna

> "So I started exercising. That's the reason I joined. To be healthy. I have to be healthy for her (referring to her daughter)." Rozina

Aahna and Rozina both went to the gym early in the morning before their husband and child were awake, so the sleeping husband had responsibility for the sleeping child, and the women returned home ready to take up the care of the family before either their husband or child woke up. Three other women in the study group had found ways to exercise, taking time to either run or go to the gym whilst their child was at school. In this group there was an element of pleasure rather than obligation associated with taking exercise, for example Yasmine describing going for a run:

> "Gosh it's such a release. Such a release". Yasmine.

And Rachel talking about she had made a friend at the gym:

> It's nice to go, if I don't go to the gym and chat there, I really don't have anybody else". Rachel

Yasmine and Rachel had school aged children and only exercised during term time. This was not something they talked about in the interviews, but from probing it became apparent that they saw it as self-evident. In the school holidays their priority was to their child and therefore they stopped exercising. All these strategies demonstrate how much the women believed they had no right to time of their own, and that they could only engage in individual activity if they found ways to ensure it did not compromise their caring activities, or if they found a way to include it in their caring activities. Similar findings have been reported by Lloyd, O'Brien and Riot (2016) for a group of mothers in Australia and by Koca et al., (2009) in a study of Turkish mothers. The reported exercise pattern by those women in the Shaping Health research that undertook physical activity, benefited from support from other levels of the socioecological model of health. Aahna and Rozina relied on their partners to stay at home so they could exercise, the regular gym users went with friends who provided moral support, and the gym users took advantage of special rates offered by local gyms that made membership more affordable.

Home exercise equipment represents an alternative to going out to an exercise class or gym and many of the mothers had access to such equipment in their homes such as exercise bikes, cross trainers and exercise DVDs, but they were rarely used. One of the participants, Jaswinder, did report regular use of home exercise equipment at the first interview "I've got machines back shed so I use them". She was living in a multigeneration household and had support from her parents-in-law with

childcare and other household responsibilities. By the time of the second interview she said that she rarely used the exercise equipment "because it's cold back there now I don't go there" and she appeared to have lost interest. The participants did not express guilt about their failure to use the resource of home exercise equipment, rather they thought it was amusing, using the equipment for other purposes such as drying clothes, or assuming that it was obvious as a mother of small children they would not have time to use it. One participant, Kirti, turned the argument on its head saying she did not want to exercise using her Nintendo wii, as she did not want to expose her son to computer games "my son is at an age…I don't want to introduce him to the gaming world yet, and that's my personal thing" . In her mind it would be exercising rather than not exercising that would engender feelings of guilt.

Not only was there insufficient time for exercise in the participants' busy days because many of the women in the study started their day early and were busy with a wide range of activities all through the day, they did not have time to rest and relax, a finding that has been reported by Shaw (2008) in a study of mothers in the USA. The mothers in the Shaping Health study reported that by mid-afternoon they were often tired and had not eaten properly all day. If they did find themselves with some free time, they rewarded themselves with a sit down, a hot drink and a treat, something sweet, a piece of cake or some biscuits.

> "It's comfort, it makes you feel like you know just makes you feel you done so much it's something for yourself and you don't get much for yourself you don't get much time for yourself you know any time for yourself so when you do silly as it sounds you have that bit of cake". Kirti

This quote shows that Kirti felt she had to justify her cake eating because she was taking time out from the task of caring and also because she had chosen to eat something that she considered to be unhealthy. She was happy with her decision, but some individuals that indulge in this type of comfort eating regret the action. Bissell et al., (2016) in a qualitative study of individuals defined as obese and living in a low SES area, found that participants expressed both the pleasure of eating cakes and biscuits and feelings of guilt arising from a failure to meet societal norms of a healthy diet and appropriate body size.

Kirti describes eating the cake as silly, to justify the activity; she feels she is allowed to do something that is not quite right because she has had a busy and difficult day. This is in line with Graham's seminal work on smoking (Graham, 1987) where she found that low SES women took time off to smoke in the afternoon, despite knowing of the health risks and the cost to the family purse, because they needed a break from the family routine. The participants in the Shaping Health

Research, who for the most part did not smoke, saw the cake and biscuits as the guilty pleasure. They had earned the right to a few minutes of "non mum" time (Currie, 2004; Martinson, Schwartz, & Vaughan, 2002; O'Brien et al., 2017). Whilst guilt is generally associated with negative affect there are some experiences that induce guilt that lead to positive affect so that experiencing guilt can heighten the pleasure particularly in relation to the consumption of certain foods (Goldsmith, Cho, & Dhar, 2012). The guilty pleasure of the piece of cake could be justified for some of the participants in this research and they were happy to talk about enjoying a moment of relaxation with a sweet treat. Others found it more difficult to control their own access to snacks. These mothers were tempted by the unhealthy snacks in the house that they had purchased for themselves, for their partners and children. One strategy that some of the mothers adopted to avoid the guilt associated with eating this food was not to buy the unhealthy snacks but instead provide an alternative such as a well-stocked fruit bowl, again demonstrating knowledge of what constitutes a healthy diet.

> "And it was knowing that I had to be healthy and if I'm feeling hungry urm not to get a packet of crisps. I have a better stocked fruit bowl now." Shabnam

In this way Shabnam appeared to be avoiding the guilt she felt by snacking on crisps and at the same time providing a healthy option for her family. In the third interview she explained with pride how her husband and children are now enjoying fruit but she said that she has to cut it up for them. She used the discussion about fruit as an example to demonstrate how she cares for her family. She did not resent this extra demand on her time from her husband, despite the fact that at the time of the interview she was working part time and her husband was out of work.

The output from the Shaping Health research shows that the women in the study are struggling with feelings of guilt because they are unable to complete all their household and childcare responsibilities to their own satisfaction. They have high expectations of themselves as mothers and they accept the burden that this role confers. The gender equality that is being accepted in the workplace does not appear to be mirrored in their homes (Eek & Axmon, 2015; McMunn et al., 2019). Whilst at first sight it appears that a fairer distribution of household chores in the home might allow women to have more time for themselves, which may in turn allow them more time to follow a healthy lifestyle, in practice the situation may be more complex. The participants do not believe they have an entitlement to time or resources for themselves, and at the same time they accept the all-consuming constraints of the Ethic of Care. Research with women working outside the home finds that when women are unable to undertake household work because of the time spent on paid work they feel guilty about neglecting the household to such an extent that it affects their health (Thomas et al., 2018). A reduced sense of entitlement means, in this context, that women have low

expectations of the support they expect to receive from others (Tolmacz, 2011). It is possible that even if the household responsibilities were to be more fairly distributed that the mothers would experience guilt in spending time on themselves, because as low SES mothers they do not believe they have an entitlement to leisure (Koca et al., 2009; Quinn, 2010).

This sub theme has covered how the women try and manage the many demands on their time and resources. Constrained by the Ethic of Care, despite a good knowledge of what constitutes a healthy diet, the mothers do not have sufficient time to ensure that they can eat healthily. In contrast, knowledge about the need to undertake physical activity is inconsistent in the group and considered, either to be irrelevant, or something else that needs to be done to ensure that the family can be cared for properly. Struggling to meet the requirements of the Ethic of Care and with only minimal support from other levels of the socioecological model of health the women feel guilty for failing to meet the standards they have set themselves. The mothers in the Shaping Health research had a very strong focus on their children and the discussion of lifestyle behaviours often led to how they wanted, despite all the difficulties, to model healthy behaviours for their children. The next section on the "mother as a role model" develops how the mothers use their knowledge of healthy lifestyle behaviours to demonstrate healthy behaviours to their children.

5.2.2. Mother as a role model

The mothers expressed strongly that they were role models for their children. In the context of this study, because most of the children were young, it was diet more than physical activity where the mothers felt that they should be showing and demonstrating healthy behaviours. Modelling diet and modelling physical activity are therefore considered separately.

5.2.2.1. Modelling diet

For many of the mothers the weaning period had been important as they wanted to introduce their children to a wide range of healthy foods particularly fruit and vegetables and many of the women had made the decision to prepare this healthy food for the whole family so that the child could see eating this food as normal.

Rozina explained how she had changed her diet because she wanted her daughter to see her eating healthy food:

> "After she is born I am more conscious I want to be healthy for her. Because if I am not healthy she will ….eat whatever I eat so I try not to eat junk. That's the reason". Rozina.

And later she explained that this is something she had inherited and wanted to pass on:

> "Because my mum used to cook every day every meal lunch breakfast and dinner. So we know what is healthy and what is junk. I want to do the same thing". Rozina.

Many of the mothers saw their role to educate and demonstrate healthy food behaviour.

> "I do want to be a good role model to them especially when it comes to eating because I do want them to be healthy you know. I don't want them to think it's OK just to eat whatever you want because you have to start educating them from a young age and I think that's the key because we see so many children nowadays that are considered overweight um I suppose I'm lucky because my girls are not but I think …..that to maintain that you've got to educate them and you've got to be a good role model for your children." Shabnam

As we have seen the mothers embraced the Ethic of Care and as a result, did not resent the time they spent modelling healthy diet behaviour for their children, nor did they expect their partners to share this caring role. They did however become exasperated when their partners not only did not assist them, but actually undermined them. Naseem talked about how her modelling of healthy eating behaviour was weakened by her partner who she said, on occasion, rejected the healthy food she had prepared and left the meal to go out and purchase a kebab. She said this had a bad impact on her children:

> "Because sometimes when I have made um errr maybe um lentils then sometime my husband buy kebabs from outside and then they don't want to eat lentils they want to eat kebabs" Naseem

This topic came up again later in the interview and Naseem explained that it was impossible to change her husband's diet even though he was experiencing health problems from a high meat diet (gout). Nevertheless, she believed that by modelling and providing a healthy diet for her children, despite the lack of support from her husband, she would establish healthy eating habits for them which would last all their lives. She was clearly taking the full responsibility for passing on a healthy diet and not receiving or expecting support. Instead her husband's behaviour and the ready availability of takeaway food, which are factors from other levels of the socioecological model of health, undermine her.

Other participants took up the theme of modelling a healthy diet today that would bear fruit for years to come. Kirti explained how she saw healthy eating being passed down the generations emphasising that it is a difficult thing to do, that not everyone can manage, but it was her responsibility which she accepted:

> "It's not easy, it is difficult, believe me it is difficult but I make time because I know in the long run it's healthier for my children, it's healthier for me and my husband and I'm instilling these you know these things into my children so that when they grow up they know and they'll be passing it on and it's healthier it's better and I prefer it that way. So it's not easy and I would not at all knock a mum for not doing it". Kirti

The mothers that were working hard to model a healthy diet were expressing a wish to produce healthy home cooked meals from scratch to conform with the female identity to which they aspire (Parsons, 2014; Parsons, 2015), even though feeding the family is a low status activity not valued by others (Parsons, 2015). As we have seen in the section on the Guilty mother, Section 5.2.1, they are not always able to live up to the ideal that they set themselves. The mothers with older children found that the pressures on their time increased and it became more difficult to model healthy diet behaviour. Some of these mothers said they did not have time to eat with their children and resorted to processed foods to save time and because the children preferred them. Nevertheless, some of the mothers described how they regulated their own intake of processed food and snacks to ensure that their children received the appropriate messages about healthy eating.

> "We will quite happily me and my husband we do eat snacks but it's limited in the sense we do watch so if we've had a bag of crisps that day we don't need a bag of crisps every day, a cake every day, chocolate every day we're kind of vary it in that sense of course kids see what we eat as well um yes so I do tend to keep that but not in abundance". Kirti

The mothers use their knowledge of what constitutes a healthy diet to model a healthy diet for their children but when the pressures on their time become unmanageable their priority is to provide healthy food for their children, even if their own diet suffers.

5.2.2.2. Modelling physical activity

Providing food for the family was an essential activity that the women undertook, something that had to be done. Through the provision of healthy food and eating as a family, the mothers felt they could model a healthy diet for their children. Exercise in contrast was seen by the mothers as an optional activity, mainly taking place outside the home, and some of the women questioned whether it was even something they should be doing. The women talked about diet as something they did for themselves and their family, something they put time into, but it was an unselfish act, it was their duty to provide for their family and model healthy behaviour; providing food for their family was part of their maternal identity (Parsons, 2015). They saw exercise in a very different way, it was personal and something they did for themselves; for their health and to look and feel good about themselves. Whilst some participants saw keeping fit as part of the Ethic of Care, most of the

mothers saw exercise as outside their maternal role and therefore, it was not prioritised. This is in line with the literature where having children is negatively associated with undertaking physical activity (for a review of the literature see Prince et al., 2016).

For some of the participants that had very busy lives they did not think it was realistic to serve as a role model for physical activity. They acknowledged that this would be the case in an ideal world, but in their lives, they did not have the time. Christine described how she facilitates physical activity for her children rather than modelling it herself:

> "They do all these things without me. Without me in the sense that my daughter she goes to swimming lessons I'm not in the pool with her. She goes to the dance classes. I take them so I think they are they get the message that it's good to do it if you want you can do it." Christine

This example illustrates the important difference, for these mothers of young children, between diet and exercise. Diet is a family activity and therefore can only be modelled to children through participation. Moreover, providing food is a frequent and regular activity and part of the traditional female role. Exercise is a self-focussed activity so as long as the children are introduced to age appropriate exercise it is not necessary for the mother to model exercise herself. This means that there is no imperative for the mother to provide a positive exercise role model to her children. Physical activity is something women do outside the home and separate from the family, as also reported for mothers in Turkey and Australia (Koca et al., 2009; Lloyd et al., 2016; O'Brien et al., 2017).

This section has explored the way the mothers saw themselves as role models for their children. They strive to engender healthy lifestyles in their children by both modelling and providing a healthy diet and by providing, but not modelling, opportunities to participate in physical activity. All these activities they take on as personal responsibilities and they do not seek or expect support. The mothers' focus on their children, often to the exclusion of other social relationships is striking. It is therefore not surprising that many of the mothers talked openly and at length about loneliness and isolation and this together with its impact on lifestyle behaviours is considered next.

5.2.3. The isolated mother

The participants in the Shaping Health research described feeling isolated, with few friends, and no interaction with neighbours or other mothers locally, an experience identified in the literature (Drentea & Moren-Cross, 2005; Paris & Dubus, 2005; Valtchanov, Parry, Glover, & Mulcahy, 2014). Loneliness and isolation are more often studied in later life, see for example, Victor, Scambler, Bond and Bowling, 2000, and they are separate constructs, loneliness being a negative experience arising

from insufficient social relationships and social isolation being the absence of relationships (De Jong-Gierveld, Tilburg & Dykstra, 2006). Loneliness is associated with poor health behaviours and NCDs although the causal relationships are unclear (Fried et al., 2020; Pizzo, 2020).

The mothers in the Shaping Health research report both loneliness in terms of the quality and quantity of their relationships and also isolation because they feel that some important relationships are missing from their lives. Some feel alone at the centre of the socioecological model of health with very little support from the other structures in the model particularly partners, family and peers in delivering healthy lifestyles for themselves and their families (Lee, Vasileiou, & Barnett, 2019). Many of the women described being tied to the home with responsibility for their children around the clock. This means that even if there is a local service that they would like to access they are unable to do so because they have no childcare, have no means to get to the activity or cannot pay for the activity. Alison who was open about her loneliness described her position:

> "I've found since I've been at home incredibly lonely. Even though I go to the Children's Centre I don't find the mums err, I don't find them very sociable it seems the majority of the ladies who go err you know are from the Indian subcontinent and they all speak in Hindi or Guajarati or something and you know we're English and I've not you know made a single friend to go out and about to the park or as I've said if I had another mum or nanny you could almost take it alternate weeks to go swimming… So I've found it incredibly lonely…… I'm quite an out, outgoing person you know I'm used to making that first move and however many times…it's just there is nobody here". Alison

Her experience, of the change from being at work, to staying at home, and the resulting loneliness, is in line with that reported by Lee et al., (2019) in a qualitative study of a group of professional women from a town in the south of England. These women found the transition from being out at work, to being at home with a new baby, lonely, and whilst they felt that they had been prepared for the experience of childbirth they had not appreciated how their life would change when they were looking after a baby. These mothers also reported fewer social interactions, after the birth of their baby and those that did take place being of poorer quality.

Later in Section 5.3.1, Body Confidence, it will be shown how this loneliness and difficulty in forming new relationships after having a baby is compounded by a feeling that all the other mothers are in some way better, another finding of Lee et al., (2019). More than 25% of new mothers may experience loneliness (AXA Healthcare, 2015) even if the feeling is sometimes concealed (Lee et al., 2019). Shabnam had an insight that suggests that this experience of loneliness is not uncommon in the study area:

> "It's funny you think you're the only person that feels like that and it's only when you start talking to the other people that you realise it's not just me that other people are in the same boat" Shabnam

All but one of the women in the study lived with their husbands or partners at the time of the interviews, but many of the partners worked long hours or night shifts and this meant that the women had no company or support during the working day. Some of the women described poor relationships with their partners who they found unresponsive to their needs further increasing their sense of isolation, another finding in common with Lee et al., in their group of professional mothers (2019). Some of the women who were living in multi-generational households reported an experience of isolation, even with their relatives around them, because they felt that their needs were not recognised. In this situation their loneliness was compounded by a lack of agency, as the household and its activities were managed by the older generation.

Some of the participants had found a virtual community on line, participating in Facebook groups which they found informative, motivational and supportive. The on-line communities however functioned as a two-edged sword because some of the on-line women describe a perfect existence which is a long way from the realities of the participants' experience making them feel inadequate:

> "yeah it's like I just don't get it. Where am I going wrong? Why am I tired all the time? You know why have I got this you know this that this that I just don't get it sometimes. I suppose it is disheartening at time sometimes it seems you're doing something wrong because you haven't got the time to do what this other super mum's doing". Kirti

Strange, Fisher, Howat and Wood (2018) report a similar experience in a study of on-line communication carried out in Australia where alongside the positive benefits of access to information, some participants found there was an increased potential for isolation due to the lack of face to face contact, and that comparing experience to that of others could lead to feelings of inadequacy.

This example shows, as we have already seen with diet, that when other levels of the socioecological model of health come into play, they are not always supportive. This in turn helps explain why trying to elicit behaviour change through health messaging aimed at individuals alone, may be unsuccessful (Sniehotta et al., 2014), because change cannot be made without support. This experience of failing to live up to an idealised version of motherhood undermines women of all social groups (Douglas & Michaels, 2004). For the participant group, their feelings of inadequacy served to discourage participation in activities outside the home and increased their feeling of isolation.

For some of the participants working outside the home relieved the sense of isolation. They valued the opportunity to talk to friends and colleagues at work about difficulties at home and said how useful sharing this type of experience was to them. Some of the women at home with small children were anxious to get back to work and escape their isolation

> "I mean I feel isolated sometimes at home that's why I'm kind of wanting to get back into work" Kirti.

An alternative to work to relieve isolation experienced by some of the participants was exercise. As we have seen Rachel said that she had made a friend through joining a gym, and Shabnam described how she enjoyed socialising at a local Zumba class. These benefits of group exercise and the need to reduce isolation informed the public health interventions that were discussed with the participants at the third interview and are reported in the second findings and analysis chapter.

Alongside the isolation they experienced the women also reported feeling invisible. These descriptions had some features of existential loneliness which arises from a feeling of being separate and apart from other members of society, more normally researched in the context of end of life care, (Ettema, Derksen, & van Leeuwen, 2010), but is also linked to a feeling of abandonment (Bolmsjö, Tengland, & Rämgård, 2019). The Shaping Health mothers felt that their needs were not acknowledged or recognised by the health professionals with whom they came into contact, a marked contrast to the position before they gave birth , and they felt similarly, that their families failed to recognise their needs with the lack of acknowledgement compounded by their feelings of lack of entitlement. Existential loneliness is an extreme type of loneliness that usually is associated with some form of inner growth (Ettema et al., 2010); as the mothers were neither seeking nor expecting inner growth, their feelings of loss and abandonment are reported next, under the heading invisibility, to more accurately describe what the mothers reported.

5.2.4. The invisible mother

The end of the immediate post-partum period saw a major change for the mothers when the interest of health care professionals switched from the mothers themselves to their children. Some of the mothers were happy with this situation saying that if they required advice, they would ask for it, but others felt that their needs were being overlooked and they would welcome more advice and support. This finding is in line with the work of the Southampton Initiative for Health that found healthcare professionals do not exploit opportunities to discuss healthy lifestyles with mothers of young children (Barker et al., 2017). The Southampton team spent eight years developing and rolling out a healthy skills training programme that supported health care professionals in providing both information on healthy diet and motivation to change to women of child bearing age (Barker et

al., 2017). Participation in the healthy skills programme provided the healthcare practitioners with the confidence they previously lacked to embark on these conversations (Barker et al., 2017), illustrating that the problem the Shaping Health participants experienced of being overlooked by healthcare professionals can be addressed.

This is however a sensitive area for both healthcare professionals and mothers. Research carried out in the South of England in primary care has shown that patients welcome weight loss advice from physicians and that such an intervention can help individuals manage their weight (Aveyard et al., 2016). The weight loss advice, however, needs to be delivered to pregnant women and new mothers in a way that is sensitive to their individual circumstances so that they do not feel stigmatised by their body size (Jarvie, 2017).

The participants described how the official channels appeared not to be interested in them. Only other mothers knew what they were going through and asked the right questions.

> "What I feels is, if, I suppose funny that it depends on where you go um say if you go to like the Children's Centre they won't talk about the food there, it really doesn't get discussed um the doctors aren't really very interested. I don't really know who would say oh how are you how are you eating um, only people at work they're all so mothers, are you eating OK?" Jade

The participant group did not feel connected to current public health interventions and the guidance they received did not feel relevant to them. When the healthcare system did appear to take an interest in their health through a regular check-up, the participants felt that the support was perfunctory and not addressing them as individuals. Shabnam described attending for a health check and finding that her BMI was high, which worried her. She felt that the healthcare professional she saw was only interested in ticking a box and did not help her address the high BMI.

This feeling of invisibility extends from the public sphere to the home. Throughout the interviews the mothers described how they put the needs of their children and other family members above their own, their role being to serve their families with little in the way of acknowledgement of the work that they do. As Henderson and Allen point out (1991) pursing the Ethic of Care can lead to a loss of self. The experience of the mothers in this study were in line with those reported by Miller and Brown (2005) in their qualitive study of leisure time in mothers with young children in Australia; they were constantly at the beck and call of others and their own needs remained unacknowledged.

5.2.5. The conflicted mother summary

The identity of the Shaping Health mothers is wrapped up with their children and their behaviours are focused on doing their best for their children and families. For some of the participants the

experience of motherhood was overwhelming, with their own needs ignored or even forgotten. This focus by women on the needs of others has implications for lifestyle behaviours. Healthy behaviours, about which the mothers are generally well informed and which belong mainly to the "third shift" (Dworkin & Wachs, 2004) are seen as important, but difficult to achieve, in the face of the multiple tasks and demands on their time. Public health guidance is sometimes seen to be relevant, but not always, and its influence in the face of other competing demands on their time is doubtful. Unhealthy behaviours do not necessarily arise from a lack of knowledge but from the constraints of the Ethic of Care and lack of support from other structures in the socioecological model of health. The mothers would like to adopt healthy lifestyle behaviours but find it difficult to translate their intentions into practice especially when they perceive conflict with their mothering role. A healthy diet is seen as a more realistic aim than physical activity because it fits more closely with their family responsibilities. Nevertheless, the women were keenly aware that their lifestyle choices had had a direct impact on their bodies. Pregnancy, childbirth and the stress of looking after children had changed their body shape, most were dissatisfied with these changes and the relationship between their feelings about their bodies and healthy lifestyles is explored in the next theme, Concerns about the Body.

5.3. Concerns about the body

Body dissatisfaction is a negative feeling arising from the difference between an individual's perception of their body size and their ideal of body size; both the actual and the perceived body size vary between individuals (Heider, Spruyt, & de Houwer, 2015). In western countries women experience a high level of body dissatisfaction because of a perceived failure to achieve a slim ideal, with body dissatisfaction being greater in young women and those of high SES (Davies & Wardle, 1994). Pregnancy protects women from criticism of body image because they are allowed to be big (Hodgkinson, Smith, & Wittkowski, 2014) and women become more comfortable with their body size and image (Davies & Wardle, 1994; Loth et al., 2011; Richardson, 1990; Skouteris, Carr, Wertheim, Paxton, & Duncombe, 2005), although they feel less attractive during pregnancy than before becoming pregnant (Skouteris et al., 2005). This is theorised as a change in cultural roles making a larger body size acceptable (Davies & Wardle, 1994). Qualitative research in Australia with women during pregnancy found that women themselves are comfortable with their larger size because they accept that it is part of a healthy pregnancy and having a healthy baby (Clark, Skouteris, Wertheim, Paxton, & Milgrom, 2009). The acceptance though is short lived; a systematic review of the qualitative literature found that whilst women experience a shift in focus from how they look to the wellbeing of the foetus and baby across the pregnancy and post-partum period, they experience dissatisfaction with the post-partum body (Watson, Fuller-Tyszkiewicz, Broadbent,

& Skouteris, 2015). Mothers taking part in the qualitative research in Australia post-partum (Clark et al., 2009) reported that it was no longer socially acceptable to be large and they felt more negative about their bodies than they had anticipated, although the study also reported that their feelings about their body and identity had changed so that body size and shape were now a lower priority. After the birth, the dissatisfaction women experience with their post-partum bodies leads to a desire to lose weight and they have ambitious expectations of what they can achieve in terms of an acceptable body size (Hodgkinson et al., 2014). In the post-partum period women are encouraged to control, what has been perceived as an out of control body (Hodgkinson et al., 2014), and pressure to achieve a mainstream ideal body shape comes from multiple levels of the socioecological model of health including the media, their partners and peers (Lovering, Rodgers, Edwards, Edwards George, & Franko, 2018; Roth, Homer, & Fenwick, 2012), with this pressure increasing in the second six months after the birth (Lovering et al., 2018).

Whilst there are reports in the literature of both dissatisfaction and acceptance post-partum (Jordan, Capdevila, & Johnson, 2005) most of the mothers in the Shaping Health research were dissatisfied with their changed bodies, particularly increases in weight and changes in shape. Their concerns about their body size and shape are analysed under two sub themes, body confidence, which covers both shape and weight changes, and managing weight, which covers specifically steps taken by the participants to lose weight. For the analysis of these two sub themes the theory of the influence of cultural role on body size (Davies & Wardle, 1994) is added to the socioecological model of health, the Ethic of Care and the influence of current public health guidance to interpret the findings.

5.3.1. Body confidence

Whilst some of the mothers in the Shaping Health study accepted their change in body shape either as an inevitable part of motherhood or alternatively as a minor concern, others lamented the loss of their pre-pregnancy selves. Jade expressed eloquently how she felt about her body after the birth of her second child:

> "I feel (pause) I look at myself in the mirror and I just hate the way I look. It's depressing. It really is depressing. Um I want to lose weight as well so I can get a bit more energy fit into my other clothes I don't feel like I'm a flump flump flump flump you know when you look good you feel good. Cause I remember when I had lost weight before I had [first child] I feel a lot better with myself I feel a lot nicer I feel I can go out a lot more it's a whole different way of feeling so for me it's about the feeling if I want to lose weight it's because I want to feel better that's why I want to lose weight". Jade

Jade's experience has been captured in a large study of 5,470 women who gave birth in Porto, Portugal in the period 2005 to 2006. After the birth of their first child, the study found that women are not unduly concerned about their body image, probably because they are optimistic that they will lose weight (Henriques, Alves, Barros, & Azevedo, 2013). This optimism is replaced by acceptance of the difficulty of losing weight after subsequent pregnancies and a corresponding increase in body dissatisfaction (Henriques et al., 2013). Similar findings are reported in a review of the literature of body dissatisfaction across the life course (Tiggemann, 2004). In pregnancy women were, as theorised by Davies and Wardle (1994), accepting of body changes because they considered them transient but dissatisfaction with body shape returned post-partum; young first-time mothers had the most unrealistic expectation of post-partum weight loss (Tiggemann, 2004). Whilst BMI and body image are clearly separate constructs, a study with pregnant women carried out in Australia found that women with high BMI are more likely to be dissatisfied with both their body weight and body shape and that women that are dissatisfied in these regards have the highest gestational weight gain (Sui, Turnbull, & Dodd, 2013). Jade, who had a young baby, again fits the pattern reported in the literature of body dissatisfaction worsening during months one to nine post-partum (Gjerdingen et al., 2009; Rallis, Skouteris, Wertheim, & Paxton, 2007).

We saw in the literature review, Section 3.4, Diet, body size and low SES, that in women, body size is related to SES with women in lower SES groups being larger in terms of BMI and waist measurement than those in higher SES groups. Data from a range of different study types and collected in the UK (Wardle & Griffith, 2001), Canada (McLaren & Kuh, 2004) and the USA (Lynch et al., 2007) show that women in higher SES groups are more likely to be dissatisfied with their body weight and body image. This is not necessarily due to a lower BMI ideal in the high SES group but may be due to a lower BMI norm in high SES groups (Wardle & Griffith, 2001). The relationship is complex, and some studies find that only the educational component of SES correlates with body weight dissatisfaction with women with the highest levels of education being the most dissatisfied with body weight (von Lengerke, Mielck, & KORA Study Group, 2012). There is also evidence that mothers of more than one child, who are experiencing a decrease in SES, i.e. are downwardly social mobile, are more likely to express body dissatisfaction than other groups of mothers (Henriques et al., 2015). The participants in the Shaping Health research were all recruited from a low SES area, and contrary to expectations based on the literature, and in particular the work of McLaren and Gauvin (2002) who found a strong influence of area affluence on body dissatisfaction, many of the Shaping Health participants were concerned about their weight and unhappy about their body image. The overall educational level in the Shaping Health participant group was high for a low SES area which may explain the high level of body dissatisfaction in this group (von Lengerke et al., 2012). There was also

some downward social mobility, both long term and temporary, that could contribute to this finding (Henriques et al., 2015).

Women who are dissatisfied with their changed bodies post-partum may take steps to reverse the changes. There is however no simple relationship between dissatisfaction with body image and body size, and weight loss. Women who are dissatisfied with their body size and shape are more likely to experience excess weight gain during pregnancy (Sui et al., 2013,) and mothers who are most dissatisfied with their body after birth are the most likely to gain further weight (Henriques et al., 2013). To this has to be added the finding that low SES women of childbearing age may underestimate their body size (Potti, Milli, Jeronis, Gaughan, & Rose, 2009) suggesting that they are unlikely to see a need to lose weight. Shabnam for example was shocked when a health check revealed a higher than expected BMI:

> "And I was shocked with my BMI. And people said are you sure and I said well that's what they're saying to me. And it really shocked me. And although they were saying to me Oh don't take those statistics as being right, I said then how have you calculated it. If you're telling me not to worry about it, I am worried about it now" (Shabnam).

Shabnam's experience was voiced by other participants and whilst some knew how much they weighed and were pleased to talk about weight loss that had been achieved between interviews, others did not want to acknowledge their body size and said they did not know how much they weighed. There were elements of guilt associated with what the participants saw as a failure to meet the high standards they set themselves concerning their diet and shame arising from their changed bodies that the participants thought fell short of what was expected of them. The most extreme example in the study of this guilt and shame was Lilly who at the first interview was clear that she needed to lose weight and said she would only participate in other interviews if she had lost weight; she declined all the invitations to further interviews.

In the interviews the participants expressed how their changed bodies affected them. Jade explained how her increased size made her reluctant to leave the sanctuary of her home. At the first interview she recounted how she had been asked to a wedding but was anxious because neither she nor her husband had anything to wear because they had both put on so much weight. The plan was for her husband to wear his work shirt, she did not know what to wear, but she was confused about the date and missed going to the wedding. She said:

> "Well we were like what a relief. Didn't want to go. Yes, so that's another thing you don't want to go anywhere because you feel fat you feel huge, you're going to a wedding everyone's all dressed really nice. I feel like a fat frump". Jade

This mother clearly feels embarrassed and believes she will experience weight related stigma because of her size. This embarrassment and anticipated stigmatisation that made going to a wedding difficult extends to other activities as Jade stated "you don't want to go anywhere". The visual normalization theory (Robinson, 2017) posits that people judge weight relative to that of others and that as a result overweight becomes normalised in overweight groups. Despite overweight being common amongst low SES women, overweight did not appear to have become normalised in the Shaping Health participant group.

The mothers in the study were aware that one way to combat their increased size is to exercise but in the same way that Jade was worried about being judged if she went to the wedding, they were worried about the reactions they would get if they exercised. Alison who did go to an exercise class described how she felt:

> "they all seem fitter and slimmer and everything than me even though their babies are a year or two younger than (mine)" Alison

The participants that were dissatisfied with their body size found that it was not easy to participate in exercise. The findings reported under the theme "The Conflicted Mother", Section 5.2, showed that exercise was a low priority for the participant group and the findings that are present later under the theme "External and Contextual Factors", Section 5.6, demonstrate that the participants face practical problems in accessing physical activity, but body size and shape also contribute to the difficulties the mothers have in exercising. Physical activity is associated in the minds of the general population with a slim and toned body shape (Maguire & Mansfield, 1998). In contrast, dissatisfaction with body shape and size is associated with decreased levels of physical activity, stigma experiences, exercise avoidance (Schmalz, 2010; Vartanian & Shaprow, 2008,) and weight gain (Jackson, Beeken, & Wardle, 2014). Weight gain can further reduce physical activity, and with no corresponding decrease in calorie intake, a vicious circle is established with further weight gain and less physical activity (Golubic et al., 2013). Some of the participants felt excluded from physical activity because of their current size and could not see a way to break this vicious circle. Others though felt they could break out and were committed to making positive changes to their bodies. The difference between these two groups appeared to be one of self-belief.

Not all the participants were dissatisfied with their post childbirth bodies and they were not all seeking a slim and toned body. Some participants thought weight gain and flabby tummies were inevitable and part of their new role as a mother, supporting the cultural roles theory (Davies & Wardle, 1994). They acknowledged but not necessarily accepted their changed body and their loss of pre-pregnancy self (Patel, Lee, Wheatcroft, Barnes, & Stein, 2005):

> "But after my second pregnancy I was really quite comfortable with my body. And I'm not really bothered. I don't care what my husband says any more. I think I've just got passed that point of wanting to look nice….. I look terrible. My sister says why do you dress like that? She says you lost your identity. I think that's what I lost……..Then recently because I was trying to get myself back again I was thinking of getting a piercing over here getting my ear pierced here I was wearing my DMs again it was nice I was thinking of getting my hair turquoise blue doing all of that for my 30th birthday and then I find out that I'm pregnant". Noorie

This quote illustrates the conflict Noorie is experiencing. She starts by saying that she is comfortable with her changed body but then goes on to say that it's not just her body that has changed but that her whole self has changed, she has lost her identity. She appears to decide to fight against this loss and get her identity and body back, but a third pregnancy means that she is no longer going to care about herself or her body, she has become a child bearer again. As a pregnant woman she does not have to worry about the shape of her body.

What Noorie was expressing here was echoed by other participants. They may not actively choose to neglect their bodies but, following the Ethic of Care, as mothers there were so many other priorities, they did not have time to look after their bodies and their overall well-being:

> "when you look at your body I don't want to say this is years of neglect because it's not that cut and dry I've done this on purpose to neglect my body. I'm not saying that some people don't you know dependent on what they put into their body but I don't think it's always that cut and dry there's lots of other factors" Shabnam.

From a health perspective this unintended neglect of their bodies is a major concern as mothers who do not lose weight after the birth of a child have an increased likelihood of becoming obese (Henriques et al., 2013; Ng, Cameron, Hills, McClure, & Scuffham, 2014; Rooney & Schauberger, 2002) and experiencing the poor health consequences of obesity. Mothers that adopt healthy lifestyles such as eating three or more portions of fruit and vegetables per day, participating in recreational activities with their baby and walking for leisure are less likely to retain weight (Ng et

al., 2014). The findings reported in the "Conflicted Mother", Section 5.2, were that the participants do not follow all these recommendations, they do not prioritise themselves and in many cases are overwhelmed by the responsibilities of motherhood. Thus, despite a wish to change body shape the mothers are constrained by the Ethic of Care and find themselves unable to do so. Two of the Shaping Health participants (Jaswinder and Fatima) had however found a solution that allowed them to shape and tone their bodies without causing a conflict with their caring roles, they did Zumba (a dance fitness form of exercise) at home with YouTube videos. They talked about the enjoyment they got from using their bodies:

> "that you and your body is doing something…..you can feel that energy in yourself" Jaswinder

> "you know you love yourself more" Fatima

The experience of these two participants supports the suggestion made by Sanders and Dlugonski (2016), on the basis of analysis of physical activity messages in North American popular magazines, that framing physical activity in public health guidance as a positive and enjoyable experience for the body, rather than as another task that must be done for health benefits, may be more attractive to women.

For the participants body shape and body weight were closely entwined with a desire to lose weight to improve their body shape. Managing weight was a major preoccupation for nearly all the participants. The next sub theme explores some of the strategies that the participants adopted to manage their weight and the obstacles they faced.

5.3.2. Managing weight

The women had experienced major life transitions and saw these as being in some way responsible for the bodies they now inhabited. The most important of these was pregnancy which many of the participants had seen as an opportunity to relax and eat in an uncontrolled manner resulting in significant weight gain, above that which is recommended in pregnancy. Subsequent pregnancies added to weight gain, as participants did not regain their pre-pregnancy weight before conceiving again.

> "so a woman gets pregnant and she quite happily eats and drinks whatever she needs to as you do when you're pregnant and then you put on weight and then you've had the child and you don't get time to eat healthily I'll tell you that definitely not after that cause you're kind of so carried away so you eat binge not binge eat, eat what you can and you don't shake that weight off unless you're a dedicated person you won't shake that weight off and

> then if you fall pregnant again that weight creeps up and then obesity kicks in diabetes kicks in" Kirti

Kirti's experience is in line with the literature where multiple births are a risk factor for permanent weight gain (Abrams, Heggeseth, Rehkopf, & Davis, 2013). Faced with this weight gain the participants described a battle to try and lose weight, although what they talked about may be better described as a long-term war. In trying to lose weight the participants are sharing in the experience of many other women. In a major review, covering 72 studies and more than a million participants Santos, Sniehotta, Marques, Carraça and Teixeira, (2017) found that 40% of the population have been involved in efforts to lose weight or maintain weight, and the figure was higher for studies in groups of women. The two most popular strategies to lose weight were increased physical activity and dieting although motivation was rarely reported; those studies that did report motivation listed improved appearance, health, well-being and self-esteem (Santos et al., 2017). The evidence from the literature is that the drive to lose weight is highest in high SES groups (Wardle & Griffith, 2001) but it was clearly present in the low SES Shaping Health group.

Some of the participants complained that it was difficult to manage their weight through the adoption of a healthy diet because of the relative high price of healthy food. This complaint is supported by the literature where Jones, Conklin, Suhrcke and Monsivais (2014) found, using UK food price data for the period 2012-2014, that healthy foods increased in price more than unhealthy foods and that the price gap between the two groups increased over the time period studied. This means that adopting a healthy diet to manage weight leads to an increase in spending on food which is a concern in this low SES group.

> "I know when I do go on a healthy diet I'm spending" Meenakshi.

Other members of the participant group disagreed saying that with careful shopping it was possible to buy healthy food on a budget. In response to a question on whether it is possible to adopt a healthy diet on a budget Vicki, who had explained that she was severely cash constrained, said:

> "I think it's very easy. It depends on how much time you have. I get home a bit earlier you know but um I don't think it's that difficult I just think that from my point of view I've had to go and do a fair bit of researching actual recipes um but it's not that difficult. With the internet now at your disposal, for me it's been a bit challenging but not difficult" Vicki.

Participation in physical activity is another tool that the participants could select to manage their weight and whilst it had been adopted by some participants it was not generally used. A systematic review of the literature on physical activity interventions in post-natal women (Gilinsky et al., 2015)

showed that post-natal women that want to lose weight are less likely to undertake physical activity than age matched controls and that post-natal women that want to lose weight are more likely to choose diet than exercise as a weight loss method.

Whilst most of the participants felt they had a responsibility to lose weight, for some it was a responsibility that could be deferred until later. Losing weight was something that could be postponed until after something else had been achieved e.g. stopping breast feeding, going back to work.

> "But then part of me thinks you set yourself a limit alright I'm going to wait to, after I give birth I'm going to lose the weight, give birth, after I've recovered I'm going to lose the weight, after he's 6 months I'll stop this [referring to breast feeding] I'm going to do it. You kind of push the goal posts further and further you know" Jade

For the participants that were actively trying to manage their weight down, any weight increase was seen as a failure, and weight loss was seen as a success. The former was depressing and the latter energising and motivating. Participants were eager to talk about their success in losing weight and were reluctant to talk about what they saw as failure to lose weight. The participants' experiences were in line with those reported in the literature for example by Lopez, Milyavskaya, Hofmann and Heatherton (2016) in a study of college students where a failure to maintain a healthy eating pattern was associated with weak desire strength and poor mood, and Sarfan, Clerkin, Teachman and Smith, (2019) in a study of dieters recruited on line, who found that primed to think about dieting reduced self-esteem and increased body image concerns. The Shaping Health participants that were trying to lose weight accepted the energy balance model (Bombak, 2015; Hall et al., 2012), and did not refer to alternative approaches to health, such as Health at Every Size (HAES) (Bacon et al., 2005; Gaessar et al., 2011; Mensinger et al., 2016).

Most of the participants looked beyond themselves to other levels of the socioecological model of health (Linke et al., 2014; Stokols, 1992,) for help managing weight. Support came from family members or from other groups such as exercise classes, healthy eating programmes, slimming clubs and the media, through celebrity diets. Some of the participants had purchased specific eating plans to try and lose weight; Jane Plan[13] and Juice Plus Complete[14] were both referenced by participants. One of the participants had benefited from a weight loss programme provided on prescription by her General Practitioner and others had attended the MEND[15] programme offered by the Children's

[13] https://www.janeplan.com/
[14] https://www.juiceplus.com/gb/en/complete-by-juiceplus/products-and-ingredients
[15] https://www.mendfoundation.org/

Centres. Only one of the participants talked about attending a Slimming Club at the time of the interviews although others had used them in the past or were considering going to a slimming club in the future. The participant (Rachel) who was a current member described how she went to be weighed but preferred not to stay for the club session as she felt ashamed for putting on weight. She found the atmosphere judgemental rather than supportive if she had put on weight. This feeling of being judged, also experienced as stigmatisation, is common amongst overweight individuals attending slimming clubs (Duarte et al., 2017) or accessing exercise (Schmalz, 2010; Vartanian & Shaprow, 2008).

This analysis of the material related to body size has shown that whilst, as predicted by the theory of changing cultural roles, the participants accepted the change in body size and image during pregnancy, after the birth they became dissatisfied. Women who became pregnant again or were breast feeding were able to resist the expectation to achieve a slim ideal body. The other mothers, however, expressed considerable dissatisfaction with their body size and experienced pressure from multiple sources to conform and lose weight. Whilst acknowledging current public health guidance that the best way to lose weight and tone the body is through a healthy diet and exercise, the constraints of the Ethic of Care made it difficult for the mothers to follow the guidance. Some of the participants felt supported by other levels of the socioecological model of health in their efforts to lose weight, being encouraged by family members and friends, able to access a healthy diet through the local shops and using other services such as slimming clubs. Others felt isolated in their own homes without support and without the financial resources to adopt a healthy diet or access local services.

Thus far, this chapter has considered two themes “the conflicted mother” and “concerns about the body” and has explored the participants’ attitudes to, and feelings about, diet and exercise. The participants are clear in their minds that whilst these lifestyle behaviours have implications for body image and how they feel about themselves, the main reason to adopt healthy lifestyle behaviours is to be healthy, now and in the future. Despite the participants being of an age where good health is considered the norm, there were many health problems in the participant group. This pervasive poor health influenced attitudes to lifestyle behaviours and represented both a barrier and a facilitator to the adoption of healthy lifestyles. The complex role poor health played, both for the participants themselves and for their family members, on the adoption of healthy lifestyle behaviours is considered in the next theme “Experience of Health”. The findings reported under this theme add nuance to the material already presented, and critical context for the ideas for potential lifestyle interventions that make up the second findings and analysis chapter.

5.4. Experience of health

5.4.1. Health status

The participants gave specific examples during the interviews of how their health prevented them exercising, for example Kirti who developed palpitations and asthma in the period between the first and second interview:

> "Palpitations all of a sudden …I've been in and out with the doctors been to hospital a couple of times …….I've somehow managed to bring on asthma ……I was absolutely gutted with that and I literally just had to stop (exercising)". Kirti

And Jade explaining that she cannot exercise after a difficult delivery of her second child followed by falling downstairs:

> "we I me personally want to exercise. Obviously, I haven't been able to, been in so much pain, too much pain" Jade

Physical and mental health also influenced diet through the ability to get out of the house to shop and being able to cook, for example Sumi who suffered from an aoutimmune disease talked about the difficulties preparing healthy meals for her family:

> "I get more stressed because I'm not well…..I feel as if I can't cope, I might have depression." Sumi

In the first and second interviews the participants reported many health problems ranging from serious chronic conditions, to problems arising from the birth of their children and short-term acute illnesses. At the time of the third interviews the participants reported further health problems that had arisen in the time between the interviews including both new chronic conditions and acute illnesses. A third interview was not pursued with one participant as she had developed severe health problems (depression leading to attempted suicide, and alcoholism).

In a qualitative study it is not possible to say whether the morbidity identified during the study is typical of the mothers living in the study area. It is certainly possible that women concerned about their health would be more likely than others to agree to participate in a research project on health behaviours and this may account for the high level of morbidity. Health status is not always captured in studies of lifestyle behaviours in low socioeconomic groups (e.g. Romeike et al., 2016; Teuscher et al., 2015). In studies where health status is considered, positive self-rated health can be an enabler of physical activity (Prince et al., 2016) or poor physical and mental health can prevent participation in exercise (Chinn et al., 2006; Peterson et al., 2013). Burton et al., (2003) in a qualitative study in Australia report 18 separate instances of poor health preventing participation in

physical activity in a group of 20 low SES individuals with ten participants referring specifically to psychological health, four to physical health and four to health crises, suggesting that the Shaping Health participant group was not unusual with its high incidence of participant morbidity. The other side of the coin is for individuals to acknowledge poor health and then to embark on physical activity as part of positive lifestyle changes in an effort to improve health (Buckman et al., 2014; Burton et al., 2003).

The high level of morbidity in low SES groups (Buckman et al., 2014; Burton et al., 2003; Casey et al., 2011) suggests that a public health focus on lifestyle behaviours alone, may be misplaced as participants may not be well enough to make changes. An approach that takes a more holistic attitude to health may be more appropriate. As well as the very obvious health problems such as depression and physical injury in the participant group making it more difficult to exercise, and Crohn's disease restricting diet, there may be hidden problems, for example Jaswinder explaining why she does not like vigorous exercise:

> "it's just because when I do like more uh more uh these intensive exercises I feel like my bladder is going to leak (laughs)" Jaswinder

The participants not only had to deal with their own health problems but they also had to manage illness in their children, in their partners and wider family. Reported health problems with the children of the study participants included a lot of colds, hand foot and mouth disease, chronic constipation, allergies, eczema and slow development with speech and walking. Health problems for family members included diabetes, stroke, heart disease, foot problems requiring surgery, Grave's disease and depression. Health problems in children and family members are rarely mentioned in studies of lifestyle behaviours although they may be referenced indirectly in comments on lack of time and inability to access facilities. For the mothers in the Shaping Health study, following the Ethic of Care, the demands on their time arising from the poor health of their family members had a detrimental effect on their ability to adopt healthy lifestyle behaviours.

The health problems of adult family members had an impact on the participants beyond the management of day to day activities and the ensuing difficulties in adopting healthy lifestyles. The participants understood that they might experience the same problems themselves recognising that many of these diseases have either a genetic component, are lifestyle related, or both. Shabnam described it as a "wake up call" when her sister was diagnosed with Type 2 diabetes particularly as both her parents had suffered from the disease. Rachel was very concerned about being overweight because her mother had died young from heart disease.

> "my mum passed away at 51 that's eleven years ago now um and I think I always think of my mum …she had a heart attack… so I just think I've got to look after myself" Rachel

Lilly whose mother was suffering from the complications of diabetes had similar concerns:

> "Because I've got here my mum who is ill you know it runs in my background being diabetic, she's diabetic as well, she's got so many health issues ……is losing mobility because of being long term diabetic neuropathy all of these things I see for myself and I don't want to be in that state"

Poor lifestyle behaviours are one explanation for the poor health of the participant group exacerbated by the Ethic of Care, but there are other potential reasons. One of these is the high workload of the mothers in the participant group. A study on working parents in Sweden found that a lack of leisure and exercise leads to poorer health outcomes in working women, compared to their partners (Eek & Axmon, 2015). In this study of household duties, (child care was not considered), where the distribution of the work load was unequal, with women taking a greater share, women were found to be more stressed, tired and to take more time off work due to illness than their partners (Eek & Axmon, 2015). As in this study, many of the Shaping Health participants shouldered a greater burden of responsibility for household duties than their partners, with implications for their health. Another explanation for the apparent poor health in the participant group is that they are experiencing psychosocial stress as a result of seeing themselves positioned low down in the social hierarchy. Qualitative work in Scotland and the North of England has shown that such a position has an adverse effect on reported health and well-being (Davidson, Kitzinger, & Hunt, 2006).

The material presented in this sub theme has shown that the poor health of the participants and their families generally presents a barrier to the adoption of healthy lifestyle behaviours although within the group there were examples where concerns about the likelihood of developing diabetes or cardiovascular disease, served to encourage the adoption of a healthy lifestyle. In the next subtheme the health knowledge of the participants is explored. Much of current public health guidance is designed to educate, but its value to the participants depends both on its relevance and their ability to use it.

5.4.2. Knowledge of healthy behaviours

Knowledge of the health behaviours required for a healthy lifestyle was generally good in the participant group.

> "Just eating healthy. Eating healthy, eating less moving more. You know" Sumi

As has been reported by others in the Netherlands (Romeike et al., 2016; Teuscher et al., 2015,) and in Australia (Andajani-Sutjahjo et al., 2004) the Shaping Health participants were aware of public health guidance on diet. The mothers knew they should "eat five a day" and they were also aware of the importance of cutting down on saturated fat, sugar and salt all of which feature in current public health guidance (Public Health England, 2016b). They were cognizant of the importance of exercise though less sure of what the specific guidance in this area is, and what it means, in terms of everyday activities. There was clearly confusion in the participant group on the difference between not being sedentary and undertaking physical exercise and no real understanding of sedentary behaviour and lack of physical activity as two separate risk factors for the development of chronic diseases.

The in-depth discussions with the participants revealed that whilst many of the participants were generally well informed some participants interpreted official advice in an unconventional way and others did not accept its relevance to their lives suggesting that the advice did not have meaning for their lives. A similar finding was reported by Lawrence et al., (2009) who found that low SES women did not believe they were capable of meeting government health advice to eat at least five portions of fruit and vegetables a day so whilst they were aware of the advice, they did not try to implement it. Individuals are able to both be aware of government advice and choose not to follow it; perhaps because they interpret risk differently to the official guidance (Heading, 2008) or because they discount the future (Bissell et al., 2016; Hill, Jenkins, & Farmer, 2008; Warin, Zivkovic, Moore, Ward, & Jones, 2015).

The Shaping Health participants have a lot of information sources available to them. They receive some information from health care professionals especially during pregnancy and to a lesser extent after childbirth, and they are aware of multiple information sources including Children's Centres, websites, social media, television, print media, friends and family. This information can be contradictory and confusing. For example, at the second interviews several of the participants talked about "clean eating" which had been receiving a lot of attention in the media. What is meant by clean eating varies but some of the participants interpreted it as a need to avoid gluten and dairy which for individuals without specific health problems requiring them to restrict intake of these food types may not be the healthiest choice (European Society of Cardiology, 2018; Niland & Cash, 2018,). At the second interview Jaswinder talked about the benefits of coconut milk and other products saying that she had changed to cooking with coconut oil and her young daughter was drinking coconut milk. She had made this change after reading about the benefits of coconuts in a newspaper (Daily Mail) demonstrating again the strong influence of the media on food choices.

Weight loss, a topic of interest to many of the participants is another area where they were unsure about the quality of the information available and questioned their health knowledge. Shabnam explained how she was tempted by and then resisted some "lose weight quick" advice.

> "You know as soon as put in the search engine like diet and weight loss first of all it throws up all the worst possible things like raspberry ketone it has pictures of celebrities, pictures of mums that have lost all this weight. You know in two weeks mum has lost four stone she's been on this thing and you think Oh my God….I suppose you get sucked in really because you see things and you like you're tempted but I haven't done it". Shabnam

The participants in their accounts make it clear that they find it difficult to identify sound advice. Advice from a prestigious body like the NHS carries high value and can push out less evidence-based instructions. Romeike et al., (2016) have reported similar difficulties in low SES groups in interpreting advice, the example quoted in their study concerned the value of milk as a healthy food, a particularly pertinent example as the study took place in the Netherlands where a lot of milk is consumed (Westhoek et al., 2011). There is a danger that too much information, particularly when the advice appears to be contradictory, can lead to consumers rejecting all the guidance (Arden et al., 2014; Backett et al., 1994; Frankel et al., 1991).

Accepting, but not following guidance for a healthy lifestyle, was more common when it came to exercise. Rather than opposing the guidance, this arose from a lack of understanding of the guidance. There was clearly confusion as to what constituted the moderate physical activity in the government guideline and this has been reported by others (Knox, Taylor, Biddle, & Sherar, 2015; Romeike et al., 2016). Many participants felt that because they looked after small children and did housework, they were active enough, failing to appreciate the need for vigorous exercise (Knox, Taylor et al., 2015), whereas others saw a clear need to undertake specific cardiovascular and muscle strengthening physical activity as set out in current guidelines. Some of the women however felt that as mothers they needed more time for their bodies to recover after childbirth and it was not necessary for women with small children to go out and exercise. Noorie expressed this view about physical activity

> "So I think for some people that need that yeah I think it's important to exercise. But some women don't need it" Noorie.

And Radhika took this argument further

> "I was kind of thin so I said I thought I don't need any exercise" Radhika.

This response is in line with survey data that people who are of standard weight do not believe that they have to exercise (Knox, Taylor et al., 2015), exercise is for others. As with eating the participants received conflicting advice on exercise. One of the participants, Shabnam, reported that she had been thinking about taking up running to help her lose weight but she had been put off starting by her friends who warned her about the potential for injuries.

An important part of current public health guidance on exercise is the importance of strength training. Whilst most of the participants talked about the need for cardiovascular exercise (albeit not using this terminology) for a healthy lifestyle, most were silent on the topic of strength training. The guidance calls for two sessions per week of muscle strengthening exercise but, in the interviews, only one participant talked about trying to do strength training. Rozina explained how she had recently learned about the importance of doing strength training from her reading of Facebook groups:

> "Strength training, I didn't know about strength training it helps with toning long term but I keep reading". Rozina

Overall, health knowledge about the value of exercise was much lower in the participant group than their knowledge about healthy eating. This knowledge gap is significant because without a belief amongst the participants that they need to change their behaviour and undertake more exercise, public health interventions that provide information and counselling, following models such as the health belief model (Rosenstock, 1974), the theory of reasoned action (Fishbein & Ajzen, 1975), the trans theoretical model (Porchaska et al., 1992) and the theory of planned behaviour (Godin & Kok, 1996) are unlikely to result in a change in behaviour.

5.4.3. Cultural dimensions of health

The Shaping Health participants lived in close geographic proximity to each other in similar housing but they came from a range of different cultural backgrounds and this diversity influenced their diet. Several of the participants came from an Asian background and had eaten a lot of curry as children, with some continuing to cook curries for their families. Most of the participants that ate curry and rice were, however, concerned about the health implications of this style of food (fried, high fat, salty) and talked about the need to reduce the amount of oil and salt used in its preparation. More than one participant explained how she mopped excess oil off the dish before she served the food. Changing traditional dishes to make them healthier was not always easy as it had an impact on the taste, as Lilly who had a Sri Lankan heritage, explained:

> "Because you're used to having so much if you're used to when you're used to having oil in the food when you take it out the taste is not the same so yeah" Lilly

Other studies, for example Eastwood, Rait, Bhattacharyya, Nair and Walters (2013) carried out in London, and Lawton et al., (2008) in a diabetic population have identified the use of ghee, deep fat frying and traditional sweets in traditional South Asian cooking as unhealthy. There appears to be a lack of knowledge in the community of how to make South Asian cooking healthier (Cross-Bardell et al., 2015; Patel et al., 2017). The literature also supports Lilly's contention that it is difficult to change because South Asian women find a western diet unpalatable (Davies, Damani, & Margetts, 2009; Kuehn, 2019). Older versions of some traditional diets may be more healthy because they had a higher vegetable content and it has been suggested that reverting to these rather than advocating change to a Mediterranean diet may be more successful (Kuehn, 2019).

Some of the participants faced an additional obstacle to healthy eating. Even if they as individuals wanted to move from a traditional cooking style, that they now considered unhealthy, they were unable to do so because of family constraints. This could be their partner's preferences or their parents, or parents-in-law, if they were living in a multigeneration household where the older generation had control over the types of meals that were cooked. The participants in this position talked about family members who were unwilling to change their diets and how they had insufficient influence in the family set up, to make changes so they had no choice, but to eat what they considered to be unhealthy food. Fatima, who came from North Africa, described how in a multigenerational family she has no choice on what to eat:

> "Sometimes, our dishes have a lot of oil, a lot of, sometimes you just can't eat healthy, all the family eats the food" Fatima

This unwillingness to adapt food culture in the light of current dietary advice was taken to an extreme in one of the South Asian families where the participant, Noorie, who had been diagnosed with Inflammatory Bowel Disease described how her stepmother continued to prepare dishes that she could no longer eat, particularly those containing lentils, and would not make any concessions in the types of meal she prepared despite her step daughter's difficulties with eating foods with a high fibre content.

Amongst the South Asian, North African and Eastern European participants there was a clear sense of an inherited food culture. These participants had been brought up eating a particular diet and most, but not all of them, were able to prepare similar food themselves. Not all of the participants wanted to continue to eat this type of diet, or they wanted to mix between what they considered the food of their childhood and a more western diet. The western diet they described was not all traditional English cooking but embraced food from other cultures such as Italian, and particularly pizza, but also food from outside Europe such as Thai and Chinese. This left some of the participants

with a cooking problem, unwilling or unable to cook the food of their childhood and with no skills in cooking food from other cultures. The cooking problem was not restricted to those participants that wanted to cook in a different style to the one they had been brought up in. Rachel described how she was not able to cook the roast dinners she had eaten as a child:

> "I still wouldn't cook a roast …..I wouldn't I'm not adventurous to, I mean I could do all the veg prep all that but I'm not so good with meat". Rachel

Participants who were themselves confident in cooking talked about how they saw a lack of food culture in the people around them. Eva, from Slovakia, said that the culture in the UK of eating processed food was alien to her. She said that she and her partner, who was also from Slovakia, had brought their culture of home cooking, using lots of vegetables, with them to the UK. Christine, originally from the Philippines, who had lived for a time in Italy, talked about how the Italian culture of simple fresh food had influenced her, and how she tried to follow this style of eating for the meals she prepared for her family.

The lack of food culture was also apparent in the reliance on processed and fast food. Jade described how she started as a child on a very restricted diet of fishfingers and chips and discovered fast food:

> " But I ate fish fingers but I wouldn't eat anything else. Chips I loved chips. Chips chips chips chips. So um then I got older and I started going out night clubs and stuff but this was when I was only thirteen fourteen going out clubbing, not possible now. Then I started eating things like takeaways like kebabs hot and spicy food but then I just sort of lived I don't know my whole world opened up with food and I'd eat anything and everything and weren't putting the weight on so I didn't care. So I'd be like I'll eat this I'll eat the um I'll eat the pasta pasta I'll eat the pizza I'll eat you know….." Jade

Now as an adult she is continuing to eat this diet of fast food and feels she has no choice because it is the food she knows. She represents a group that have adopted fast food as their food culture.

Whilst there were strong cultural differences in the type of food that the participants ate, no strong cultural differences emerged in the attitude to exercise or the type of exercise the participants wanted to undertake. For exercise the only discernible cultural influence was the need of some participants to exercise in a female only environment, which restricted their access to exercise facilities.

5.5. Factors influencing participant agency

In the three themes considered thus far, the participants have described a strong sense of agency, talking about their health and lifestyle choices as their responsibility. In the interviews they spoke clearly and with self-awareness about the lifestyle choices they have made, with some acknowledgement that they face difficulties in adopting healthy lifestyles as a result of their own and their family's circumstances. They talked about the problems of managing what at times is an overwhelming workload whilst struggling with health issues, and they talked about problems managing their body size whilst looking after small children at home. The participants recognised that the family has a strong influence on their lifestyle behaviours, but believed nevertheless, that it was their responsibility to find a solution.

The mothers are aware that there are forces at play that are beyond their control, that there are factors in the environment that make it more difficult to adopt healthy lifestyle behaviours. Some of these factors make them angry because they believe that they are being treated unfairly. More rarely they acknowledge environmental factors that support them in the adoption of healthy lifestyle behaviours. These environmental factors come from the levels of the socioecological model of health beyond the individual and the family. In the socioecological model of health, they are the levels of "Organizational", "Community" and "Public Policy" (Linke et al., 2014) although the participants do not use these terms. In the fourth theme the role of factors operating at these three levels is explored together with the part they play as barriers and facilitators of healthy lifestyle behaviours for the participant group.

5.6. External and contextual factors

This theme considers the impact on the participants of the immediate environment where the family lives, the workplace for those participants that work outside the home, and the actions of commercial entities and government. It moves the analysis from the centre of the socioecological model of health where the individual, their family and peers are placed to the outer layers referred to by Stokols in his 1992 paper as "geographic, architectural, technological, sociocultural" (p12) and by later users of the model for example Acheson (1998, p110) as ", cultural and environmental conditions". In the interviews the participants were reluctant to acknowledge the significance of these environmental factors on their behaviours, which is in line with the findings of Putland, Baum, and Ziersch (2011) carrying out qualitative work in Australia. The participants recognised their existence but for the most part felt they had sufficient agency to overcome the difficulties presented in their environment. Nevertheless, sensitivity to, and knowledge of, the impact of factors from all levels of the socioecological model of health is important for the development of helpful public health interventions. The limited resources that low SES groups have to resist, negative pressures

coming from the wider environment, means that the environment is likely to have a larger impact on low SES groups than on other groups (Bissell et al., 2016; Green et al., 2015).

In this theme the findings are presented in four sub-themes, the local facilities available where the participants live, work related constraints, the advertising and promotion of food and the role of policy.

5.6.1. Local facilities

The participants have a wide range of food sources available. As in many low SES areas, there are a lot of fast food outlets in the areas where the participants lived and most of the participants acknowledged that they used them at some point. The international literature shows a relationship between the number of fast food outlets and social deprivation with studies in the UK agreeing with this international trend (Birch et al., 2019; Fraser, Edwards, Cade, & Clarke, 2010; Public Health England, 2016c). Hillingdon has the second highest density of fast food outlets in London with 86.5-143 fast food outlets per 100,000 of population (Public Health England, 2016c). Data from Norfolk shows that the number of fast food outlets is growing more quickly in socially deprived areas, than in other areas, and from a higher base (Maguire, Burgoine, & Monsivaisn, 2015). This social patterning of fast food outlets is relevant to the study participants because eating away from home, including takeaway food, increases overall energy intake and the proportion of energy derived from this type of food is increasing (Lachat et al., 2012). Eating food not prepared at home is associated with a poorer diet in terms of total fat content and micronutrient intake (Lachat et al., 2012). Moreover, the more fast food outlets there are in an area, the more likely the local population is to consume fast food (Burgoine, Forouhi, Griffin, Wareham, & Monsivais, 2014).

As has been described, Section 5.2.1, The Guilty Mother, the participants prefer to cook for their families from scratch but they do use the convenient fast food outlets. One participant (Jade) used takeaways for most of her meals but she was not typical of the group. There was a lot of choice and the participants spoke about getting takeaways including pizza, burgers, kebabs, chicken, fish and chips, Indian and Chinese food. Some of the group saw takeaways as a treat and a welcome change from having to cook meals and used them once or twice a week. For others takeaways were used rarely being seen as unhealthy and/or expensive and to be accessed almost as a last resort when they have been unable to cook for some reason. Some of the participants reported an increase in the use of takeaways in the chaotic immediate post birth period, but overall the stay at home mothers reported less use of takeaways compared to when they were working, before starting their families. They felt they had more time and more motivation to cook for their families when they were at home looking after their children.

The alternative to the attractive fast food option is to cook food at home and in contrast to reports in the literature the Shaping Health low SES study area was not associated with a dearth of supermarkets and fresh food outlets or difficulties in accessing shops selling fresh food (Bove & Olson, 2006; Eikenberry & Smith, 2004; Inglis et al., 2005; Lawrence et al., 2009; Peterson et al., 2013; Withall et al., 2009). The participants all talked about ready access to a choice of supermarkets and other sources of fresh ingredients e.g. Sumi:

> "Vegetables are widely available now, we've got such a choice, supermarkets and everything" Sumi

Overall the participants seemed very well informed about the local shopping facilities selecting which shop to go to based on offers, vouchers, price and quality. Nevertheless, as reported under the sub-theme, Managing Weight, 5.3.2, some of the participants felt that whilst vegetables were readily available, choosing to eat a healthy diet cost more than one based on processed foods.

The position with regard to access to facilities for physical activity was very different. Whilst the study area did have sports facilities and leisure centres many of the participants felt they were out of reach, either physically or because of the cost of access. Some participants were gym members or used community-based exercise classes but for others the cost of exercise was a major factor in their explanation of why there were unable to exercise. They talked about wanting to join a gym and many had been gym members in the past, but now that they were stay at home mothers their finances did not stretch to gym membership and there was also a feeling that as they were not working and contributing financially it was not appropriate to spend money on the gym. For example, Sumi said:

> "Yeah I wouldn't mind going to the gym, I have been a member like in the past, it is good because you've paid as well you've got the right machines there, you can work certain parts of your body, it is a good thing, or just use the floor in my home where you're really limited in what you can do, isn't it? Sumi
>
> PW: But for now it's too expensive?
>
> Yeah, yeah, because I've got him [her son] now I've only gone back [to work] part time so the finances" Sumi

Some of the participants were able to enjoy exercise classes when they were provided through the Children's Centres (typical cost £2 per session) but they were unable to afford the commercial classes offered through the leisure centres (£5-10). For some participants the cost of the exercise as

such was only part of the cost equation as the cost became prohibitive when they added on travel, parking and childcare.

The evidence from the US is that low SES areas have poorer and fewer exercise and recreational facilities than more affluent areas (Moore, Diez Roux, Evenson, McGinn, & Brines, 2008). The issue for the study participants was different, being not the availability of facilities, but them being out of practical reach. This is in line with the work of Jones, Hillsdon and Coombes, (2009) in England (Bristol) who found that physical activity facilities and green spaces were available in poor areas but that the facilities were less used by the inhabitants than the facilities in more affluent areas; inhabitants in the poorer areas reported that access was difficult. Jones et al. (2009) suggest that that there is an additional factor at play namely that residents of low SES areas have a poor perception of the place where they live and therefore use the facilities less. The Shaping Health participants appeared to hold similar views.

The built environment can have an effect on emotional health and on stress (Hancock, 2007; Lake & Townshend, 2006; Parry, Mathers, Laburn-Peart, Orford, & Dalton, 2007; Popay et al., 2003; Townshend & Lake, 2017). Whilst the Shaping Health study area had parks and pavements to allow walking, and most of the participants did walk to access a range of facilities, some expressed concerns that showed they were not always comfortable in the physical environment. For example, Shabnam described the difficulties she had accessing an evening exercise class:

> "We don't live in one of the safest neighbourhoods. Um we always have the police out on these streets. We have a lot of issues with undesirables, drugs especially in the area. So I don't think my husband would be happy with me walking". Shabnam

It seems that for some mothers even if parks and open spaces are provided, they may not be able to use them, either because of concerns about their own safety, or because they do not feel able to keep their children safe. Mothers with more than one child may therefore need some form of support to access parks and open spaces. Programmes are available to support parents wishing to improve their parenting skills so that they can safely manage their children in open spaces (Gardner, Burton, & Klimes, 2006), and Shern, Blanch, and Steverman (2016) argue that such programmes should be part of public health programmes.

5.6.2. Work related constraints

For the participants that worked outside the home, the work place created additional barriers for the adoption of healthy lifestyle behaviours. The talked about difficult working hours, which meant they were working at traditional meal times, and the lack of healthy food options at work. Lack of time in their busy lives, and the low priority they assigned to their own needs, prevented them from

preparing healthy food to take to work. One participant who worked in a health centre, Meenakshi, said the only food available at work was biscuits and cakes and another, Jade, who worked in airport security at night, said that the only food available was unhealthy snacks from vending machines. Eva, who worked as a waitress said she was provided with food at work but the choice was limited:

> "Oh burger. There are not many options, burger and pasta. (laughs). Burger and pasta" Eva

And Jade who had had a desk job, described unhealthy food in that work environment:

> "The IT job it was whatever you can get your hands on whatever you can eat at your desk it was full of junk full of high carbs coffee tea tea tea tea and it was well just lots of rubbish desk food crisps sandwiches". Jade

These findings are in line with other studies of eating in the workplace which found that workers are often dissatisfied with food choices at work and that healthy choices are not available (Pridgeon & Whitehead, 2013), that workers are tempted by unhealthy options (Mazzola, Moore, & Alexander, 2017) and that working patterns and job characteristics make it difficult to eat healthily (Donaldson-Feilder et al., 2017).

Participants who worked also expressed dissatisfaction with the availability of exercise classes and crèche provision saying that they were unable to access classes or crèches because they were not open at convenient times for working parents. Meenakshi, who worked part time outside the home explained why she is unable to go swimming:

> "but the Uxbridge crèche is only open to four o'clock and I work like on a Tuesday to 6.30 and the nursery closes at 6.30 so I pretty much can't go after work either because I have to pick her (daughter) up before 6.30 so timewise I'm not able to do" Meenakshi.

Again, the experience of the participants is in line with reports in the literature. Mazzola et al. (2017) reporting on the experience of workers in the US found that workload made it difficult to exercise and Donaldson-Feilder et al. (2017) whose study was with UK workers found that working patterns made participation in physical activity difficult.

5.6.3. Advertising and promotion of food

The participants shopped regularly at supermarkets and budgeted carefully. They were aware of the offers available at the supermarkets but felt that these were not designed to encourage the adoption of a healthy diet. Many of the participants commented specifically that special offers and promotions are rarely found for healthy foods. As Shabnam explained:

> "Never. Well I say never but I can't they might reduce fruit and vegetables by something but I don't think it's I don't think the shops are great at putting offers on the healthy things. And I suppose it's always big in the news isn't it like with the offers. You'll find it's buy one get one free on chocolate, crisps, cakes and all the unhealthy things". Shabnam

And as Lilly and Rachel explained the promotion of unhealthy food can be hard to resist:

> "Even when I'm shopping the temptation is there. You know you're going round, they have at the end of the aisle or seasonal chocolates you know. I love chocolate having it on the end you know all nicely stacked up you know it's very tempting" Lilly

> "I find it very hard not to go out and buy something sweet or a multi pack of crisps…even more so if they're on offer and there's 24 bags for two and I'll have them I mean if you were to look at my cupboard you'd be shocked there's that many crisps and its mainly crisps and stuff for me" Rachel

It is interesting to note in Rachel's comment that she feels what she buys is being judged against some external standard. She seems to be acknowledging that filling her cupboards with crisps is an unhealthy behaviour but at the same time explaining that the special offers encourage this type of purchase. The participants are clearly influenced by both price and the positioning of food items in the store. This relationship between price and demand of food is a major area of study. Literature reviews have reported that changing the price of food through for example by taxation and subsidy can influence food choices (Afshin et al., 2017; Andreyeva, Long, & Brownell, 2010; Epstein et al., 2012; Hyseni et al., 2017; Niebylski, Redburn, Duhaney, & Campbell, 2015). For purchasers, relative price seems to be the key component with a label stating a price reduction, without stating the actual price, being sufficient to increase purchasing (Epstein et al., 2012). The position of food in the shop independent of price is known to influence buying behaviour and food manufacturers pay for prominent positions in shops (Glanz, Bader, & Iyer, 2012).

The implication for public health interventions is that in addition to considering the manipulation of price to encourage purchase of certain healthy foods, another approach is to incentivise stores to display healthy items in prominent places (Glanz et al., 2012; Kerr, Sallis, Bromby, & Glanz, 2012,). This though is a complex field that would benefit from further research. A large study has been set up, in the Netherlands, to determine whether a combination of changes in supermarket pricing and promotion together with supportive lifestyle advice can change purchasing patterns in low SES adults (Lakerveld et al., 2018). This five-year project is due to be completed in 2022.

Lilly took the question of availability of unhealthy food items further arguing that such foods should be restricted:

> "I don't understand you know everybody the government wants and everybody wants to be healthy why are they selling things like these in the supermarket? I don't know" Lilly

Lilly is suggesting that the individuals should be supported to make healthy choices by government policy and there are indeed policies in place to make unhealthy items unattractive to purchasers. This opens up many questions of equity and availability and the participants' feelings on these issues are reported in the next sub-theme.

5.6.4. Role of policy

The participants, as already described, focused strongly on their own agency, but there were issues that can be considered as arising from the policy level of the socioecological mode of health that they described as influencing their ability to adopt a healthy lifestyle. These issues have been grouped together into three policy areas namely the advertising of food to children, what they referred to as the "sugar tax" officially the Soft Drinks Levy (UK Statutory Instruments, 2018)**Error! Bookmark not defined.**, and nursery provision. All the interviews were carried out before the introduction of the Soft Drinks Levy in the UK in April 2018 although the measure was being discussed in the media at the time of the second and third interviews.

5.6.4.1. Advertising of food to children

Many of the participants only had very young children and therefore did not feel unduly influenced in their food purchasing by the advertising of food to children and it therefore did not affect their ability to provide a healthy family diet. The participants with school age children, however, raised food advertising to children as a problem. Kirti who was particularly interested in healthy lifestyles supported a ban on advertising of sugary food and drinks at times when children could be watching TV:

> "I think they're trying to put a ban, the watershed on kids ads for food which I think is really good because it's so hard you're sitting there they're advertising all this rubbish "Oh Mum I want that" and I feel bad sometimes you know I don't want them to have it but you're advertising it". Kirti

Food advertising can be misleading and the participants were looking for clearer guidance. Rachel explained how she had bought Frosties for her son in the past, believing it to be a healthy choice not realising the high sugar content:

> "You think you're giving your kids the best like the advert and sometimes you're not…, like he likes Frosties you can't have Frosties they're full of sugar. You know and I wouldn't dream of buying, I have bought them do you know what I mean but I wouldn't I'm not buying them now you know" Rachel

The UK has a code of advertising for the promotion of foods that are high in fat and/or salt and/or sugar to children (ASA, 2017). Under this code, advertising of these products is forbidden during and immediately before and after television programmes specifically aimed at children, or likely to appeal particularly to children. The code also states that advertisements must not condone poor nutritional habits and excess consumption of any food. The code that was introduced in 2007 for television advertisements was extended in 2017 to cover children's websites and social media targeting children (ASA, 2017). The government announced in June 2018 a consultation on extending the ban on the advertising of foods high in fat and/or salt and/or sugar to 9pm (Department of Health and Social Care, 2018a). In May 2018 London mayor Sadiq Khan announced a proposal to ban the advertising of foods high in fat and/or salt and/or sugar on London's transport system (Mayor of London, 2018). The participants who raised the issue of the advertising of food to children support the current UK advertising code that restricts the advertising of "junk" food to children and whilst they were not specifically asked to comment on the new government and London Mayor proposals, their responses in the interviews suggest that they would be in favour of what they would see as a healthier food environment for their families. The participants typically have TV on continuously at home so a more general advertising ban would ensure that all family members are exposed to fewer junk food advertisements.

Restrictions on the advertising of certain foods may restrict awareness, but it does not restrict the ability to purchase. The next policy area raised by the participants, takes that extra step and influences the availability of certain products.

5.6.4.2. The Soft Drinks Levy

The Soft Drinks Levy came into force in April 2018 following advice from Public Health England (Tedstone, Targett, Allen, & staff at PHE, 2015). In the two years between when it was announced and when it was introduced, 50% of manufacturers reduced the sugar content of their drinks (HM Treasury, 2018). Only drinks that were not reformulated are subject to the levy. The Soft Drinks Levy is seen as regressive because the effect will be greatest on the poorest of society as the additional cost of purchasing sugary drinks represents a larger proportion of their disposable income. It is therefore not surprising that the participants that talked about the levy were unhappy about the extra cost of buying what they saw as a sweet treat. When the extra cost was accepted it was felt that there should be some sort of quid pro quo making the price of healthy foods cheaper.

> "all of the sugary things should be more expensive you know they should reduce the price of healthy stuff that might be. That's one of the things to do. Increase this you're getting your tax or whatever reduce this" Lilly

The unexpected finding on the Soft Drinks Levy was that some of the participants resented the reformulation of products to reduce the sugar content despite the fact that this made the product less unhealthy and avoided the extra charge. This was the participants asserting their agency and expressing anger at their product choices being taken away.

> "yes the sugar tax, now I agree with it and I don't agree with it… I didn't notice til someone told me oh they've changed Lucozade now so what's this about….. That's the sugar tax's fault they blame the sugar tax for it but I said OK if you have that keep the original um with the high amount of sugar but make less of it and put the price up or don't call it original. Because it's not original" Jade

In contrast Rachel was a strong supporter of the idea of increasing the cost of unhealthy sugary drinks and foods. She felt that she needed help in providing a healthy diet for her son who had recently had teeth removed in hospital:

> "that hospital was packed, it's a beautiful hospital a big hospital but there were so many children younger older all going in for well I don't know if they were going in for the same but they were in the dental part. They might have had one teeth out…….if things were more expensive in the long run the NHS would benefit from it because they wouldn't be taking all these teeth out. Yes especially like single parent, well I can't afford that. Yeah and in the long run if it's going to help parents. I'm all for it anything that's going to help him you know and myself but obviously he's more important" Rachel

The problem of tooth decay in her son that Rachel reported is part of a national problem. According to the Children's Dental health Survey (2015) tooth decay and extractions are rising in children under 10. In 2014-15 there were 33,781 children requiring extractions and the incidence is higher in low SES groups as measured by children receiving free school meals. In the low SES group 21% of children had severe decay compared with 11% not in the low SES group. It is too soon to say whether the introduction of the Soft Drinks Levy has reduced the incidence of tooth decay or influenced body weight.

5.6.4.3. Nursery provision and childcare

Nursery provision and free childcare was the third policy area where the participants had strong opinions. The participants were not referring here to the provision of creche facilities so that they

could exercise but to the provision of regular nursery care. The participants that worked outside the home were well informed about the nursery provision policy which changed during the period that the interviews were carried out. By the time of the third interviews, all children in England were eligible for 570 childcare hours per year starting from the term after the child turns three (GOV.UK, n.d.a). This is usually taken as 15 hours of free early education or childcare per week in term time. Further childcare is provided for some families depending on income and needs, and extends the childcare to two-year olds (GOV.UK, n.d.b) and for three-year olds the childcare is extended to 30 hours per week (in term time).

Lilly who worked outside the home, felt strongly on this issue and made the point that the additional help for two year olds is provided to families with an income of less than £16,000 but in her view very few families in the area had incomes below this level and she felt that there should be some reduction in childcare costs for families where both parents worked but had incomes in excess of £16,000.

When the participants did qualify for free nursery care they said that the provider was only paid a proportion of the total fees by the government and they had to pay a top up to the nursery to cover the actual fees charged.

The same problem of inequitable access applies to after school clubs where only those on very low incomes benefit as Meenakshi explained:

> "the after-school clubs are specifically for those parents that are on benefits are often free so that they can use them up to 5 o'clock whereas that's not available to people whose incomes are over £15,000, £16,000 per year" Meenakshi

Overall the participants expressed considerable dissatisfaction with childcare provision but their focus was on the availability of facilities to allow them to work outside the home. They did not have an expectation that childcare should be provided to allow them to adopt healthier lifestyles, for example, to provide more time to prepare healthy meals, or undertake physical activity. They saw their lifestyle behaviours as something separate and something they could choose to do. Whilst help would be welcomed they were not looking for support from the government to change nursery and early years provision to help them adopt healthy lifestyles. As Rachel explained:

> "So I do think there should be, there could be more help but I think like I said it's down to yourself" Rachel

5.7. Chapter 5 summary

These findings grouped into four themes and analysed in relation to the socioecological model of health, the Ethic of Care, current public health guidance and the literature reveal some common threads running through all the material. The mothers in the Shaping Health study are reasonably well informed about what constitutes a healthy lifestyle. Whilst they would benefit from a better understanding of physical activity guidance, the main barrier they face in adopting a healthy lifestyle, is that they do not prioritise their own health. The mothers follow, rather than resist, the Ethic of Care and find themselves as isolated individuals struggling to achieve a healthy lifestyle with very little in the way of support from the other levels of the socioecological model of health. Indeed, in some ways, these other levels, be it family members, friends, the area in which they live and government policy make it more difficult for the mothers to adopt healthy lifestyle behaviours. This suggests that more public health messaging targeting the mothers as individuals will not be helpful and may even be counterproductive as they may cause further feelings of guilt if the mothers strive but, in their eyes, fail to adopt the guidance.

There is material contained in the analysis about what type of support may instead by helpful. Reframing physical activity as an enjoyable pursuit rather than another task to be accomplished is one example. This may need to be accompanied by actions to make it easier for low SES women to access physical activity. Taking a holistic approach to participant health acknowledging their current health status, their position in the family unit and the underlying food culture is another. Recognising the changing cultural role of the body of a young woman as she goes through one or more cycles of child birth is a third. The desire to model healthy lifestyle behaviours for their children is a fourth. All these, however, will be difficult to achieve if the mothers remain isolated and without support from the wider environment.

The mothers feel that they have, or should have, sufficient agency to adopt healthy lifestyles, but they acknowledge that the barriers they face sometimes appear to be unsurmountable and they admit to being discouraged. The right type of help and support would be welcome. They see the current support on offer as patchy, inconsistent and sometimes inappropriate. They have however not given up and are open to suggestions because they would like to adopt healthier lifestyle behaviours. It is these suggestions that are the topic of the second Findings and Analysis chapter. During the course of the first and second interviews a number of possible interventions were suggested by the participants. From these ideas, four that were proposed by more than one participant and with the potential to be implemented were discussed in detail with ten of the participants in the third interviews. The focus group participants who had experienced some of the proposed interventions provided useful information for framing the ideas for potential

interventions. There is a clear desire for support and the participants' responses to the four possible intervention are illuminating. As well as giving feedback on the likely success of each intervention and how they could be implemented the participants' comments provide further insights into their lives.

6. Chapter 6 - Findings and analysis 2: Facilitating healthy lifestyle behaviours

6.1. Introduction

The mothers were all, to some extent, dissatisfied with the support they currently receive to help them adopt healthy lifestyles and during the interviews voiced many ideas and proposals for the type of support they would value. As part of the interviews these ideas were discussed, explored and developed. Additional input on the ideas for interventions came from the focus group that was carried out with the group of mothers from Slough, recruited through HomeStart Slough. This group of mothers had been the recipients of interventions designed to support healthy lifestyle behaviours in themselves and their children. Their input was added to the ideas for further support that had been essentially co-produced with the individual interview participants, and the ideas were put into a format in which they could be discussed in detail with each of the interview participants. In this way the output related to ideas for interventions, from the first and second interviews and the focus group, could be shared with the interview participants in the third interviews. To facilitate the explanation and discussion of the ideas for further support a visual aid for each area to be discussed was prepared, see Appendix 12. In this way the third interview included an intense discussion of the co-produced ideas, and it is this material that is the focus of this chapter. To put the findings in context the chapter starts with the focus group's feedback on the interventions they had experienced. This is followed by the interview participants' responses to the ideas for potential interventions, interwoven with an analysis of experience of similar interventions, and finally a commentary on how the most popular intervention could be implemented. The four ideas for interventions that were discussed with the interview participants were a self-help group, support for the whole family, support in the home and influencing the environment.

6.2. Focus group participants: Feedback on interventions experienced

In the focus group the participants were encouraged to talk about their experience of the Healthy Families programme, what they thought worked well, what worked less well, what they would like to change and what they found most useful. Their experience brought an additional perspective to the research findings because they had experience of volunteers visiting them in their homes and the family support group, as well as the information and guidance made available to all mothers of young children. Whilst the data did not have the depth of the interviews, the focus group participants in their comments echoed many of the findings from the interviews, particularly the Ethic of Care "we just forget ourselves" (Ashley), complaints about the lack of healthy fast food, difficulties in accessing opportunities for physical activity, and a preference for collecting information from discussion rather than reading "it's easier to discuss and it's more effective as well,

rather than reading" (Danika). The focus group participants expressed the view that written information could be contradictory and that a discussion allowed any conflict to be resolved. Like the interview participants the focus group participants were generally well informed about healthy lifestyle behaviours yet struggled to put the learning into practice. There was a similar range of cooking confidence in the two groups although Lisa and Ashley both used the word "panic" to describe difficulties cooking with small children, which was a stronger feeling than that expressed by the interview participants. The similarities between the two groups in terms of demographics and experience of healthy lifestyle behaviours allowed the thoughts from the focus group to contribute to the development of ideas for interventions that were then discussed in depth with the interview participants.

Danika put forward the idea for a self-help group during the focus group and it was warmly supported by the other participants. They saw the focus group itself as a prototype for a self-help group and talked about the value of meeting with other mothers with young children, sharing their experiences and learning together.

> "it would be good to have everybody and how we can help them" Gurjeet

> "it's easy to discuss you know and it's more effective as well rather than reading because nowadays we read so much on internet… so I think these discussions are better than you know just reading the leaflets" Danika

The focus group participants expressed clearly at the end of the discussion that they would like to see regular sessions scheduled. They felt that the discussion that had taken place and the hints and tips they had exchanged were helpful and informative, and that they had all benefited. Their preference for future sessions would be for the group to have control over the agenda with all members suggesting topics for discussion, their approach was inclusive with information coming from within the group not outside. As Danika explained as she developed her idea:

> "if we are facing some problem and we want to bring some topic then you know maybe in one box we can write and put a slip there and then you know it's there we can read it out which topic we should bring today, so we can decide like that". Danika

Alongside their interest in a self-help group the focus group participants made it clear that they were grateful for the support they were receiving from the HomeStart volunteers in their own homes.

> "HomeStart always helps me with maintaining children's needs" Ashley

> "I don't think they could do much better" Gurjeet.

The focus group participants acknowledged that they struggled to absorb information from leaflets and expressed a strong preference for having the information explained to them. Whilst they valued the input from their volunteers, they said they also benefited from help and support from other agencies such as Health Visitors and the Children's Centres.

The learning from the focus group, particularly the value the mothers put on being able to meet and share information and their experience of volunteers in the home was taken forward into the third interviews.

6.3. Interview participants: Feedback on the ideas for healthy lifestyle support

The discussions with the interview participants on the ideas for healthy lifestyle support generated much useful feedback for the practical application of programmes of this type in their community. These responses, for each of the four intervention ideas, were collected and tabulated and are presented in Appendix 17. This feedback served as a structure to organise the data for the analysis of each of the ideas for interventions that follows.

6.4. Family based healthy lifestyle support

The interview participants' contribution to family based healthy lifestyle support was consistent with their insights into other aspects of lifestyle behaviours; they thought it was their responsibility to take decisions and they believed they had sufficient agency and information to do so, but they would welcome some support. The mothers acknowledged that they faced barriers when trying to make changes.

All the ideas for support that arose from the discussions received a degree of backing from the group. As this is qualitative research, it is not possible to assign scores to the different ideas for healthy lifestyle support, but the participants were asked, at the end of the third interview, to rank the ideas in order of perceived usefulness and a self-help group was the most popular, receiving enthusiastic support from all the interview participants. In the section below the response of the research participants to the self-help group concept is presented in relation to previous experience with this type of intervention reported in the literature.

6.4.1. Self-help group

The idea of a self-help group to support healthy lifestyle behaviours was easily grasped by the interview participants. Whilst there was enthusiastic backing for the concept there were nevertheless a lot of concerns expressed about how it would work in practice, for full details see Appendix 17. The self-help group is a tried and tested concept in the fields of health and lifestyle behaviours although the application of the concept to a group of healthy women to support positive lifestyle behaviours is novel.

Self Help UK, a leading organization in the operation of self-help groups, states on its website that self-help groups have three elements in common "shared experience, shared benefit and shared involvement" (Self Help UK, 2020). In the UK self-help groups are typically associated with specific illnesses where people can learn from each other about how to cope with the illness, for a review see Stuifbergen, Morris, Jung, Pierini and Morgan (2010). Groups can be real or virtual and whilst some have professional support, they are usually peer led and open ended. The mothers who participated in the Shaping Health research believed strongly that they could learn from each other and they wanted to share experiences with women in similar circumstances and benefit from their knowledge and practices. Thus, the requirements for a successful self-help group seem to be in place. Qualitative research with low SES groups in the Netherlands found similarly that the combination of practicing and sharing healthy behaviours in a social setting was strongly supported (Teuscher et al., 2015). The women in the Shaping Health research expressed the view that the experiences of other mothers would be relevant to their lives and through sharing and supporting each other they could all benefit.

> "…somebody who can guide me, talk to me, answer questions motivate me you know, same might be with other mums as well or other people" Kirti

> "plus I think it would be a great way of people meeting each other" Rachel

The idea of using self-help groups to support healthy people is not new. In a review of the literature Watt, Verma and Flynn (1998) referenced the use of support groups to improve well-being and the studies reviewed included some in healthy people. It is also accepted that social groups can mitigate the adverse health effects of loneliness (Pizzo, 2020). The best-known use of support groups outside of chronic or specific medical conditions in the UK is for weight loss with private companies offering a group-based service, for example Weight Watchers and Slimming World, and the NHS providing group-based weight management services in primary care. The operation of these groups and the experience of participants provides a useful model for the structure for the type of self-help group that the Shaping Health research participants appear to be seeking. Experience has shown that programmes are more successful if they run for long periods; weight loss groups that operate for 12 months are more successful than shorter three-month programmes (Ahern et al., 2017). The benefit of participation begins to reverse when the intervention ceases (Ahern et al., 2017), suggesting that continuous participation would be advantageous. There is though contrary evidence that the dropout rate with long term groups is high, with only around a quarter of participants staying with the interventions for a year (Brindal, 2017).

As well as the weight loss programmes there are other self-help groups aimed at healthy mothers. The best known is probably the virtual self-help group Mumsnet[16] started in 2000 by Justine Roberts. The stated aim of Mumsnet is to make the lives of parents easier and to share ideas. It does include a diet and fitness section to provide information and there is an active online community for the discussion of problems and to provide support. Mumsnet was not mentioned by the interview participants although many used and mentioned other on-line forums such as Facebook. This may be because Mumsnet has a strong middle-class membership with a high proportion of professional working women using the site (Pedersen, 2016). Another on-line forum, Netmums,[17] also started in 2000 offers, amongst a wide range of services, a local group programme where one mother serves as "chairmum" and hosts monthly meetings for new mothers at local venues. This site claims a broad membership in terms of SES (Russell, 2012), but again is was not mentioned by the research participants. Thus, neither of these groups seems to have reached the Shaping Health participants.

There is one scheme operating in England that appears to have a similar objective to the self-help group concept that captured the enthusiasm of the participants in the Shaping Health research. The "New Life New You" intervention was developed and implemented in Middlesbrough and was designed for the prevention of Type 2 diabetes (Penn, Dombrowski, Sniehotta, & White, 2014). In the sense that it had a specific disease prevention objective it is different from the self-help group concept identified by the Shaping Health research participants, but it is of interest here because the intervention targeted low SES communities and recruitment was through the community rather than referral by health care professionals. The "New Life New You" intervention promoted healthy eating, exercise and weight loss through group sessions in an eight-week programme, and participants were encouraged to get involved in other community-based exercise sessions (Penn et al., 2014). Much of the experience of running this programme is in line with the responses from the Shaping Health research participants on how a local self-help group could operate. For example, Penn et al., (2014) found that the sessions needed to be held at convenient local facilities that are familiar to the participants and culturally sensitive, they used social networking to support the programme and they trained local women to deliver the sessions. All these suggestions were made by the Shaping Health participants for the self-help group concept. The women participating in the Middlesbrough study, like the Shaping Health mothers saw their primary role as care givers and home makers, meaning that their own needs had a low priority (Penn et al., 2014). Assessment of the "New Life New You" intervention showed that in addition to the sharing of lifestyle advice, participation in the group provided additional benefits such as confidence to make healthy cooking changes at home,

[16] https://www.mumsnet.com/
[17] https://www.netmums.com/

relief of isolation and reduction in depression; the women reported feeling empowered (Penn et al., 2014). The positive response to the Middlesbrough self-help group concept suggests that the Shaping Health mothers could achieve similar benefits.

Another community-based intervention that relies on group delivery is the MEND programme[18] (Mind, Exercise, Nutrition...Do it!) a 10-week programme delivered by non-specialists. Aimed at families, but with a focus on diet and exercise in young children this programme is available nationally including in Hillingdon (at the time of the interviews), and some of the interviewees were aware of the programme. Two of the interviewees had been on the programme, one had completed the programme (Shabnam) and one had joined the end of a programme (Meenakshi). Assessment of the MEND programme has shown that not only does it improve diet and physical activity in children, but it also results in improvement in the diet of the mother (Smith et al., 2013). The ethos of the MEND programme is one of empowerment in a non-judgemental place, and includes a discussion element. A further programme MEND MUMS is presented on the MEND website, aimed at weight management for mums with children up to 2 years old. The Shaping Health participants were not aware of this programme and it did not seem to be available in Hillingdon at the time of the research.

The available evidence, albeit slight, seems to favour the self-help group concept for supporting healthy lifestyle behaviours and taken together with the evidence that supports the use of self-help groups in medical conditions (Stuifbergen et al., 2010), suggests that the self-help group concept as envisaged by the Shaping Health research participants is worth exploring in further work.

6.4.2. Support the whole family

The interview research participants responded positively to the second of the ideas to support healthy lifestyle behaviours, support for the whole family. They saw advantages in involving their partners in a lifestyle behaviour programme because they hoped to gain support for healthy lifestyle changes that they would like to make.

> "I think they should encourage it more the whole family so at least the whole family hears the whole idea and at least they can work together to follow whatever it is…. so they can work together as a team" Meenakshi

The interviewees did not underestimate the difficulties of getting their partners to participate in such a programme and some felt that their partners would not value this type of programme.

[18] https://www.mytimeactive.co.uk/mend

> "I think that might be hard work for you get them [partners] to go to the first one and then they wouldn't turn up for anymore" Alison.

This expectation, expressed by Alison, is in line with the literature where it is acknowledged that it is difficult to involve fathers in other types of family interventions. Panter-Brick et al., (2014) in a global review of the literature on family-based interventions that include fathers found that in current programmes, even when fathers are involved, they are often marginalised. They also found that to be successful, it is not sufficient to replicate a programme designed for mothers and offer it to fathers, instead programmes need to be actively developed for both parents and the time and place for delivery of the programme needs to be convenient for fathers to attend (Panter-Brick et al., 2014). The Shaping Health participants in their comments emphasised the need for any intervention to be designed with the needs of their partners to the fore, and for it to be clear that the programme was designed for fathers. Otherwise the participants feared that their partners would delegate the task of attending the programme to them and the benefit would be lost.

> "He wouldn't have gone to it. Why not? He'd say why do I need to go there? Go to that one? What do I need that for?" Noorie

> "I think some Dad's might not want to and think Oh well mum's going that's fine" Kirti

Some of the interview participants felt that support for the whole family should encompass not only their partners but the extended family, usually parents or parents-in-law who have strong views on diet and physical activity. The importance of influencing older family members was recognised in the work of Penn et al., (2014) in the delivery of the "New Life, New You" intervention comprising physical activity and dietary advice to women of Pakistani origin in Middlesbrough. In this programme, however, the expectation was that the women would participate in the learning group outside the home and take the learning back to the home for the benefit of the other family members. The Shaping Health participants were concerned about their lack of agency in a multi-generation household, so their preference was for direct involvement of all family members in the proposed family-based intervention.

> "there's one person who does the cooking and it's not me" Fatima

One suggestion that the Shaping Health participants made to extend the provision of information on the importance of healthy lifestyles to partners, was to piggy-back the sessions on to ante-natal classes. This was seen as a learning time and an opportunity to draw the attention of fathers to the additional needs of their partners after the birth of the child. Care would have to be taken that the

content design was directed to the needs of both parents and that fathers were treated as equal partners on the programme (Panter-Brick et al., 2014)

The participants felt that any sessions involving partners would have to be limited to a maximum of two sessions, because of the practical difficulties in getting partners to attend a session. Whilst this would be useful to sensitise partners to the issues mothers are facing, it would not provide the continuous support that the mothers are looking for, and they therefore saw the partner support as complementary to the self-help group, and not an alternative.

6.4.3. Support in the home

Of the three learning-based ideas to support healthy lifestyles discussed with the interview participants the least popular was volunteers visiting the home to provide direct support for healthy lifestyles. The idea of improving public health through supporting women in their own homes is not new. It dates back to the mid-1800s and the sanitary movement where women volunteers made visits to the homes of the poor to supervise public health improvements in the home (Wohl, 1983). It was felt at that time that women would be more acceptable than public health officials and the objective was to control the spread of infectious diseases through education of the working classes in personal hygiene (Wohl, 1983). In what became the "Ladies Sanitary Association" there was, as in much of public health discourse today, a strong emphasis on the need to change the habits of the individual. Volunteers continued to enter the homes of the poor throughout the 19th Century with the focus towards the end of the century switching from personal hygiene to cooking skills (Wohl, 1983). More recent work in the USA has suggested that community-based interventions where healthcare professionals and trained lay advisors support low SES women including home visits and telephone calls can encourage the adoption of healthy lifestyle behaviours (Koniak-Griffin et al., 2015; Speck, Hines-Martin, Stetson, & Looney, 2007).

The research participants had all had experience of healthcare professionals visiting them in their own home, midwives and health visitors, and some had had visits from social workers and volunteers. Three of the interview participants had had experience of HomeStart volunteers visiting them in their homes. Jade and Vicki were positive about the experience and said they had benefitted, but Naseem, felt that what was offered was very limited. At the time she received the support she was unwell, isolated at home with three young children. She was hoping for someone to take the children out and entertain them, but this was not part of the service provided. Her comment illustrates the importance of ensuring that the nature of the support provided is understood by the recipient and that it is appropriate for their needs.

> "there was a lady who was coming who was coming to our house…. she helped a little bit um but it was just for one hour….because it is just for one hour in one week so it wasn't helpful for me….. and I couldn't go out". Naseem

The participants who had not had experience of the HomeStart service could see the value of home visits from volunteers for specific activities such as cooking healthy meals with vegetables and finding out about physical activity opportunities locally. Jade who had experienced the volunteer visits would have liked to see their role extended:

> " it would help as well having volunteers to help with ideas on what to have because I think that's the main problem that you have all this stuff in the fridge and you open it and you think I've got nothing to eat" Jade

Indeed, some had hoped to get this sort of information from participating in the Shaping Health research and had been, to a certain extent, disappointed. They also liked the idea of someone visiting them in their home and taking an interest in their lives; this they felt had been a benefit of taking part in the research despite not receiving advice. Nevertheless, they expressed some concerns about home visits especially if they were compulsory; they wanted the opportunity to choose to have access to this type of service and were concerned that it may turn into some type of inspection.

> "That's fantastic for people that are interested. So if it's going to have to be forced on somebody I think it's pointless …..because it will be wasted half an hour, hour somebody sitting there can't wait for them to go, get them out of my house" Kirti

The success of this type of intervention would depend on it being properly resourced. It is unlikely that such a service would be funded through the NHS which currently focuses its resources on acute care rather than preventive care. This focus can be seen at the community level where community nurses have a role in both acute care and preventive care, but their efforts go mainly towards the acute care of individuals rather than preventive care in the community (Cohen, 2006). This means that the service would have to be funded either by local government through the Children's Centres or by the charitable sector through organizations such as HomeStart. This may be difficult in the current climate where Children's Centres are closing and services are being reduced because of a lack of funding (Smith, Sylva, Smith, Sammons, & Omonigho, 2018). During the course of the research two of Hillingdon's 18 Children's Centres were closed including one of those used to recruit research participants (Uxbridge College in Hayes).

6.5. Influencing the environment

The participants understood that the intervention ideas on changing the environment to support healthy lifestyle behaviours were different to the family-based ideas for interventions. In the latter, they could picture themselves participating directly, whereas the former would have, at best, an indirect impact on their lives. They saw the family-based ideas for healthy lifestyle behaviours as opportunities to increase their agency and get the direct support they were seeking to adopt healthy lifestyles. They had little confidence that environmental changes would help them and said that changes in the environment, based on their experience, were likely to be detrimental rather than beneficial, citing examples of the closure of the local Children's Centre and the increase in the number of local fast food outlets. They were, however, prepared to discuss how changes in the environment could support them. Four areas for interventions were covered: exercise provision; food policy and instore food promotions; nursery provision; and planning restrictions for food outlets.

6.5.1. Exercise provision

The participants were divided on whether there should be increased provision of low-priced physical activity. This may be related to the lack of knowledge within the group of the physical activity guidelines and the importance of physical activity; confusion as to what constitutes physical activity; and a belief by some participants that exercise is not something mothers need to worry about (see Section 5.4.2, Knowledge of healthy behaviours).

Some of the participants were content with the free of charge physical activity opportunities open to them, including walking, and the use of home gym equipment or videos. Others had the financial resources to pay for physical activity sessions at local gyms. There was however a third group, which saw organised physical activity as being in some way out of their reach, and whilst seeking to change this situation, they were not optimistic that any changes, that could be made, would actually solve their access problems. They reported multiple problems with gym contracts, pay as you go options, creches, parking and times of exercise classes. This is exemplified by Rachel's experience; she was given vouchers by the Local Council that allowed her to access a range of exercise options free of charge, and whilst she was very pleased to receive them, had not used them as the locations and times of the classes were not convenient. She also felt that vouchers alone were not enough, she needed further support to increase her motivation to exercise (she had recently moved into the area):

> "I never used them so I weren't sure where everything was. I thought if I were back (previous home) I'd probably be more motivated but because I'm here" Rachel

This finding is in line with a study of exercise incentives in a low socioeconomic group in the North East of England (Harland et al., 1999) which found that only intense interventions, motivational interviews together with a financial incentive increased uptake of physical activity and that the increase was not sustained when the intervention was withdrawn. Another study carried out in two low SES housing estate in Scotland found that the availability of a voucher may play a role by removing the financial barrier (Lowther, Mutrie, & Scott, 2002).

It appears that there is no one simple environmental change that could be made which would make it easier for the Shaping Health mothers to access exercise facilities. It would therefore make sense for local authorities that wished to increase access to their exercise provision to engage with potential users and understand their needs and develop specific local programmes. The self-help groups referenced above, if they were to be in place, would provide a suitable mechanism for sourcing this type of information and may also serve as an appropriate support to encourage more women to use the facilities. With the support of others, the mothers may not feel that organised physical activity is out of reach.

6.5.2. Food policy and instore food promotions

Many of the participants felt that healthy food was more expensive than unhealthy processed food and that they were being penalised financially for wanting to eat healthy food. In finding food prices were "unfair" and restricting their food choices the participants were echoing the findings of Mozaffarian et al., (2018, p3, table 1) that "price has a strong influence on food choice".

Some of the participants would welcome support for healthy eating through a switch in supermarket promotions from unhealthy foods to more healthy foods.

> "I think there is an element that processed food, that processed food should be subsidising fruit and veg I do agree with that" Alison

Whilst others were concerned that without promotions, they would not be able to afford treats for the children:

> "yeah if they don't do the offer Oh God children want a treat, we can't get them a treat nowadays because they don't have the offers. You can't win either way. It has to be down to your own mind set your own mentality and your own common sense" Kirti

A large study of supermarkets carried out in the UK found that contrary to the beliefs of the participants, 60% of food promotions were on healthy foods and only 40% are on less healthy foods (Nakamura et al., 2015). Where the participants were more acute in their observation was in the effect of these promotions, as the promotion of unhealthy items leads to larger increases in sales

compared to promotions on the healthy items (Nakamura et al., 2015). This suggests that the participants are right that a change in either practice by manufacturers and supermarkets, or government policy, that restricted the promotion of unhealthy foods in supermarkets, would lead to more healthy food being purchased. Of interest is another finding from the supermarket study that the increased purchasing of the promoted unhealthy food items was greater in high SES groups than low SES groups (Nakamura et al., 2015), so that restrictions on the promotion of unhealthy foods by supermarkets may paradoxically, further increase health inequalities.

Other options that have been tried to address the balance between the cost of healthy and unhealthy food items are to provide subsidies for healthy foods, and food vouchers that can be exchanged for healthy food items. There was experience in the participant group of food vouchers, provided on a weight loss programme, that could be used to buy fresh fruit and vegetables, and Rachel, who had received them, reported favourably on the scheme.

> "I got the vouchers for the veg …and it really helped me you know so anything that is going to help you know I think it would be good" Rachel

For this type of scheme to be fair there should be both incentives to encourage the purchase of healthy food and disincentives to discourage the purchase of unhealthy foods as disincentives only, being regressive, have a disproportionate effect on low SES groups (Mozaffarian et al., 2018). Food policy can be used by government to support healthy preferences and if it is used to target families with young children it has the additional benefit of establishing healthy food preferences in the next generation (Hawkes et al., 2015).

In other areas of food policy, the participants consistently reported that they would like to see clearer food labelling, calorie content on restaurant menus to help them make healthier choices, restrictions on the placement of unhealthy foods around tills in shops and more controls on the advertising of unhealthy food to children both on television and in store.

> "that's kind of good, not to do them at the checkouts it's kind of easier otherwise you're standing there and the kids are screaming blimmin murder I want this I want that eeuuhh there's only so much you can say no there's only so much you can say no to them" Kirti

The impact of nutritional labelling was reviewed by Crockett et al., (2018) who found that whilst the evidence quality was considered poor, calorie labelling in restaurants appeared to reduce the number of calories purchased, thus supporting the view of the participants that calorie content on menus would help them make healthier choices.

There was less consistency in the responses of the participants to the use of taxation to change eating habits. Most of the feedback was in line with the participants' overriding belief that it was their responsibility to make decisions about diet and they wanted to be able to afford a treat. There was a degree of resentment of decisions being made for them, such as the reformulation of favourite sugary drink brands to avoid the soft drinks levy.

> "… so that for me I think annoyed me the most that they've, everyone is changing their recipes and still calling it original and it's not. So that what annoyed me the most and I think there should be the option" Jade

The same logic prevailed when it came to the availability of a wide range of foods. The mothers did not want to see anything banned, they wanted to retain the choice to buy or not buy unhealthy food items, as they saw fit.

There have been some attempts by governments to make the types of change to food policy suggested by the participants. The UK government had a short-lived initiative, the Public Health Responsibility Deal, which started in 2011 but which ceased to function with the end of the coalition government in 2015 (Department of Health, 2018). The Public Health Responsibility Deal covered four areas, two of which were food and physical activity, the other two being alcohol and health at work. Companies were encouraged to sign up to pledges to improve public health. Food pledges included reducing the salt content of processed food and including calories on restaurant menus. Physical activity pledges included promoting exercise in the work place and promoting the current physical activity guidelines. An evaluation of what was achieved under the scheme found that whilst food manufacturers and suppliers pledged to make changes to food content and labelling, to make products healthier, involvement in the scheme was primarily seen as public relations activity and to fend off regulation, rather than a real attempt by the manufactures to improve public health (Durand et al., 2015). Effective schemes require formal sanctions and incentives (Durand et al., 2015) and without polices and schemes that include these it seems unlikely that the requirements of the participants will be properly met.

In June 2018 The Department of Health and Social Care announced a consultation that covers many of the area highlighted by the participants (Department of Health and Social Care, 2018b). The consultation includes calorie labelling of restaurant food, further restricting the advertising of unhealthy products children and providing incentives to food manufactures to make products healthier. The consultation has some physical activity elements aimed at children to encourage walking to school and cycling. According to the Gov.uk website, (accessed 24th January, 2020) the feedback is currently being analysed.

6.5.3. Nursery provision

Nursery provision was a contentious issue with some of the participants, particularly for those that worked outside the home. In line with another qualitative study of low SES mothers carried out in London, the mothers in the Shaping Health research relied on state and voluntary nurseries for childcare and they experienced problems with both the choice of provider and the cost of the service (Vincent, Braun, & Ball, 2008). Although all the participants were recruited from a low SES area some of the participants benefited from free nursery provision whereas others did not, according to individual income. Where participants did benefit from free nursery provision there was difficulty in finding appropriate nurseries and in some cases, the state provision did not cover the full costs, and the participants had to pay top up fees to the nursery. Some of the mothers reported that the nursery hours were inflexible making it difficult to use the nursery provision for paid work, or to undertake exercise.

> "… the 15 hours is only three hours a day …. it's not possible, well in the sense of depending on where the gym is for us unless it's in West Drayton for me to drive back here or to Uxbridge it's not much time for me to go in get ready half an hour on the treadmill or half an hour swimming to have a quick shower to drive back again" Meenakshi

The current nursery provision led to a degree of resentment with mothers who were working outside the home angry that they had to pay nursery fees that took up a significant part of their income whilst other local mothers who did not work seemed to get a bigger benefit in terms of nursery care. Other participants who chose to stay at home were generally happy with the provision of nursery care for three-year olds and felt that two, was too early to send their children to nursery.

Nursery provision is an area where the participants would like to be involved in decision making and to have a range of options to work with rather than being provided with a single fixed scheme. Whilst not contesting the benefits of formal nursery care (Zagel, Kadar-Satat, Jacobs, & Glendinning, 2013) the participants saw nursery provision as an inflexible government operation that was not designed to fit their needs. They would prefer to have a system that was flexible where they could discuss their needs with providers of nursery care and arrange a timetable that suited them. Working mothers in particular would like to see the fact that they are contributing to the state through working recognised in the provision of nursery care, rather than it being simply based on family income. In their minds this would address some of the unfairness in the current system.

6.5.4. Planning restrictions for food outlets

The participants expressed a range of views about the number and type of fast food restaurants in their immediate environment. Many of the participants wanted to retain the option of food from

takeaways outlets and they enjoyed the choice of food that was available locally and they therefore saw no reason to restrict this type of restaurant. Most of the participants felt that they were able to control their use of these restaurants, even though there is evidence in the literature to the contrary, that exposure to fast food increases its consumption (Burgoine et al., 2014), and saw them as a treat or a welcome break from having to provide meals for their families. Some of the participants acknowledged that the number and range of restaurants very close to where they lived was a source of temptation, and suggested that if they were not so easy to access, they would use them less.

In contrast some of the participants had strong views and wanted to see the numbers of takeaway restaurants limited, but thought that this might be difficult to achieve with local councils trying to keep local high streets full of shops and restaurants. Other participants suggested an alternative approach whereby fast food restaurants and coffee shops were required to offer some healthier options in addition to their current menus. The interviews with Fatima and Meenakshi took place in Costa (UK coffee shop chain) and both participants pointed out the lack of healthy food options in this particular outlet. The views of these participants are in line with calls in the literature for incentives to attract retailers providing healthy food options into low SES areas and to encourage existing retailers to provide healthy alternatives (Hawkes et al., 2015).

6.6. Putting the findings into practice

Of all the ideas for interventions discussed with the Shaping Health participants the self-help group garnered the most support and thus merits further discussion of how it could be put into practice. There will be many difficulties to overcome to set up a self-help group of the type envisaged by the mothers participating in the Shaping Health research, with ownership of the group likely to be a contentious issue. The women participating in the Shaping Health research wanted to be in charge of the self-help agenda, but in practice this is rarely achieved with community groups. This is because community groups are typically set up as targets for an existing intervention, rather than as an end in themselves and typically have a coercive rather than a supportive function (Lupton, 1995). To meet the needs of the Shaping Health participants, the self-help group would need to be established in the spirit of Critical Theory (Guba & Lincoln, 1989) acknowledging that reality for the participants cannot be separated from their lived experience. Economic, cultural, ethnic and gender issues will all be important constituents of that experience (Israel, Schulz, Parker, & Becker, 1998). It is, however, worth striving to address these issues, because social networks have been identified as a valid mechanism to support families with children in overcoming barriers to unhealthy eating preferences (Hawkes et al., 2015). Moreover, the self-help group may serve as Blue, Shove,

Carmona and Kelly (2016) recommend, to understand better the social practices of groups so as to develop effective public health interventions.

There are examples of successful public health interventions that have been developed from lay expertise such as “Fag Ends”, a programme developed in Liverpool to help smokers stop smoking (Springett, Owens, & Callaghan, 2007). Fag Ends is an example of a programme that successfully challenged the accepted status quo that public health interventions must be driven by evidence-based practice and instead privileged the experience of the community. The argument for relying on community experience is that it better reflects the complex lives of the recipients of the intervention, and that this is particularly important when trying to serve difficult to reach groups that generally do not respond to public health interventions (Springett et al., 2007).

The participants in the Shaping Health research who supported the idea of a self-help group expressed similar ideas to those reported by Springett et al., (2007), seeing the proposed group as a means to share information between equals and they wanted ownership of the group to avoid being patronised by what they saw as the “nanny” state. They acknowledged that a self-help group had the potential to reinforce negativity in the group and saw the importance of a trained leader otherwise as Noorie quipped, they would end up talking about their divorces. Ideally this leader should come from within the group to fully understand the lives and experiences of the group members. Whilst the Fag Ends programme dealt with smoking there is some evidence from the literature that this type of approach could be translated to interventions to improve diet and increase physical activity. A group in the Netherlands (Broeder et al., 2018) that conducted research amongst health professionals in a low SES area where the inhabitants experienced poor diet and lack of physical activity concluded that one way to improve community health was to use the collective power of the inhabitants through the use of groups.

Implementation of a self-help group would require careful thinking about the business model. A major concern for the participants was the financial basis for such a group. The participants indicated that they would be happy to pay in the order of £2 per session for an activity, but that higher fees may provide a barrier to participation. There would certainly be costs associated with establishing and running a self-help group such as venue hire, training of group leaders, preparation of materials and handouts, advertising and promotion of the group. It may be possible to provide a self-help group as an additional service through an existing service such as the Children’s Centres, HomeStart, Netmums or another community-based group. A lot of these services are, however, already stretched and may not be well placed to take on an additional service. Discussion and research with these providers would be required to determine whether they would be interested in

supporting the self-help groups and had sufficient resources to do so. An alternative approach would be to adopt a business-based model for the self-help groups using a franchise, for example replicating the way exercise classes are provided by the Les Mills group[19].

Les Mills is a business that develops exercise programmes, trains and certifies teachers and makes the programmes available through local gyms. The business started in Auckland New Zealand in 1968 with a single gym and is now represented in more than 80 countries and 20,000 clubs. The programmes are refreshed every three months to maintain the interest of the participants. The self-help group could be organised in a similar way with a central function providing materials, training and certification of leaders, and promotion of the self-help group brand. As with the gym classes the self-help groups would require new materials on a regular basis to maintain the interest of the participants. In this model the leaders could be drawn from the community where the group takes place in the same way as the Les Mills leaders are drawn from exercise class attendees.

There are other community-based businesses that use the franchise model. Slimming World, for example, encourages individuals that have completed Slimming World programmes to purchase a franchise and run Slimming World sessions receiving support from Slimming World in the form of training, materials and national promotion. Weight Watchers works in a similar manner although its coaches that run the local sessions are employees not franchisees. Typically, leaders of these commercial weight loss programmes are previous participants who have lost weight on the programmes (Allan, Hoddinott, & Avenell, 2011). All these models share the feature of recruiting individuals that are interested in the service to run local sessions with support from a head office, and such a model may work well for the self-help groups. A business plan would have to be prepared to check financial viability. Setting up and testing this type of intervention was considered beyond the scope of the Shaping Health research project but would be a useful piece of follow-on work.

6.7. Chapter 6 summary

In their response to all the proposed interventions the interview participants consistently supported ideas that would allow them to help themselves. This is unsurprising as the main results, reported in Chapter 5, showed that the participants had a strong belief in their own agency to make decisions to maintain and improve their health. This does not mean that the participants would not welcome support for the adoption of healthy lifestyles. They were though, wary of public health interventions

[19] https://www.lesmills.com/uk/

that were developed by people not fully cognizant with their circumstances; they were more interested in sharing experiences with people that lived in their environment.

The concept of a local self-help group received enthusiastic support from the interview participants. The mothers could see an immediate benefit of sharing ideas and experiences with others in a similar position. They thought that such a group would help them with the adoption of healthy lifestyles in the areas of diet and physical activity, as well as being a social event that would reduce the isolation that some of them felt. The mothers wanted to run the group themselves and set the agenda whilst acknowledging the need for some professional support. One solution to this apparent contradiction was provided by some of the mothers who saw leadership of a self-help group as a worthwhile activity for which they would be prepared to undertake training. The overwhelming support for the self-help group may have arisen at least in part from the way in which the Shaping Health participants were recruited, they had agreed to take part in a research project on healthy lifestyle behaviours, indicating an interest in this area. Moreover, the series of three interviews that made up the data collection process had fed that interest in the participant group. The participants had grown and nurtured their interest in healthy lifestyle behaviours during the research period and may have responded positively to the self-help group concept as a way of strengthening and developing their interest and sharing it with others.

A self-help group would take some of the pressure for the adoption of healthy lifestyles from the individual at the centre of the socioecological model of health and share it with other levels, mainly friends, but through exchange of information allow access to further support from other structures, in the community, such as exercise facilities. The self-help group concept allows this to happen without the individual feeling that she is surrendering her own agency. It should also be possible to position a self-help group to be in line with the tenets of the Ethic of Care so that attending the group was not only for the benefit of the group members but also for the families that the group members are caring for. A single self-help group may find itself struggling to work with the current public health guidance which fails to take into account the experiences of low SES mothers, but with time, a network of self-help groups could work with the guidance developers to ensure that guidance more closely reflected the needs of the self-help group members.

The two other family-based interventions, support for all the family, and volunteers in the home were of interest to the mothers but they saw these as short-term interventions that could address specific concerns at certain times. They would not provide the continuous support that they envisaged being provided by the self-help group. If these two family-based interventions were to

be made available they could be publicised through the self-help group which may ensure that they reach those families in most need of them.

The participants did acknowledge that changes could be made to their environment that would support them in their endeavours to adopt healthy lifestyles. They had little confidence, however, that useful changes would be made in areas such as food promotion, nursery provision or planning regulations for fast food restaurants. Whilst they had strong views on how these factors from the environmental and policy level of the socioecological model of health influenced their health and those of their families, they believed they would have to live with things as they are, and changes were as likely to be detrimental to their lifestyle as helpful.

7. Chapter 7 - Conclusion

7.1. Introduction

This chapter summarises the findings from the Shaping Health research and makes proposals as to how the knowledge generated could be used to support the adoption of healthy lifestyle behaviours in groups of low SES mothers. Also, in this chapter, further work, arising from the research methods, is suggested to take advantage of the establishment of the two participant groups, for the interviews and the focus group, that represent groups of difficult to access low SES mothers.

The purpose of the Shaping Health research was to understand the barriers and facilitators to the adoption of two healthy lifestyle behaviours in a specific group of low SES mothers and to create new knowledge to support the development of public health interventions and guidance to address the reduced life- expectancy and the increased number of years spent in poor health in this demographic group.

A qualitative study design was used comprising a series of three in-depth interviews with a participant group recruited through HomeStart Hillingdon and Children's Centres to address three research questions:

1. What roles do diet and exercise play in the lives of mothers with young children living in a low SES area of London?
2. What barriers do the mothers face in adopting a healthy lifestyle?
3. What public health interventions would support the mothers in adopting a healthy lifestyle?

To answer these questions, time was invested to establish relationships and undertake a series of participant led in depth interviews. A reflexive stance was developed so that data were generated from relationships of trust and support, and knowledge construction was collaborative. A focus group was held with a separate participant group recruited through HomeStart Slough to provide context for the development of the ideas for public health interventions. The data from the interviews, collected in the participant transcripts, were subjected to a thematic analysis and four major themes were recognized. Four potential areas for public health interventions were identified in the data, which were subsequently discussed with a sub-set of the original participant group.

7.2. Summary of study findings

The participants in the Shaping Health research had generally, good health knowledge, particularly in the areas of diet and food. The research identified some gaps in their health knowledge, for example with regards to physical activity, how being physically active differs from not being sedentary, and the importance of physical activity for all women including mothers. Lack of knowledge however, was not the main barrier to the adoption of healthy lifestyles in this group of

mothers. Instead, what emerged from the data was a picture of a group of mothers striving to do their best for their families, but constrained by the Ethic of Care, and assigning a low priority to their own health. Whilst the socioecological model of health recognises that health is influenced by multiple factors operating at different levels, all interacting with each other, the mothers that contributed to the Shaping Health research reported feeling isolated and struggling on their own to meet many demands on their time and resources. Not only did they feel they lacked support from other people and structures, they reported barriers and constraints arising from other levels of the socioecological model of health which they found difficult to overcome, often because of poor health and limited financial means.

The four themes that were used to analyse the data allow different aspects of the mothers' lives to be interrogated. The first theme, the conflicted mother, summarises how many of the participants felt about several different aspects of their lives. The mothers feel over-burdened, but are committed to their caring role. They mainly describe a patriarchal home environment where they accept the responsibility for the housework and childcare. The mothers express a strong desire to both adopt healthy lifestyles for themselves, and model them to their families. They are generally well informed about what this requires although they are sometimes influenced by non-evidence based recommendations reported in the media, find it difficult to find a way forward when presented with contradictory information and are sometimes unsure whether public health guidance applies to their special circumstances as mothers of young children leading busy lives. Further conflict arises from the input of other family members and peers, who may be less well informed about current public health guidance, or less willing to accept diet guidance, and also from cultural conditions that encourage eating foods that are not in line with current dietary guidance. The mothers strive to provide healthy meals for their families and have access to shops with a good selection of foods, but are influenced in their meal choices by the large number of local fast food restaurants that offer a quick and satisfying, albeit less healthy alternative. This combination of forces leaves the mothers striving to do what they believe is the right things, but feeling guilty, when, they fail to meet the standards they have set themselves. The feelings of guilt apply more strongly to diet than to physical activity because many of the mothers are less familiar with current physical activity guidance, or if they are aware of it, they think they are either active enough, or that physical activity guidance does not apply to them.

Alongside and related to their feelings of conflict about lifestyle behaviours are the mothers' concerns about their bodies. Whilst the mothers had taken advantage of the relaxation in society's expectations of what constitutes an ideal female body during pregnancy, after the birth of each child the mothers become aware of the changes that had occurred to their bodies and many seek to lose

weight and change shape. To do this they mainly chose to adjust their diet although some of the mothers also endeavoured to increase their physical activity. Some were able to make the changes they desired, but others struggled with some giving up, but all remaining to a certain degree dissatisfied. For some the dissatisfaction fed feelings of shame which together with the loneliness arising from their efforts to meet the demands of their caring roles, led to further isolation.

An unanticipated finding of the Shaping Health Research was that the mothers are dealing with the demands of the Ethic of Care on their time and resources, and their own and society's expectations to have a healthy weight and toned body, against a backdrop of considerable ill health. As well as their own poor health the mothers were managing their children's health and development problems and also the poor health of other family members. Poor health was a drain on their physical and emotional resources, and had a direct impact on lifestyle behaviours, as a barrier to healthy behaviours through physical limitations on undertaking physical activity, and poor mental health making it harder to maintain a healthy diet. In contrast, poor health could also be facilitator where concerns about developing major NCDs served as motivation for the adoption of healthy lifestyle behaviours.

The conflict that the mothers experienced, their concerns about their bodies and their experience of health were all influenced by the environment in which they lived. Whilst the mothers believed strongly in their own agency and ability to adopt healthy lifestyle behaviours, they acknowledged that there were a number of factors in the environment that had an impact on their lifestyle. Healthy food was more expensive and less filling than processed food, and many physical activity options were out of reach, both proving problematic in the group with limited financial resources. Factors from other levels of the socioecological model of health such as store promotions, advertising of food, creche provision and food choices at work made healthy lifestyles difficult to adopt and maintain, whilst the soft drinks levy, intended to support healthy lifestyles was viewed with distrust.

Despite their belief in their own agency the mothers were open to, and mostly welcomed, all the ideas for public health intervention suggestions that arose from the individual interviews. The most popular was a locally run self-help group to exchange information on healthy lifestyle behaviours, learn about local facilities and relieve the isolation experienced by many of the mothers. Experience with similar self-help groups to meet different needs suggest that this may indeed be a useful tool to build and maintain healthy lifestyle behaviours in the participant group. The participant group also responded positively to the availability of courses for the whole family in healthy lifestyle behaviours, so that the responsibility for healthy lifestyles could be more widely shared in the family,

and to the idea of volunteers to visit the home and provide support to address specific healthy lifestyle problems. The participants had less confidence that changes could be made to the environment, but they would like to see more promotion of healthy foods in the supermarkets and restrictions on advertising to children.

7.3. Contribution to knowledge

The Shaping Health research is unique because there is no similar study of low SES women in the London Borough of Hillingdon. It is unusual, in that there is very little research with healthy low SES mothers in England on the two lifestyle behaviours, diet and physical activity, and little from other countries. The Shaping Health research has provided a unique insight into the health behaviours of a group of low SES mothers with young children. It has provided a rich and detailed picture of current lifestyle behaviours, explanations for these behaviours and the barriers and facilitators that the mothers experience when trying to adopt healthy lifestyle behaviours. Whilst the data collected are not representative of this group they are nevertheless, exemplars of the behaviours of this group of women, that experience reduced life expectancy and spend a considerable part of their lives in poor health. This understanding of the lives of this group of women is crucial for the development of public health guidance and interventions for this group. Thus, for example, the research has demonstrated that providing more information and instruction on healthy lifestyle behaviours to women overwhelmed by duties and responsibilities, who do not prioritise their own health, is not helpful. Instead an intervention which allows women to learn from their peers, who they understand have similar lifestyles to their own, is likely to be more welcome.

The motivation for this research was to reduce health inequalities and the findings have confirmed that health inequalities arise from four main factors, structural, behavioural, psychosocial and biomedical and that these interact with each other and accumulate over the life course. Health promotion as defined in the Ottawa Charter requires that government promotes a healthy living environment and develops individuals so that they can lead healthy lives. This research has shown that current health promotion is failing a group of low SES mothers and that alternative approaches are required to meet their needs. Without changes it will not be possible to address the morbidity and mortality from NCDs that reduce life expectancy and healthy life expectancy in low SES mothers. These alternative approaches need to take account of all the factors contributing to health inequalities, the tension between individual and environmental factors, yet also acknowledge the strong Ethic of Care in this group. This research has collected together the many and diverse needs of this group and despite the strong claim to agency made by the participants the influence of the environment and particularly material deprivation on health is clear. Many public health

interventions rely heavily on individual behaviour change but this research has brought to the fore, the role of the environment in achieving a change in behaviour.

The methods employed in the Shaping Health research have provided a further knowledge contribution. They have shown that through volunteering, regular visits to Children's Centres, committing time to the development of relationships and maintaining a reflexive stance, it is possible to engage a traditionally difficult to reach group. From this engagement comes the possibility to undertake further research including the development and testing of public health interventions to support the group.

7.4. Implications for practice

The Shaping Health research has shown that despite their busy and chaotic lives, low SES mothers are interested in developing healthy lifestyle behaviours and would welcome support. They are aware of the dangers of NCDs arising from poor lifestyle behaviours and are open to appropriate public health interventions. Whilst there are some areas where current information based guidance could be improved to make them more applicable to this group, for example, by taking into account that many of the mothers may be suffering from poor health and that there are misconceptions about the role of physical activity, the mothers are looking for a different type of support. They would prefer a solution that they were part of, rather than it being imposed from the outside. Whilst many of the mothers feel isolated, they understand that they are not alone, that others share their problems and they believe that with the right support they can solve their problems themselves. Alongside this desire to self-manage is a recognition that they will need some external support to set up and manage a self-help group. Despite the small number of participants in the Shaping Health research and with no intention at the outset to recruit potential leaders, more than one of the participants expressed an interest in managing a self-help group indicating that the potential exists in the community for this type of structure.

There is also an appetite for sensitively run and delivered programmes, both to provide support for the whole family and for volunteers to visit homes, to encourage healthy lifestyle behaviours. These programmes need to take into account the busy and sometimes chaotic lives of this demographic and to be designed to fit into the participants' schedules rather than have an expectation that the mothers will be able to change their activities to take part. A local self-help group could provide a platform for these additional activities, identifying the type of additional support needed in the community and publicising the programmes to ensure that the people most in need attend.

The self-help group, if well-established, could also serve as a sounding board for other proposed initiatives to support healthy lifestyle behaviours in a specific area, such as the provision of exercise

classes, adjusted creche hours, planning applications and supermarket promotions. The Shaping Health research did not extend to piloting the self-help group concept, but the enthusiasm for the idea amongst the mothers suggests that it may be possible to use the self-help group as the basis for future action research projects using the agency of the mothers in the area to make local changes that would support healthy lifestyle changes.

The Shaping Health research has shown that much of the public health guidance falls on stony ground and does not achieve the desired changes in behaviour. Alongside education individuals would benefit from support from other policies such as calorie labelling of restaurant meals, changes to supermarket promotions, improved access to physical activity and incentives to purchase healthy food.

7.5. Strengths, limitations and future research directions

A major strength of the Shaping Health research is the time invested in developing relationships with busy mothers living in a low SES area, so that the mothers were willing to talk about, and share their experience of healthy lifestyle behaviours, both their own, and those of their families. For the mothers this meant sharing sometimes intimate information and they did so because they were pleased that someone was willing to listen to them and value what they had to say, and because they want things to change and saw the research as one vehicle that could bring about change. The series of three in depth interviews carried out over a period of time allowed the relationships to develop, the information shared to grow in depth and the information collected to be validated through repetition and become saturated. Not all the mothers took part in the second interviews and this was a disappointment and meant that some important data were lost to the research. This however is the reality of dealing with a group of people with busy lives, some of whom were only resident for a short time in the study area.

The thematic analysis was rigorous and the selected themes were borne from many readings and discussions of the data. The themes presented in this thesis were not the original ones selected, but by careful reading of the data and considering different themes, the four themes that were most helpful to address the research questions were identified. That does not mean that other researchers would not be able to find other themes, especially if they were trying to answer different research questions. It is a strength of the study that rich data were collected and the data set could be used in the future to understand other aspects of the lives of low SES mothers. The research questions did not enquire about diet and exercise in the participants' children or partners, but because these family members were of such importance to the participants, the data collected include a lot of information that sheds light on their lifestyle behaviours.

The collection of data from twenty interview participants is both a strength and a weakness. It is a strength because it allowed thick data to be collected from the participants allowing an in-depth understanding of the role diet and exercise play in their lives. The research suffers from the weakness of any qualitative research, which is that the findings cannot be said to be representative, they only apply to the participant group. The findings are not even representative of the population of low SES mothers in Hillingdon, as no attempt was made to ensure that the age, number of children, ethnicity, education level, income, health status, hours worked outside the home or other demographic characteristics were representative of the low SES population. Indeed, with so many demographic variables it would not have been possible to conduct an in-depth qualitative study with a representative sample. Instead women who were in receipt of HomeStart support or attended sessions at the Children's Centre were approached to see if they were interested in participating and all those who expressed an interest were included in the research. Thus, the group were self-selecting, possibly agreeing to take part in research on lifestyle behaviours because it was a topic of interest to them, and because they felt they were positive role models and wanted to share what they knew, or possibly because they felt that their current lifestyle behaviours were poor and they hoped to learn and benefit in some way from participating in the study. Another reason for agreeing to take part could simply be that they had established a relationship with me as the researcher and did not want to say no. In retrospect it would have been useful to ask the participants at the end of the research what their motivation was for taking part and what they had got out of participating. Despite not asking this question, the data collected suggest that all the motivations set out above apply.

It was anticipated at the start of the research, and accounted for in the participant information leaflet that the participants might find taking part in the research distressing. Nevertheless, the amount of distress experienced by three of the mothers who participated in the research was unexpected. One mother became mentally ill over the course of the study, not as a result of the study, indeed she found the regular meetings helpful and I continued to meet her although I decided that because she was unwell it was not appropriate to carry out a third interview. One participant declined a second interview, and one participant declined a third interview, both because they found the questions distressing, particularly talking about their weight, mental health and ability to look after their child. These two participants dropped out of the research but it seems wrong not to have referred them to a support service, beyond the information provided in the participant information sheet. The need to have support in place, outside the research environment should be considered for further studies.

Two major areas for further research arise from the Shaping Health research. The first is to carry out similar research with low SES mothers in other parts of London and other parts of the country to see whether the experience of lifestyle behaviours, and the identified barriers and facilitators are similar, or whether there are important differences. The second is to design and test an intervention, to continue to work with the research groups in the London Borough of Hillingdon and/or Slough and set up a self-help group as envisaged by the participants and see what benefits it brings in terms of lifestyle behaviours.

7.6. Theoretical implications

This research used the socioecological model of health in an effort to determine the relative roles of the individual's agency and the environment in influencing healthy lifestyle behaviours against a background that most public health interventions target individual behaviour change. The findings show that the individual accepts responsibility for managing their own health and despite acknowledging barriers and, more rarely, facilitators from the other levels of the socioecological model, the mothers believe they have sufficient agency to make changes. This finding implies that the current focus of public health interventions on the individual may not be misplaced, but that the type of intervention may be wrong. The participants, as individuals, at the centre of the model, are not looking for more information, instead they are seeking support from family, people like themselves in the community, and to a certain extent community structures to achieve and sustain healthy lifestyle behaviours. The Shaping Health research has also shown that a reliance on the socioecological model of health in isolation for research and the development of public interventions for low SES mothers may be misguided because it does not take into account the strong Ethic of Care operating in this group and interventions that reinforce, rather than ignore the Ethic of Care, are likely to be more acceptable. One exception in this regard that arose from the research relates to physical activity, where reframing it as a pleasurable activity for the mother rather than a further obligation under the Ethic of Care, may increase its attractiveness and uptake.

The identification of a self-help group as mechanism to achieve behaviour change following extensive research into lifestyle behaviours follows the recommendations set out in Michie et al.'s (2014) Behaviour Change Wheel for the design of interventions, and meets their criteria of being affordable, practical and acceptable to recipients. Michie et al. (2014) also recommend gaining the endorsement of public health professional for the proposed intervention; this was beyond the scope of this project but should be part of any further work, together with following the recommendations in the Behaviour Change Wheel for the detailed design of an intervention.

For me as the researcher, the Shaping Health project has demonstrated the need for a strong theoretical base to provide a structure for public health research and interventions and has confirmed the value of the socioecological model of health as a guiding structure, albeit with the caveats set out above. This theoretical base alone though was not sufficient to direct the research. It operated alongside a strong reflexive stance that allowed the relationships with the participants to be established, for rich data to be collected and for the interpretation to be carried out with sensitivity. Without this reflexivity, the data that make up the full and detailed picture of the lifestyle behaviours of this group of low SES mothers could not have been collected.

7.7. Concluding remarks

This thesis extends our knowledge of the lifestyle behaviours of a group of low SES mothers and of the barriers and facilitators they face in adopting healthy lifestyle behaviours. It demonstrates that whilst providing information designed to meet their needs is useful, the mothers are seeking other forms of support. Interventions over which they have some control in terms of delivery and content are likely to be well received and provide the help they want. A successful intervention has the potential to address the health inequities that mean that low SES women have lower life expectancy than high SES women.

The research presented in this thesis is the foundation for what could be a new type of public health intervention. It breaks new ground in proposing a self-help group for a well population, albeit a group at high risk of developing NCDs. The self-help group concept needs to be designed and tested, with the target population, and thoroughly researched to determine whether this type of intervention can make a significant difference.

Even if this further research is not carried out, the findings of the Shaping Health research, the understanding it brings of lifestyle behaviours from the point of view of low SES mothers should be of benefit for all those wishing to encourage the adoption of healthy lifestyle behaviours in this group.

8. References

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9. Appendices

9.1. Appendix 1: Brunel University London research ethics approval letter 6th August 2015

Brunel University London

College of Health and Life Sciences
Dept. of Life Sciences

Head of Department
Professor Mark Williams
Heinz Wolff Building
Brunel University London
Kingston Lane
Uxbridge
UB8 3PH
United Kingdom
T +44 (0)1895 266691
F +44 (0)1895 269769
www.brunel.ac.uk

Paula Wittels
30 The Fairway
Burnham
BUCKS
SL1 8DS

6th August 2015

Dear Paula

RE48-14 Title: Shaping health: a qualitative investigation of the eating and physical activity behaviour of women of low socioeconomic status to inform the development of interventions to improve diet and increase physical activity

I am writing to confirm the Research Ethics Committee of the Department of Life Sciences received your application connected to the above mentioned research study. Your application has been independently reviewed to ensure it complies with the University Research Ethics requirements and guidelines.

The Chair, acting under delegated authority, is satisfied with the decision reached by the independent reviewers and is pleased to confirm there is no objection on ethical grounds to grant ethics approval to the proposed study.

Any changes to the protocol contained within your application and any unforeseen ethical issues which arise during the conduct of your study must be notified to the Research Ethics Committee.

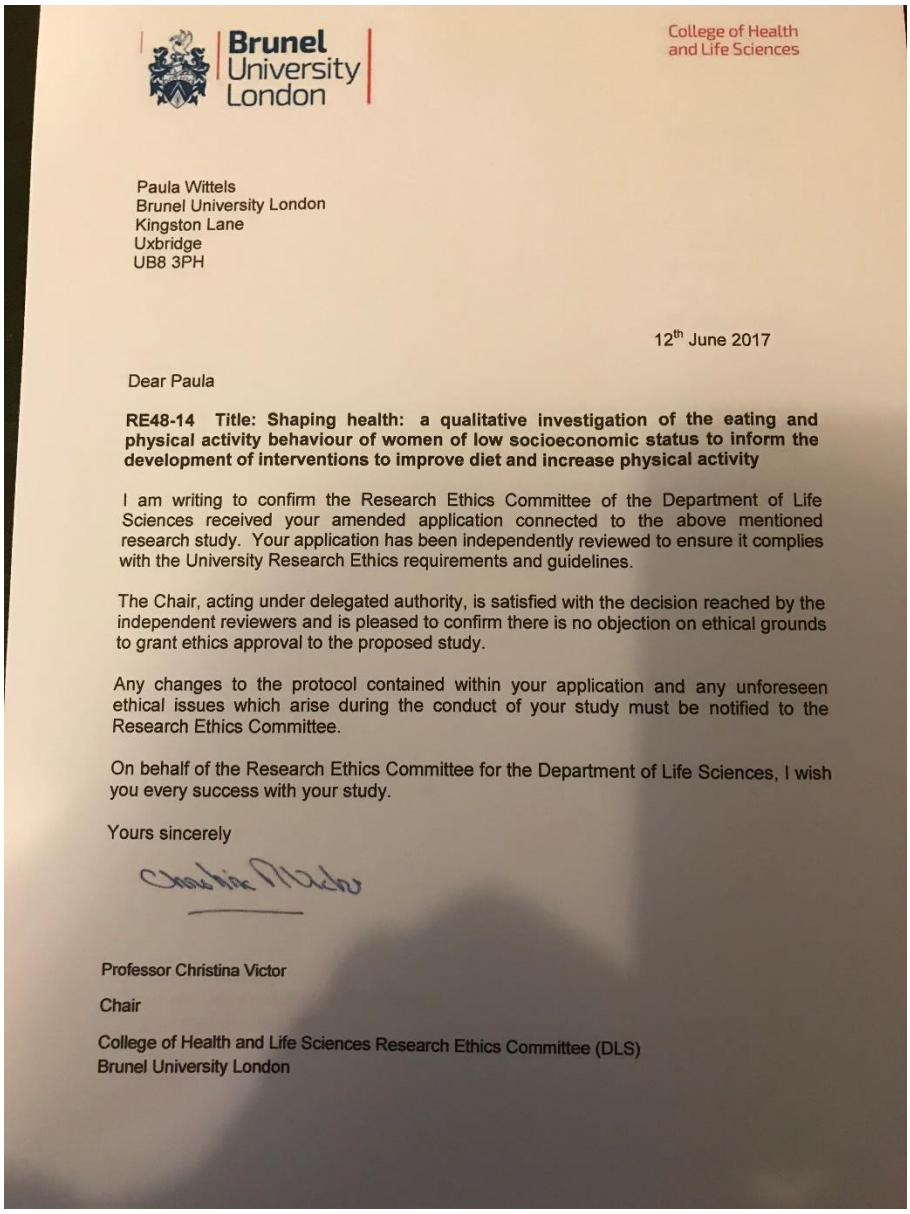
On behalf of the Research Ethics Committee for the Department of Life Sciences, I wish you every success with your study.

Yours sincerely

Richard Godfrey

Dr Richard Godfrey
Chair of Research Ethics Committee
Department of Life Sciences

9.2. Appendix 2: Brunel University London research ethics approval letter 12th June 2017



Brunel University London

College of Health and Life Sciences

Paula Wittels
Brunel University London
Kingston Lane
Uxbridge
UB8 3PH

12th June 2017

Dear Paula

RE48-14 Title: Shaping health: a qualitative investigation of the eating and physical activity behaviour of women of low socioeconomic status to inform the development of interventions to improve diet and increase physical activity

I am writing to confirm the Research Ethics Committee of the Department of Life Sciences received your amended application connected to the above mentioned research study. Your application has been independently reviewed to ensure it complies with the University Research Ethics requirements and guidelines.

The Chair, acting under delegated authority, is satisfied with the decision reached by the independent reviewers and is pleased to confirm there is no objection on ethical grounds to grant ethics approval to the proposed study.

Any changes to the protocol contained within your application and any unforeseen ethical issues which arise during the conduct of your study must be notified to the Research Ethics Committee.

On behalf of the Research Ethics Committee for the Department of Life Sciences, I wish you every success with your study.

Yours sincerely

Professor Christina Victor

Chair

College of Health and Life Sciences Research Ethics Committee (DLS)
Brunel University London

9.3. Appendix 3: Participant information sheet (interviews)

Healthy eating and physical activity study
Your opinion counts! Help us to find out what people know about healthy eating and physical activity

Participant Information Leaflet

Thank you very much for your interest in this study. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take the time to read all the information in this leaflet carefully and please discuss it with others if you would like to do so. Please ask the research team if you have any questions, full details of how to contact us are on the last page of the leaflet. When you have all the information you need, take time to decide whether you would like to take part in the research.

What is the purpose of this study?
People in the UK receive a lot of information about what they should eat and how much they should exercise - but we know many people find it difficult to behave in healthy ways. This research will help us understand why it can be hard to follow advice about being healthy in everyday life. To do this, we want to ask people how they make decisions on diet and physical activity. We are interested in what health and a healthy lifestyle means to you, whether you have the time, energy or interest to follow health advice, and what you think about campaigns that encourage you to eat a healthy diet and be physically active. This information will help us get better at encouraging people to eat well, be active and become healthier.

Why have you been invited to take part?
The research is based at Brunel University and we are inviting women in the Uxbridge and Hillingdon area to take part. We are looking for women of all ages and are particularly interested in those with family responsibilities. It does not matter if you are currently healthy or have a health problem, if you take part in physical activities or not, or if you eat a healthy diet or not. All are welcome and will be important contributors to the research. We know that women on a tight budget often find it particularly difficult to eat healthily and take exercise, and especially hope they will take part in the research.

Do I have to take part?
You do not have to participate in this study: it is completely voluntary. If you decide to participate in the study you can still withdraw at any time without giving a reason for your withdrawal. If you choose not to participate in the study, or if you withdraw, you will not be disadvantaged in anyway.

What do I have to do if I take part in the study?

The study will be carried out in three stages by Paula, a researcher from Brunel University. For each stage, Paula will interview you, to find out your views about being healthy and things which can be done to help you be healthy. Paula will record all the interviews to make sure she has an accurate record of what you say, and may also take notes during the interview.

Each interview will last about an hour. It will be very informal, more like a conversation, and you will be able to say as much or as little as you like. We hope you will take part in all three interviews, but you can stop after the first or second one if you like.

Stage 1: The first interview will be about your attitudes to health especially diet and physical activity. Paula will talk to you about your current diet and physical activity levels and whether you feel these are right for you. At the end of the interview she will also ask you to fill in a short questionnaire with information about yourself and your health.

Stage 2: The second interview will be about what you think about health advice given to people about diet and physical activity. This time Paula will want to know your views about the best way to help people follow healthy diets and be physically active.

Stage 3: In the final interview, Paula will talk to you about whether the previous discussions on diet and exercise have had any influence on what you think about healthy diets and physical activity. If you are willing, she will also ask if she could spend some time with you when you are going about your daily activities, to get a better understanding of things that may affect your diet and physical activity, such as how easy it is to shop for fresh food. It will be up to you whether you want Paula to spend time with you like this.

What are the benefits of taking part?
You will have the satisfaction of knowing that you are contributing to a research project and that your views are being heard. If the project is successful we hope that it will be used to inform public health policy and that issues raised in the interviews will influence the way in which health promotions are designed and delivered.

What are the possible disadvantages of taking part?
There is a small risk that taking part may cause you stress if you feel the topics covered are sensitive or personal. If you feel uncomfortable you can choose not to answer a particular question, or to withdraw from the study

Will there be further research as part of this study?
We may want to undertake further research and may ask if we can contact you again but there will be no obligation at all to take part in further research. You can ask us to remove your contact details from our database at any stage (see our contact details below).

Will my taking part in this study be kept confidential?
We have strict procedures to ensure all information remains confidential and anonymous. Your identity, contact details and the information you give us will be strictly confidential and not shared outside the study team. All study findings will only be presented in anonymised form so that no individual participant can be identified. When the study is completed we will destroy all identifiable data. The anonymised data will be kept for three years and then destroyed.

Can I take part in the study without giving my contact details?
Paula will need your contact details to set up interviews; however if you prefer not to provide your name, you can be identified by a study number only and still participate in the study.

What will happen to the results of the research study?
The results of this study will be published as PhD theses and will be stored in the University library at Brunel. Some of the research findings will be published in an open access academic journal so that the study findings are freely available. We will also share the study results with other researchers and public health professionals at conferences and in discussions.

We will provide you with a short summary of the study findings. You will be able to contact the researcher with any questions and to talk about the findings. You will also be able to access the full PhD thesis if you would like to.

Who is organising and funding the research?
The research is being carried out at Brunel University London and funded by the University. The lead researcher is Paula Wittels and she is being supervised by Prof Tess Kay and Dr Louise Mansfield, both in the College of Health and Life Sciences. We also have some funds from the AL Foundation, a charity that is interested in supporting studies on health inequalities in women. The study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights.

What if I have a complaint?
If you have any concerns or complaints about the conduct of the researchers or the study please contact:
Prof Christina Victor
Research Ethics Chair, College of Health and Life Sciences
Brunel University London
Tel 01895 266084
E mail Christina.victor@brunel.ac.uk

Contact for further information
You can get more information or answers to your questions about the study, your participation in the study and your rights from
Paula Wittels paula.wittels@brunel.ac.uk Tel. 07785 242558
Department of Sports Science
College of Health and Life Sciences
Heinz Wolff Building
Brunel University London
Uxbridge
UB8 3PH
United Kingdom

Additional information and support
For advice on food, diet and healthy eating see
http://www.nhs.uk/Livewell/Goodfood/Pages/Goodfoodhome.aspx

For advice on physical activity and exercise see http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-adults.aspx

We think it is unlikely that you will find participation in this research upsetting in anyway. Should you however require the following are useful sources of advice:

There are NHS psychological therapy services available around the UK via NHS IAPT (NHS Improving Access to Psychological therapies) www.iapt.nhs.uk/services

There are also resources available on NHS Choices see for example
http://www.nhs.uk/conditions/Anxiety/Pages/Introduction.aspx
There is a free online counselling service in the UK> www.free-online-counselling.org.uk

9.4. Appendix 4: Participant consent form (interviews)

College of Health and Life Sciences

Your opinion counts: healthy eating and physical activity study

Consent form

The participant should complete the whole of this sheet herself		
Please initial the appropriate box	YES	NO
Have you read the Research Participant Information Sheet?		
Have you had an opportunity to ask questions and discuss this study?		
Have you received satisfactory answers to all your questions?		
Who have you spoken to? *Please inform Paula Wittels if you are involved with any other research. This does not mean that you will not be able to participate in this study, but we will need to make sure that your participation does not interfere with other studies and is not overly burdensome.*		
Do you understand that you will not be referred to by name in any report concerning the study?		
Do you understand that you are free to withdraw from the study:		
• at any time		
• without having to give a reason for withdrawing		
• without affecting any services you are currently receiving or may receive in the future		
I agree to my interview being recorded		
I agree that the words I say may be used as anonymous quotations when the study is written up or published		
Do you agree to take part in this study?		

Your Name in Capitals:
Your Signature:

Date:

Name of researcher: Paula Wittels
Signature of researcher:

9.5. Appendix 5: Participant information sheet (focus group)

Healthy Families Focus Group

Your opinion counts! HomeStart Slough has been providing support to improve family health. Has this support been helpful for you?

Participant Information Leaflet

Thank you very much for your interest in this focus group. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take the time to read all the information in this leaflet carefully and please discuss it with others if you would like to do so. Please ask the research team if you have any questions, full details of how to contact us is on the last page of the leaflet. When you have all the information you need, take time to decide whether you would like to take part in the focus group.

What is the purpose of this study?
People in the UK receive a lot of information about healthy lifestyles for themselves and their children - but we know many people find it difficult to behave in healthy ways. HomeStart Slough has been providing support to families to help them improve the health of their children in four key areas: diet, exercise, oral health and vaccination against TB.

If you have been working with HomeStart Slough for a while we would like to know what you think about the support you have received through the healthy families programme, has it been helpful, have you been able to act on it or would you prefer to get this support in a different way?

This information will help us get better at supporting healthy lifestyles in Slough and encouraging families to eat well, be active and become healthier.

Why have you been invited to take part?
The research is based at Brunel University and we are inviting women who are supported by HomeStart Slough and have participated in the healthy families programme to take part. We are looking for women of all ages with children. It does not matter if you are currently healthy or have a health problem, if you take part in physical activities or not, or if you eat a healthy diet or not. All are welcome and will be important contributors to the research.

We know that women on a tight budget often find it particularly difficult to provide healthy meals for their children and ensure that their children get regular exercise and especially hope they will take part in the research.

Do I have to take part?

You do not have to participate in this focus group: it is completely voluntary. If you decide to participate in the focus group you can still withdraw at any time without giving a reason for your withdrawal. If you do not to participate in the focus group, or if you withdraw, you will not be disadvantaged in anyway.

What do I have to do if I take part in the study?
The Focus group will take place on the morning of Thursday 27th July during the HomeStart Slough's family session at St Andrew's Church. HomeStart Slough will set up a crèche for the children so you can participate in the focus group. Paula, a researcher from Brunel University and a HomeStart volunteer will run the focus group. She will ask you and the other participants about your experience of the healthy families programme. She will want to hear how found out about the healthy families programme, why you became involved, how you use it and what sort of difference it has made to you and your family. Paula will record the focus group discussion to make sure she has an accurate record of what you say, and may also take notes during the session.

The focus group will last about an hour. It will be very informal, more like a conversation, and you will be able to say as much or as little as you like.

What are the benefits of taking part?
You will have the satisfaction of knowing that you are contributing to a research project and that your views are being heard. If the project is successful we hope that it will be used to develop and continue the healthy families programme. The issues raised in the interviews may influence the way in which health promotions are designed and delivered.

What are the possible disadvantages of taking part?
There is a small risk that taking part may cause you stress if you feel the topics covered are sensitive or personal. If you feel uncomfortable you can choose not to answer a particular question, or to withdraw from the focus group.

Will there be further research as part of this study?
We may want to undertake further research and may ask if we can contact you again but there will be no obligation at all to take part in further research. You can ask us to remove your contact details from our database at any stage (see our contact details below).

Will my taking part in this study be kept confidential?
We have strict procedures to ensure all information remains confidential and anonymous. Your identity, contact details and the information you give us will be strictly confidential and not shared outside the study team. All study findings will only be presented in anonymised form so that no individual participant can be identified.

Paula will be providing a summary of the focus group to HomeStart Slough. All the information will be anonymous but HomeStart Slough will know that you have participated because of the way the focus group is being set up and the childcare arrangements. If you would like to see a copy of the report to HomeStart Slough before it is submitted to make sure you are happy with it please let Paula know.

When the study is completed we will destroy all identifiable data. The anonymised data will be kept for three years and then destroyed.

Can I take part in the study without giving my contact details?

HomeStart Slough will know your contact details. Paula would like to have your contact details so that she can follow up with you if she has any queries following the focus group but you do not have to provide them. If you prefer not to provide your name, you can be identified by a study number only and still participate in the study.

What will happen to the results of the focus group?
The results of this focus group will be used to develop and promote the healthy families programme. HomeStart Slough may also use the results of the study in applications for further funding. Paula hopes that she will be able to use the findings as part of her PhD research and if this is the case they will be published as a PhD thesis and will be stored in the University library at Brunel. Some of the research findings will be published in an open access academic journal so that the study findings are freely available. We will also share the study results with other researchers and public health professionals at conferences and in discussions.

We will provide you with a short summary of the focus group findings on request. You will be able to contact the researcher with any questions and to talk about the findings. You will also be able to access the full PhD thesis if you would like to.

Who is organising and funding the research?
The research is being carried out at Brunel University London and funded by the University. The lead researcher is Paula Wittels and she is being supervised by Prof Tess Kay and Dr Louise Mansfield, both in the College of Health and Life Sciences. We also have some funds from the AL Foundation, a charity that is interested in supporting studies on health inequalities in women. The study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights.

What if I have a complaint?
If you have any concerns or complaints about the conduct of the researchers or the study please contact:
Professor Christina Victor
Chair, College of Health and Life Sciences Research Ethics Committee Brunel University London
Tel 01895 274300
E mail Christina.victor@brunel.ac.uk

Contact for further information
You can get more information or answers to your questions about the study, your participation in the study and your rights from
Paula Wittels paula.wittels@brunel.ac.uk Tel. 07785 242558
Department of Sports science
College of Health and Life Sciences
Heinz Wolff Building
Brunel University London
Uxbridge
UB8 3PH
United Kingdom

Additional information and support
For advice on food, diet and healthy eating see
http://www.nhs.uk/Livewell/Goodfood/Pages/Goodfoodhome.aspx

For advice on physical activity and exercise see http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-adults.aspx

For advice on oral hygiene for adults and children see
http://www.nhs.uk/livewell/dentalhealth/Pages/Dentalhome.aspx

For advice on vaccination against TB see http://www.nhs.uk/Conditions/vaccinations/Pages/bcg-tuberculosis-TB-vaccine.aspx

We think it is unlikely that you will find participation in this research upsetting in anyway. Should you however require the following are useful sources of advice:
There are NHS psychological therapy services available around the UK via NHS IAPT (NHS Improving Access to Psychological therapies) www.iapt.nhs.uk/services
There are also resources available on NHS Choices see for example
http://www.nhs.uk/conditions/Anxiety/Pages/Introduction.aspx
There is a free online counselling service in the UK www.free-online-counselling.org.uk

9.6. Appendix 6: Participant consent form (focus group)

College of Health and Life Sciences

Your opinion counts: healthy families focus group

Consent form

The participant should complete the whole of this sheet herself		
Please initial the appropriate box	YES	NO
Have you read the Research Participant Information Sheet?		
Have you had an opportunity to ask questions and discuss this focus group?		
Have you received satisfactory answers to all your questions?		
Who have you spoken to? *Please inform Paula Wittels if you are involved with any other research. This does not mean that you will not be able to participate in this study, but we will need to make sure that your participation does not interfere with other studies and is not overly burdensome.*		
Do you understand that you will not be referred to by name in any report concerning the focus group?		
Do you understand that you are free to withdraw from the focus groupy:		
• at any time		
• without having to give a reason for withdrawing		

• without affecting any services you are currently receiving or may receive in the future		
I agree to my interview being recorded		
I agree that the words I say may be used as anonymous quotations when the study is written up or published		
Do you agree to take part in this focus group?		

Your Name in Capitals:
Your Signature:

Date:

Name of researcher: Paula Wittels
Signature of researcher:

9.7. Appendix 7: Interview guide - first Interview

Shaping health: a qualitative assessment of the eating and physical activity behaviour of women of low socioeconomic status to inform the development of public health interventions to improve diet and increase physical activity - interview guide

Stage 1 Interview 1

Introductory script: Thank you very much for agreeing to participate in this research project. I hope this is going to be a conversation with you telling me about what you and your family eat, whether you have opportunities for any physical activity, how things have changed since you became a Mother, your health and what health advice you've come across and whether it useful. I know you have the participant information leaflet, do you have any questions?

The interview will last up to an hour and with your permission I will record the interview. All the information will be anonymised and nothing you say will be attributed to you. You can stop the interview at any time, you just have to let me know that you no longer wish to continue. Are you happy to go ahead with the interview?

The conversation will be led by the participant with the interviewer following up on what the participant says within the overall boundaries of the interview topic. The interviewer will encourage the participant to talk about their beliefs, experiences and expectations and concerns and will follow the lead taken by the participants. The interviewer will encourage the participant to tell their story and will base prompts and questions on what the participant says. The questions set out below provide a structure but it may not be possible to go through all the questions in the allotted time. The prompts will only be used if the participant finds it difficult to answer the question.

1. I know we've talked already but please could you start by telling me a little about yourself and your family. If the participant finds this difficult to answer prompt:
    a. How many children, how old?

    b. How do you use the children's centre?
    c. Do you work outside the home?
    d. Friends and family in the area?
    e. How long have you lived here?
    f. Do you have a partner?
2. Tell me about the sort of food you eat. If the participant finds this difficult to answer prompt:
    a. Regular meals?
    b. Family eating together?
    c. Different food for children and other family members? School meals?
    d. Cook at home?
    e. Ready meals?
    f. Takeaways?
3. How did this change when you became a Mother*? If appropriate* With subsequent babies?
4. Tell me about any physical activities you do? If the participant finds this difficult prompt:
    a. Going for walks
    b. Shopping
    c. School pick ups
    d. Exercise at home
    e. Exercise classes
    f. Swimming
    g. Activities with the children
5. How did this change when you became a Mother? *If appropriate* With subsequent babies?
6. How does where you live affect the decisions you make on eating and physical activity? If the participant finds this difficult to answer prompt for
    a. Access to shops
    b. Use of car
    c. Safety
    d. Going out in the dark
    e. Local amenities
    f. Fast food outlets
    g. Access to school/work
7. How does what you eat and physical activity influence how you feel? If the participant finds this difficult to answer prompt:
    a. Stressed
    b. Tired
    c. Energetic
    d. Happy with weight
    e. Healthy
8. Tell me about things in your life that encourage you to be healthy. If the participant finds this difficult to answer prompt
    a. How do you help the family to stay healthy
    b. What do you do for yourself to stay healthy
    c. How do friends support you in being healthy
    d. How do professionals help you e.g. doctors, nurses, health visitors, children's centre

    e. Are there good facilities locally, how do you use them (cover shops and recreational activities)
9. Tell me about things in your life that stop you being healthy. If the participant finds this difficult to answer prompt:
    a. What people or activities in your day to day life make it difficult to be healthy
    b. What time pressures do you have to overcome if you want to eat a healthy diet/do physical activity Are there foods you would like to buy that are too expensive? What foods
    c. Are there physically active things that you would like to do but can't do? Why?
10. In what areas do you need help or advice
11. Tell me about any areas where you would like to change your diet and physical activity behaviour? Prompt
    a. What areas
    b. Why
    c. Benefits
    d. What's stopping you changing now
12. Are there areas where you have already changed your diet and physical activity behaviour? Prompt
    a. Do you think these are positive or negative changes
    b. Why did you make them
    c. When did you make them
13. Do you think the choices available for diet and physical activity are different to when you were a child?
    a. Do you think these are positive or negative changes
    b. How are things different for your children than when you were a child
    c. Fitting in with local people
14. What health advice have you come across? How useful is it? Where does it come from? If the participant finds this difficult to answer prompt verbally and/or use visual prompts:
    a. What do you think about the five a day message? Is it realistic?
    b. Do you know what the recommendation is for physical activity? What is it? Is it realistic?
    c. Do you find food labelling useful? What works best for you?
    d. Do you think lite low calorie and low fat options are useful?
    e. What do you think about calorie content on fast food menus?
15. What sort of advice on diet and physical activity would be useful?
16. Where should this advice be provided? By whom?
17. We've talked a lot about health, can you tell me what being healthy means to you? If necessary prompt:
    a. How do you feel?
    b. What can you do?
18. How important is being healthy to you? If necessary prompt:
    a. A priority?
    b. Nice to have but not my priority?
    c. Children come first?
    d. Don't think about it?

End script Thank you very much for all the information you have given me. It has all been very useful. I will be transcribing the interview and thinking about what you have told me.

Are you happy for me to contact you again about a second interview? There is no obligation to do a second interview. You don't have to decide now, just let me know if you are happy for me to contact you again.

Prepared by Paula Wittels 12.2.2016

9.8. Appendix 8: Interview guide - second interview

Second Round Interviews

Thank you very much for agreeing to do a second interview. It's great to see you again. I wanted to remind that everything is anonymous and that you can stop the interview at any time. Do you have any questions? Are you Ok to start?

Clarifications and additions from stage 1

1. How have you been since we last met? Has anything changed in your life?
    - For you
    - Your health
    - Your children
    - Your partner
    - Work
2. How did you feel about the discussion we had? Did anything change as a result of us talking?
3. Interviewee specific questions (to be made specific for each interviewee based on their first 1 - interview) e.g.
    - You said you were looking for work, have you made any progress?
    - How is your medical condition
    - How have you got on with the gym membership
    - How have you got on with the dietary changes

Sharing the research and exploring the issues raised

Since we last met I've done more interviews and I've transcribed everything on the tapes and read it all carefully. There is lots of very helpful information and comments. This has given me a chance to look at what everyone has told me and think about some of the similarities and differences. I hope this is going to help me make recommendations for helpful support and interventions. What I'd like to do now is talk about some of themes that are emerging and see how important they are for you

4. One of the things that everyone has told me is how much priorities change when you become a Mother (Use the prompts below but personalise depending on the first interview content).
    - How have priorities changed for you?
    - How does what it means to be healthy change when you are a mother?
    - How difficult is it for you to focus on your own needs?
    - Does it seem right to think about yourself?
    - How do you combine your needs as an individual with your role as a mother?

- How much has being a mum changed things for you when it comes to diet and exercise?

5. People have also told me that partners have a big role to play when it comes to lifestyle decisions for the family. I don't think we specifically talked about this last time. So could I ask you, how does your partner influence you when it comes to diet and exercise?
    - Are you and your partner in agreement when it comes to healthy eating and exercise?
    - What steps does your partner take to support you? Is it something you discuss or something that just happens.
    - Is there anything that your partner does that makes it difficult for you to exercise?
    - Does your partner have a healthy diet?
    - Does your partner exercise regularly?
6. Another thing that everyone has talked about is their weight.
    - How has your weight changed since we last met
    - How happy are you with your current weight
    - How important is maintaining a healthy weight to you
    - How can you manage your weight when you are busy caring for the family
    - How supporting is the family when it comes to managing your weight
7. Most of the Mothers said that they were struggling to find time to exercise.
    - Do Mothers need to exercise? Why?
    - How can mothers with young children exercise?
    - Is it practical for mothers with young children to exercise?
    - How important is exercise compared to eating a healthy diet?
8. Do you see yourself as a role model for your children when it comes to healthy lifestyles?
    - How do you demonstrate healthy lifestyles to them?
    - What supports you?
    - What hinders you?
    - Do you have the support of your family?
    - Is there anything in your cultural background that helps you to be a role model?
    - Is there anything in your cultural background that makes it difficult for you to be a role model?

Designing and delivering useful interventions

That's really helpful thank you. What I'd like to do now is look forward and think about what changes are needed to make it easier for you to adopt and maintain a healthy lifestyle.

9. What would help you as a mum to make healthy lifestyle changes for the whole family?
10. A lot of people have said they would use a crèche at the local gym?
    - Would you be able to use it?
    - How would you use it?
    - Can you think of anything that would stop you accessing it?
    - How would you find out about it?
    - How should such a service be promoted?
    - How much would you be able to pay?
11. Most of the Mums that I have met feel that the health related information they receive is about their children and not for them.

- Is this your experience?
- Should this be changed?
- Where would the opportunities be to provide you with health related information?
- When is the best time to talk to mothers about their lifestyle?
- How you feel about healthcare professionals initiating a discussion about healthy lifestyles?
- Would your preference be to find out things for yourself? Where would you go for information?

12. Many of the women I have spoken to feel isolated.
    - Would you agree with this?
    - How does this impact on lifestyle decisions?
    - What could be done to relieve the isolation?
    - Would you like to be supported by other mums in a similar position?

Being practical

I'd like to end with thinking about what could be done practically. If we could change things so that women with children felt fully supported and there were lots of facilities available

13. Would you be able to make use of the facilities?
14. How would you access them?
15. What things would stop you changing?
16. How could we change thing so that you could use the facilities?

Thank you very much for your time. It has been very helpful. I will be thinking carefully about everybody tells me. I may need to come back for a further talk. Would that be OK?

9.9. Appendix 9: Interview guide - third interview

Third Round Interviews

Thank you very much for agreeing to speak with me again. It's great to see you again. I wanted to remind that everything is anonymous and that you can stop the interview at any time. Do you have any questions? Are you Ok to start?

Clarifications and additions from stage 2

17. How have you been since we last met? Has anything changed in your life?
    - For you
    - Your health
    - Your children
    - Your partner
    - Work
18. How did you feel about the discussion we had? Did anything change as a result of us talking?

Making use of the research

I have now seen most of the people that have been involved in this research twice. I've transcribed everything on the tapes and read it all carefully. There is lots of very helpful information and comments. It has given more a good understanding of what is important to you and in particular the things that help you have a healthy lifestyle and the barriers that make it difficult for you to adopt a healthy lifestyle.

This is very useful in its own right but as I think you know I am also interested in doing something practical to make it easier for people in your area to adopt healthy lifestyles they might wish to lead. We have talked a bit about this before but I would like to go through a few ideas in a bit more detail and get your input.

1. Local self-help group

The idea that could be considered here would be to set up a local group for you and some of the other participants in the research and it could be advertised at the children's centre and in other places. The purpose of such a group would be for mums with young children to meet and talk about what works for them in terms of healthy eating and physical activity, share information and support each other

a. Do you think this is a good idea
b. Would you be interested in participating
c. How do you think it could work in practice
d. How often should the group meet
e. Where should the group meet
f. Or should it be a virtual group on Facebook
g. Where could we advertise it
h. Could the mums do it themselves or would they need an outside facilitator
i. Would it be enough to share information or would you want someone to come to the group and give information, like a health visitor

2. Support the whole family

The idea here would be instead of expecting the mothers to take on the burden of ensuring healthy eating and physical activity for themselves and their family to change the dynamic so the whole family takes on the responsibility. This would require the active participation and involvement of partners. It would mean inviting both parents to a healthy lifestyles session and perhaps some sort of follow up session to talk about the success or otherwise when suggestions were put into practice.

a. Do you think this is a good idea
b. Would you be interested in participating if such a programme existed
c. Would one or two sessions work or would it need to be a regular event
d. How do you think your partner would respond to such a programme
e. How could it be made to work in practice (time of day, looking after the children, location)

3. Hands on support for the family in the home

This is an idea that is up and running in Slough. Volunteers visit mothers in their homes and discuss healthy eating and physical activity for parents and children. They provide help in the form of recipes, ideas for physical activity and answer questions. The visit regularly to see how the family is getting on providing encouragement, support and information as required. They check progress with the family.

a. Do you think this is a good idea
b. Would you be interested in participating if such a programme was set up in Hillingdon
c. How often do you think the volunteer should visit in this type of programme
d. Would it be better if the support came from a healthcare professional rather than a volunteer
e. In what areas would this support be most helpful

4. Changing the environment

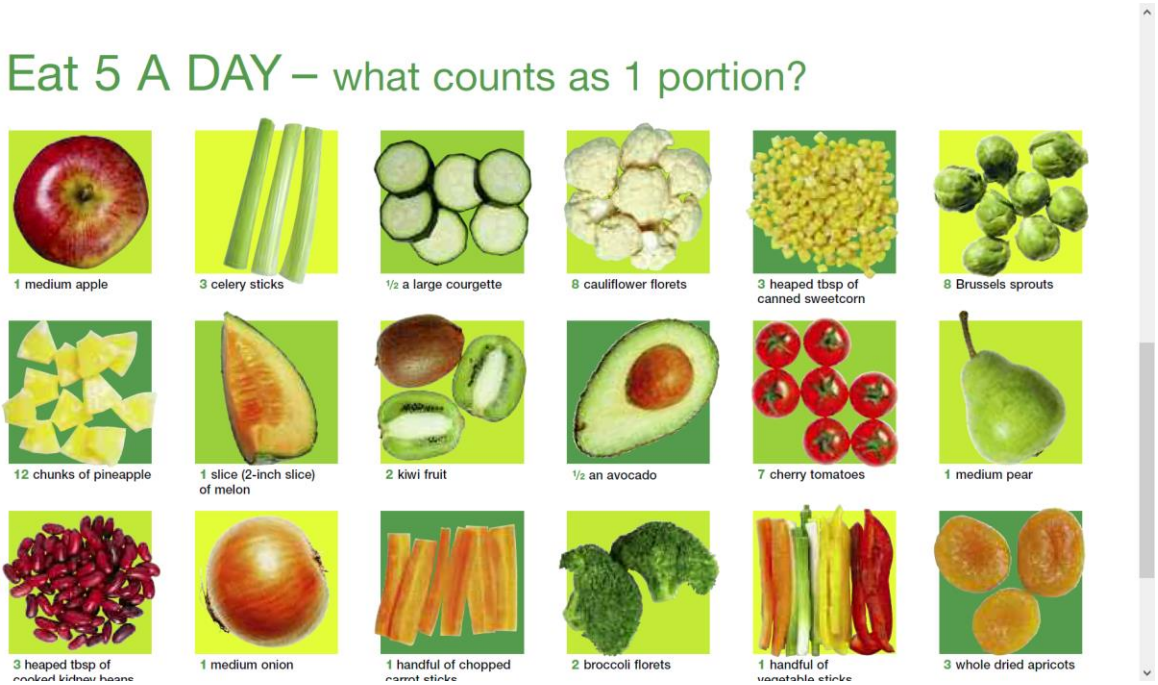
We could think bigger and look what needs to change outside the family to make it easier to adopt a healthy lifestyle. I've had a few suggestions as I've gone about this project and I'd like your thoughts on six of the ideas that have been made to me by the study participants. These are things that are not going to change overnight and would require a cultural shift. I'm not expecting you to undertake any of these activities but I'm interested in whether you think they are worthwhile:

a. Campaign for healthy affordable takeaways
b. Campaign for healthy ready meal options from supermarkets, balanced plated up meals that just need to be microwaved.
c. Campaign for fairer pricing, draw attention to the relative prices of processed food and healthy food.
d. Campaign for a sugar and fat tax to encourage healthy eating
e. Campaign for more and affordable crèche facilities locally so that women with children can access gyms, swimming pools, exercise classes etc.
f. Campaign for fairer distribution of free nursery places freeing up mother's time so that they can prepare healthy meals and undertake physical activity.

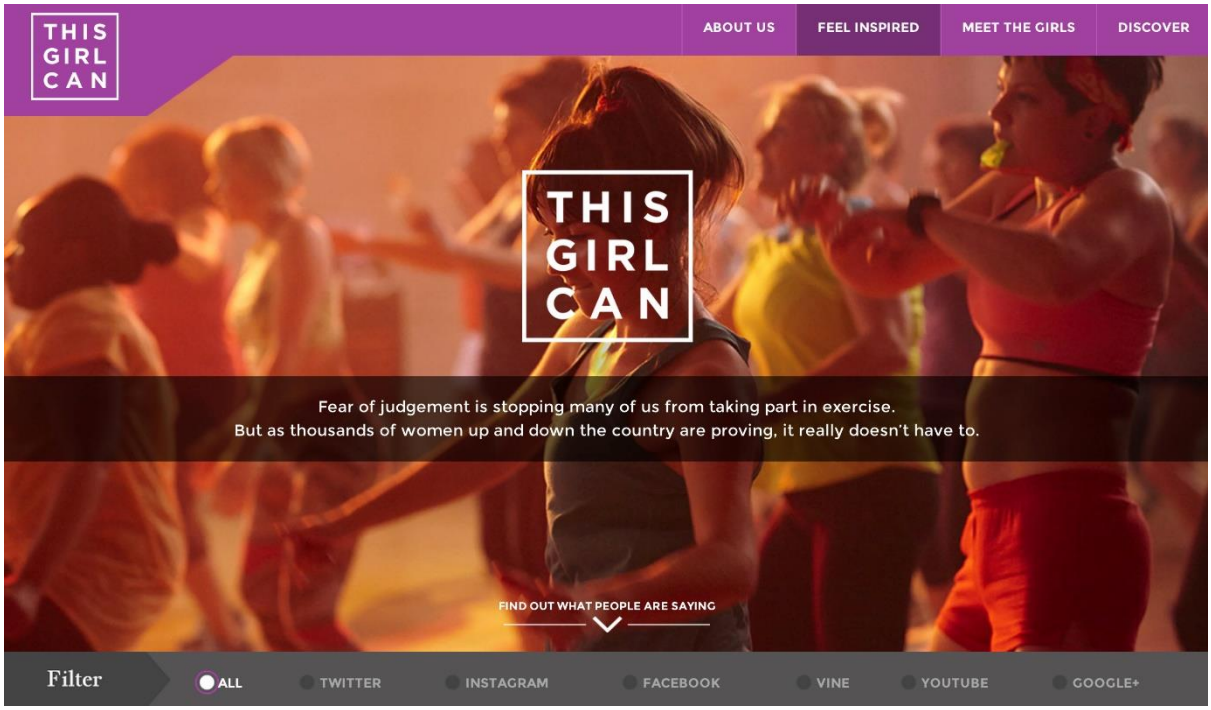
If you had to choose one, which of these six options that we have talked about do you think would be the most worthwhile to pursue and why?

Thank you very much for your time. It has been very helpful. I will be thinking carefully about everybody tells me. I think this will be the last time we talk but if I am able to make progress with any of the ideas we have talked about, may I come and talk to you again?

9.10. Appendix 10: Eat five a day poster - 1 and 2



9.11. Appendix 11: This Girl Can poster



9.12. Appendix 12: Visuals for interview 3 (ideas for potential interventions)

Local Self Help Group

Support the Whole Family

Hands on Support for the Family in the Home

Changing the Environment

9.13. Appendix 13: Focus group discussion guide

Family Health Study –focus group guide

Introductory script: Thank you very much for agreeing to participate in this research project. This is about the healthy family campaign that Homestart Sough have been running. I hope this is going to be a conversation with you telling me about what you and your children eat, whether you have opportunities to provide physical activity for your children, how you are getting on with teeth cleaning and visits to the dentist for your children and whether your children have been vaccinated against TB. I know you have all had a copy of the participant information leaflet, do you have any questions?

This discussion will last up to an hour and I am going to record it. All the information will be anonymised and nothing you say will be attributed to you. You can leave at any time, just get up and go.

The conversation will be led by the participant with the leader following up on what the participant says within the overall boundaries of the interview topic. The interviewer will encourage the participants to talk about their experiences and expectations of the healthy families programme and any concerns and will follow the lead taken by the participants. The interviewer will encourage the participant to tell their story and will base prompts and questions on what the participants say. The questions set out below provide a structure but it may not be possible to go through all the questions in the allotted time. The prompts will only be used if the participants find it difficult to answer the question.

1. What do you know about the Healthy Families Programme?
    a. What does it cover?
    b. How does it work?
2. How did you get involved with the Health Families Programme?
    a. HomeStart Volunteer?
    b. HomeStart support worker?
    c. Family Support Group?
3. Can anyone talk me through how you work with the programme now?
    a. With your family, using the tools that have been provided.
    b. HomeStart Volunteer?
    c. HomeStart support worker?
    d. Family Support Group?
    e. Other families
4. Which bits of the healthy families programme work best for you? Why?
5. Is there a part of the healthy families' programme that does not work? Why is that? Could it be changed to work better?
6. Please tell me about what the Healthy Programmes means to you and what you have got out of it?
    a. Advice on healthy eating
    b. Advice on cooking for children
    c. Advice on physical activities for children
    d. Advice on oral hygiene
    e. How to find a dentist
    f. The importance of keeping vaccinations up to date

    g. TB vaccination
    h. Support for maintaining a healthy diet and exercise for children
    i. Someone I can talk to about healthy children, individual or group
7. Tell me a bit about the sort of meals you make for your children.
8. Do you eat with the children or do you eat separately? Is your food different? How is it different?
9. Now think back to before you started the Health Families Programme. Has the programme had any impact on **your children's meals**? Tell me about it how things have changed.
10. Still thinking back before you started the healthy Families Programme. Has the programme had any impact **on your meals**?
11. Tell me a bit about the sort of physical activity that your children do.
    a. Walking to school
    b. Visits to the park
    c. Activities at school
    d. Activities at home
12. Do you do any of these activities with the children. Do you undertake any other physical activity.
    a. Walking to the shops
    b. Going for walks
    c. School pick ups
    d. Housework
    e. Exercise classes
    f. Exercise at home
    g. Dancing
    h. Gym
13. Now think back to before you started the Healthy Families Programme. Has the programme had any impact **on your children's physical activity**. ? Tell me about it how things have changed.
14. Still thinking back before you started the healthy Families Programme. Has the programme had any impact **on your physical activity?** Tell me about how things have changed. Tell me about any physical activities you do? If the participant finds this difficult prompt:
    a. Going for walks
    b. Shopping
    c. School pick ups
    d. Exercise at home
    e. Exercise classes
    f. Swimming
    g. Activities with the children
15. How has the healthy programmes changed your children's teeth?
16. How has the healthy programme changed your children's TB vaccinations?
17. Tell me about things in your life that encourage your family to be healthy
    a. How do you help the family to stay healthy
    b. What do you do for yourself to stay healthy
    c. How do friends support you in being healthy
    d. How do professionals help you e.g. doctors, nurses, health visitors, children's centre
    e. Are there good facilities locally, how do you use them (cover shops and recreational activities)

18. Tell me about things in your life that stop your family being healthy.
    a. What people or activities in your day to day life make it difficult to be healthy
    b. What time pressures do you have to overcome if you want to eat a healthy diet/do physical activity
    c. Are there foods you would like to buy that are too expensive? What foods
    d. Are there physically active things that you would like to do but can't do? Why?
19. How well do you think the healthy families programme is delivered? Prompt for:
    a. Location
    b. Timing
    c. Friendly atmosphere
20. In what ways has the healthy families programme helped you? Prompt for
    a. Provided information
    b. Provided social contact
    c. Short term changes
    d. Long term changes

End script Thank you very much for all the information you have given me. It has all been very useful. I will be transcribing the focus group and thinking about what you have told me.

Prepared by Paula Wittels 25.7.2017

9.14. Appendix 14: Demographic questionnaire

Healthy eating and physical activity study
Your opinion counts! Help us to find out what people know about healthy eating and physical activity

Participant Questionnaire

Thank you very much for your interest in this study. It would be very helpful if you could answer the following questions. As with the interview all the information will be confidential.

1. What is your postcode?

2. How old are you?

3. How many children do you have?

4. How old are you children?

5. Do you live with a partner?

6. How tall are you?

7. How much do you weigh?

8. Do you work outside the home? How many hours a week?

9. What is your household annual income?

10. What is your highest educational achievement e.g. GCSE, A levels, diploma, degree

Thank you very much for your help

9.15. Appendix 15: Lay summary

Life expectancy has been increasing in the UK and around the world but in the UK some groups live healthier and longer lives than others. People living in poorer areas typically have shorter and less healthy lives than people living in wealthy areas. There are many possible explanations for this difference, but one critical factor is lifestyle behaviours.

People living in poor areas are more likely to be overweight, eat an unhealthy diet and not take part in leisure time exercise. This leads to a higher incidence of non-communicable diseases particularly cardiovascular disease and type 2 diabetes in this group. But lifestyle behaviours are influenced by the area in which people live; it is harder for people living in poorer areas to adopt healthy lifestyles.

This research set out to understand more about lifestyle behaviours in mothers with young children living in two areas, around London, that are considered to be below average in terms of wealth and resources. Mothers are a particularly important group to study because their lifestyle behaviours have an important impact on their own health and on those of their families.

The mothers that participated in the research took part, either in a series of in-depth interviews, a maximum of three, or they joined a discussion group. The mothers talked about what they ate and whether they exercised, the things that helped them adopt healthy lifestyles and what stopped them from adopting healthy behaviours. They also talked about what they would like to see change to support them with the adoption and maintenance of healthy lifestyles.

All the information from the interviews and the discussion was collected and analysed. From what was said by the mothers four key areas were identified that influence lifestyle behaviours. The first

was the mothers experience a lot of conflict between what they see as their role caring for their family and the need to make time to adopt healthy lifestyle behaviours. Secondly the mothers are worried about their bodies, particularly the changes they experience after childbirth. Thirdly the mothers understand well the relationship between health and lifestyle behaviours but a number of health issues, their own and those of their families make it hard to adopt healthy lifestyles. The environment where the family lives was the fourth factor with the number of fast food outlets, the high cost of healthy food compared to processed food, the promotion of fast food and difficulties accessing leisure based physical activity all making adopting healthy lifestyles more difficult.

Four ideas for things that could be done to make it easier to adopt healthy lifestyles were first suggested by and then endorsed by the mothers in the study. These were a local self-help group, ideally managed by mothers from the local area, further information sessions tailored to all family members not just mothers, home visits from volunteers to help and support the mothers struggling with particular problems, and changes to the local environment to make it easier for the mothers to adopt and maintain healthy lifestyles.

The understanding of the lives of this group mothers and what they need to adopt healthy lifestyles will be of value to the officials developing public health guidance and tools. More information on healthy lifestyle behaviours is not the answer. The mothers in this study made it clear that they want to learn from each other, from mothers like them, who have similar lifestyles.

9.16. Appendix 16: Quality check list

Patton 2003: Quality Check List

1. Determine the extent to which qualitative methods are appropriate given the evaluation's purposes and intended uses.
2. Determine which general strategic themes of qualitative inquiry will guide the evaluation. Determine qualitative design strategies, data collection options, and analysis approaches based on the evaluation's purpose.
3. Determine which qualitative evaluation applications are especially appropriate given the evaluation's purpose and priorities.
4. Make major design decisions so that the design answers important evaluation questions for intended users. Consider design options and choose those most appropriate for the evaluation's purposes.
5. Where fieldwork is part of the evaluation, determine how to approach the fieldwork.
6. Where open-ended interviewing is part of the evaluation, determine how to approach the interviews.
7. Design the evaluation with careful attention to ethical issues.
8. Anticipate analysis—design the evaluation data collection to facilitate analysis.
9. Analyze the data so that the qualitative findings are clear, credible, and address the relevant and priority evaluation questions and issues.
10. Focus the qualitative evaluation report.

9.17. Appendix 17: Interview participant feedback on ideas for potential interventions

Interview Participants responses to learning based interventions

	Self Help Group	Support the Whole Family	Support in the Home
How to make it happen	Choose venues where mothers go e.g. Children's Centre, school, library, coffee shop	Choose a venue where Dad's feel comfortable e.g. supermarket not Children's Centre	Service could be offered though the Children's Centres
	Set up within walking distance of home	One or maybe a maximum of two sessions	Three visits should be sufficient
	Run weekly or fortnightly		Ideally the volunteers should have a similar ethnic background to the family
	Establish WhatsApp or Facebook Group in parallel so mothers who could not attend regularly could keep in touch with the group		May be best to offer service when children start school and Mother has more time to focus on lifestyle behaviours
	Creche would be helpful but not essential		
Practical Problems	Mothers not confident enough to attend	Difficult to find a time that is convenient for families taking into account working patterns	Families would have to want to have the service; it must not be forced on them
	Mothers may not engage with organisers	Partners believe they are already healthy	Families may feel they are being inspected or lectured
	Must be broad enough to be of interest to mothers with children of different ages	Lack of maturity in partners	It may be difficult to find and train volunteers
	Will need an acknowledged leader	Partners reject lifestyle advice	Programme will be expensive to run
			Does not get the Mother out of the house
Need for professional support	Initially will require professional support	Expectation is that it would be professionally led	Volunteers would need to be specifically trained to provide relevant advice
	With time group members could be supported to lead group	Partners are in need of advice	
	Focus has to be exchange of ideas between participants facilitated by the leader		

Shared learning	The benefit is learning from each other	Dad's would expect mum to attend on her own and bring advice home	Good option for isolated mothers who would be unable to get to a self-help group
	There is a desire to learn new things	Partners need to hear the advice	Offering the service in the home will mean that both parents benefit
	Sharing with other mothers can lift mood	The wider extended family need to hear the advice	Cooking together would be valuable
	Mothers are able to do things together that they would not do alone	Getting the whole family involved relieves the pressure on the mother	
	Addresses loneliness	Even if partners do not follow advice, they may be more supportive of mothers trying to adopt healthy lifestyles	

Interview Participant responses to environment-based interventions

Exercise Provision	**Food Policy**	**Instore food promotions**	**Nursery Provision**	**Planning restrictions on food outlets**
Accessing exercise is expensive	Subsidise healthy foods	Instore food promotions are helpful and welcomed	Outside state funding, it is too expensive to access except for work	There should be planning restrictions on the number and type of fast food outlets
Memberships are seen as costly	Do not make treats too expensive through taxation	Do not remove from treats but extend to more healthy foods	Some mothers do not want to send children to nursery before they are three	Local Government Planner should insist on some healthy fast food outlets
Pay as you go does not encourage attendance	Taxes may be useful to change buying habits	Whilst some stores no longer have "treats" at the tills some do and this is a temptation	Others welcome the chance for learning and socialisation from two	Individuals should look for healthy options in existing fast food outlets

Creche provision required on site	Labelling should be clearer	Coffee shops promote unhealthy items and do not offer healthy choices	The way nursery hours are allocated makes it difficult to use nursery time for exercise particularly if a mother has more than one child	Fast food outlets are welcome as a treat and choice should not be restricted
Community classes are a good option	Calories should be provided on restaurant menus		Confusion and uncertainty about entitlement and availability of nursery provision	
Outdoor gyms need to be fenced in	More advertising controls on unhealthy foods			
	Do not ban foods			