

## **Chapter 2 Literature review**

### **2.1 Introduction**

This chapter discusses the literature reviewed for the study. It is presented in two parts. The first part presents the justification for conducting a literature review in constructivist grounded theory. The chapter further explores pregnant women's perspectives of the challenges and facilitators to healthy eating in pregnancy using a systematic literature search. It goes further to explore the gap in literature from the exploration of the challenges and facilitators to healthy eating in pregnancy. The second part of the chapter developed during the process of writing up after categories had emerged from the study. It focuses on the sociocultural influences on dietary behaviours for Black African women in high-income countries. This was necessary for comparison and situating the study within the existing literature.

### **2.2 Literature review in constructivist grounded theory: Justification**

When and how a literature review is conducted in grounded theory has been debated (Giles et al. 2013; El Hussein et al. 2017). A grounded theory's primary aim is to generate a framework, formal or substantive theory. Theory is developed through an interplay of a relationship between data. While early proponents of grounded theory such as Glaser & Strauss (1967), Glaser 1978 & 1992 maintained that the researcher must approach the field as a blank slate such that 'emergence' takes place without contamination from existing literature (McCallin 2003; Deering and Williams 2022). Emergence, the process by which concepts are generated from collected and analysed data, presupposes that what is relevant in the research area will manifest itself without assumptions and that the researcher will be open to what the data means according to the participants (Deering and Williams 2022). This is to avoid data contamination, suggesting that when concepts evolve from the data, a literature review can be done to weave the concepts into the emerging theory (Hallberg 2010; Christiansen 2011). In this approach, the theory is said to emerge directly from the data, devoid of bias or the researcher's interpretation (Hall et al. 2013; Lauridsen and Higginbottom 2014) Walls et al 2010). For this to be done successfully, the researcher must put aside personal perspectives and must have competence in the conceptualisation of data and experience in the field (Hallberg 2010). Hallberg notes that data conceptualisation can be tricky, especially for new researchers (Hallberg 2010).

In contrast, these points differ for later proponents of grounded theory, such as Strauss and Corbin (1990) and Charmaz (2006), who have argued that a literature review can be conducted early on in the research, before data collection. According to Strauss, this is to

help contextualise the phenomenon and provide the researcher with some familiarity with the field to be studied (Strauss and Corbin 1998; Hall et al. 2013; Lauridsen and Higginbottom 2014; Deering and Williams 2022). Although there is an agreement between the authors, Charmaz, stated that a preliminary literature review aids familiarity with the subject area to be studied, enabling clarification of ideas and identification of the research gap. She recommends that to avoid forcing data into predefined categories connected to existing theories in the research field; researchers do not delve in-depth with prior literature review (Charmaz 2014; Deering and Williams 2022).

Another argument for prior literature review is to enhance theoretical sensitivity (Hallberg 2010; Charmaz 2014; Chun Tie et al. 2019). Theoretical sensitivity is described as the ability to generate sensitising concepts from the data and relate them to other data (Chun Tie et al. 2019; Vollstedt and Rezat 2019). As Glaser has argued that sensitising concepts are developed from the researcher being sensitive to the data, Strauss and Charmaz have argued that sensitising concepts can be identified from existing literature, the researcher's background, and the data analysis process (Vollstedt and Rezat 2019). In addition, a literature review can be used as inspiration for interview questions and to avoid methodological errors. Finally, a previous literature review can also be used as a guide to determine theoretical saturation (Corbin and Strauss 2015).

Another argument lies in the difficulty of data conceptualisation without literature review (Hallberg 2010). This is not to say that previous literature should drive the emergence of conceptual data. However, the point of a literature review is not to allow existing literature to drive the interpretations and conclusions derived from the data but to allow for better conceptual categories (Vollstedt and Rezat 2019).

In addition, there are institutional ethical board requirements for doctoral research studies, especially in preparing the protocol for approval. This informs the ethical board and the researcher that the investigated area is either novel or would add to existing knowledge (Newson and Lipworth 2015; Lipscomb 2019). Prior literature review is also increasingly required for studies requiring grant applications (Hart 2018). However, there is a slight deviation in the justification for literature review by Charmaz (2006) which I considered for this study. Charmaz recommends a short literature review to aid the researcher in developing foundations for the study. However, Charmaz advocates for a comprehensive literature review after data analysis to show creativity, facilitate more openness and show contribution to knowledge (Urquhart et al. 2010; Giles et al. 2013; Hart 2018; Deering and Williams 2022). Therefore, a preliminary literature review was conducted for the reasons

highlighted above, to show the gap in the literature and to highlight how this research will contribute to new knowledge.

The first part of this chapter consists of the preliminary literature review. At the end of the data collection and analysis for this study, another systematic review was conducted to strengthen the argument and to aid in making new contribution to knowledge.

### ***2.3 Challenges and facilitators to healthy eating in pregnancy -A systematic review.***

This review was initially conducted in 2019/2020 and has been updated to include all relevant papers.

#### **2.3.1 Introduction**

A healthy dietary intake especially during pregnancy is important for the health of both mother and child. During pregnancy, there is an additional requirement for protein, energy and other micronutrients including iron, folate, vitamin A, Vitamin D on the mother for the growth and maintenance of the foetus (United Nations (UN) and World Health Organization (WHO) 2004; Most et al. 2019). Maternal malnutrition is caused by poor dietary intake leading to poor nutrition status and increases the risk of adverse consequences for the mother and child. Maternal malnutrition that is associated with insufficient dietary intake including protein, energy and micronutrients has been linked to low birth rate and growth failure in children. Maternal underweight contributes directly to low birth weight in infants through intrauterine growth restriction (Alavi et al. 2013). It also increases the risk for preterm birth for the mother (Alavi et al 2013). Micronutrient deficiencies such as folate and Vitamin B12 has been associated with neural tube defects (Rosenthal et al 2017), inadequate folate status can also slow DNA synthesis and cell growth (Rosenthal et al 2017, De-regil et al 2010) deficiencies of iodine and iron has been associated with impaired cognitive outcomes (Bath et al 2013) and stunting (Black et al 2013). High gestational weight gain increases the risk for pre-eclampsia, gestational diabetes (Chu et al. 2007; Torloni et al. 2009; Poston 2010), caesarian sections (Callaway et al. 2007; Alavi et al. 2013; Thanoon et al. 2015), rate of induction, and an increased risk for postpartum weight retention (Phelan 2010). Postpartum weight retention is one of the leading causes of obesity in women of childbearing age (Phelan 2010). For the infant, there is an increased risk of neonatal seizures, birth defects, low APGAR scores and large for gestational age babies with the risk for overweight/obesity (Nehring et al. 2011). Also, subjection of the foetus to maternal obesity, diabetes and unhealthy gestational weight gain can increase the infant's risk of

developing childhood obesity and chronic diseases later in life (Langley-Evans 2015; Institute of medicine 2009), thereby perpetuating the cycle of obesity.

At present, maternal malnutrition in the form of protein energy malnutrition is still highly prevalent in some countries and regions in low- and middle-income regions such as Africa, sub-Saharan Africa, south-central and southeast Asia with prevalence rates up to 15%, sometimes exceeding 20% in countries like Ethiopia, Madagascar, and Senegal and as high as 37.3% in Eritrea (World Health organization 2017, (Onubi et al. 2016). This is coupled with other nutritional conditions like micronutrient deficiencies and obesity. Maternal obesity in regions in sub-Saharan Africa, southeast and south-central Asia and Africa had been termed as the double burden and more recently the triple burden of malnutrition and diseases at the population level (World Health Organization 2017, Delisle 2019). Obesity rates are as high as 50.6% in Swaziland with 12 countries in Africa having a prevalence of over 30%, despite the dearth of data or limitation on status data across these regions. On the other hand, in high income countries recent evidence shows that maternal obesity ranges from 20% in the UK to >20% in the US. Infact Chen et al 2018 estimated that there were 38.9 million overweight and obese pregnant women existing globally. This was estimated from publicly accessible country level estimates using total population, crude birth rate and estimated prevalence of overweight and obesity in female.

In view of this, healthy eating guidelines and weight gain range recommendations have been stipulated in pregnancy in many countries. Studies have evaluated dietary intakes, healthy eating, and weight gain recommendations in pregnancy. The studies show that pregnant women do not meet the recommended food and nutrient intakes for pregnancy (Blumfield et al. 2012b; Morton et al. 2014; Bookari et al. 2016; Malek et al. 2016a). Other studies also show that sometimes intakes are not compliant with healthy eating guidelines (Lindsay et al 2014; Bookari et al 2016) and intakes exceed weight gain guidelines (Goldstein et al. 2018; Rogozińska et al. 2019). There are also reported differences in healthy eating recommendations across countries, and there is no universal recommendation on the amount of weight to be gained in pregnancy (Alavi et al 2012). An evidence review by Alavi et al 2012 found that only 22 countries out of the 70 countries selected had healthy eating guidelines and 13 countries had gestational weight gain recommendations. Several countries (Canada, United States, Sweden, Norway, Denmark, and Australia) had adopted the Institute of medicines (IOM) gestational weight gain guidelines (GWG) (2009), which is the most widely used amongst the countries that have GWG guidelines. Some countries like the UK do not endorse the IOM's gestational weight gain recommendation but rather follow the country's specific healthy eating guideline (Rogozińska et al. 2019). In spite of the

recommendations, maternal overnutrition and undernutrition is still a global burden, and the statistics is still on the rise.

In addition, results on the efficacy of nutritional or dietary interventions in pregnancy is mixed. Systematic reviews that show effect of particular nutrients on maternal outcomes have showed positive effects (Villar et al. 2003). However, dietary interventions by itself or with physical activity have had varying results. An earlier systematic review found a statistically significant difference in maternal outcomes such as gestational weight gain (Streuling et al. 2010). However, another review published in the same year found no statistically significant difference in gestational weight gain as a result of nutritional interventions (Dodd et al. 2010). The reasons for this could have been the variation in the types of interventions, duration, timing of onset of interventions, sample characteristics and delivery methods such as nutrition and nutrition/physical activity (Gardner et al. 2011). However, despite this, subsequent reviews and meta-analysis such as from Oteng-Ntim et al, Agha et al, Thangaratinam et al, Bennet et al and Peaceman et al (Oteng-Ntim et al. 2012; Thangaratinam et al. 2012; Agha et al. 2014; Gresham et al. 2016; Bennett et al. 2018; Peaceman et al. 2018), found that antenatal lifestyle interventions involving dietary components was useful in restricting weight gain in pregnancy, showed possibility in reducing the prevalence of gestational diabetes, a reduction in the risk of pre-eclampsia, hypertension, preterm delivery (Gresham et al. 2016), improvement in birth weight (Gresham et al. 2014), intrauterine deaths, birth trauma, shoulder dystocia and hyperbilirubinemia. In addition, nutritional interventions in low and middle income countries including countries in Asia, Africa, and South America encouraging balanced protein and energy supplementation and food distribution programs were effective in reducing the risk of preterm birth, (Ota et al. 2012; Lassi et al. 2020), stillbirth, perinatal mortality, stunting, wasting and small for gestational weight (Imdad and Bhutta 2011; Lassi et al. 2020). There was however no data on reviews that evaluated evidence on antenatal dietary interventions to reduce gestational weight gain in low- and middle-income countries.

Apart from the efficacy of nutritional interventions in pregnancy, the timing of interventions has also been contentious (Bao et al. 2014; Schoenaker 2020). Some proponents have stated that interventions should be in the preconception period (Bao et al. 2014; Schoenaker 2020). While others have stated that early pregnancy is suitable or in the postpartum period (da Silva Lopes et al. 2017; Lassi et al. 2020). Definitely, folic acid supplementation preconception and in early pregnancy is said to have a protective effect on the foetus. A large randomised controlled trial the “Growing Right Onto Wellness (GROW) trial (Heerman et al. 2020) in Tennessee targeted at developing healthy lifestyle for the household found that there was no “spill-over” effect on gestational outcomes for mothers that became

pregnant during the intervention. This suggested that there are specific behaviours that affect weight gain in pregnancy and therefore interventions that target such behaviours in pregnancy would be beneficial. This also suggests that healthy lifestyle interventions in pregnancy are necessary. The beneficial effect of the GROW intervention was the reduced weight gain for women in the intervention group than the women in the non-intervention group during the course of the pregnancy, although the effect was lost 8 weeks postpartum. The study suggests that the timing of the intervention (3 years) with the active phase being one year could affect adherence thereby affecting results. It can also be deduced that in addition to healthy lifestyle preconception, healthy eating/lifestyle interventions particularly targeted at the pregnancy period could be beneficial to the mother and child in terms of reduced gestational weight gain and improved outcomes. However, administering interventions in early pregnancy is said to be challenging especially with additional symptoms of pregnancy such as nausea, tiredness, and food cravings (Forbes et al. 2018). Studies have suggested that weight gain interventions that go beyond the first trimester of pregnancy may not have meaningful impact on maternal and infant outcomes (Thangaratinam et al. 2012; Broskey et al. 2017). Apart from obesity as an outcome, there are other maternal and infant outcomes that could benefit from a targeted antenatal dietary intervention. Maternal diet quality as a whole influences birth outcome (Abu-Saad & Fraser, 2010; Chia et al., 2019). Therefore, emphasizing a high-quality diet in the maternity period would influence maternal outcomes and may subsequently provide a buffering effect against maternal obesity. This might suggest why some countries like the UK have not adopted the IOM guidelines on weight gain in pregnancy but rather focusing on encouraging healthy eating in pregnancy (Rogozńska et al. 2019).

In addition, the pregnancy period especially early pregnancy has been suggested to be an ideal time for antenatal healthy eating interventions (Bookari et al. 2017b). This is because of the increased contact that pregnant women have with health care providers (Bookari et al. 2017b). It is also suggested that pregnant women have an inclination to change behaviour in pregnancy for the sake of the foetus (Vanstone et al. 2017). It has been seen in cases such as smoking cessation. Constant contact with health care providers, and an inclination to change behaviours in pregnancy can provide researchers, pregnant women, and policy makers with a unique opportunity to focus on changing dietary behaviours.

Apart from clinical studies on dietary interventions and the evaluation of the efficacy of dietary interventions which has been given extensive coverage in the literature, it is important to fully explore adherence to healthy eating recommendations in pregnancy and factors that could influence healthy eating in pregnancy. This is because eating is influenced by a lot of factors. The reasons given by women for non-adherence to healthy eating

guidelines include the differences in healthy eating recommendations, amount of weight to be gained in pregnancy, proliferation of nutrition information in pregnancy on the social media (Atkinson et al 2015). Other reasons include advice from friends and family. Apart from adherence to healthy eating guidelines, there are other factors that affect healthy eating as a whole especially in pregnancy. This review is aimed at exploring factors unrelated to adherence to healthy eating recommendations that could influence pregnant women's healthy eating. Therefore, this review will aim at exploring pregnant women's views on challenges and facilitators to healthy eating in general in pregnancy.

### **2.3.2 Existing literature: Pregnant women's perception of gestational weight gain**

Vanstone et al 2016 explored perception of gestational weight gain and sustainable strategies to promote healthy weight gain from pregnant women living in high income countries including Canada, United states, Australia, Europe, and New Zealand. Studies included were from 2005 to 2015. Six out of the seven countries included in the review endorsed the IOM weight gain recommendations in pregnancy.

It is recognised that apart from maternal weight gain, maternal dietary quality is important to birth outcomes. A low-quality diet in pregnancy would fail to provide proper nutrition for the foetus and contribute to birth complications for the mother and foetus. Like stated above deficiencies of essential micronutrients such as folate, iron, zinc, iodine can lead to poor outcomes for the foetus and the mother. A low-quality diet is defined as one that does not emphasize the consumption of fruits and vegetables, whole grains, healthy fats and protein and minimal intakes of sodium and free sugars. Although, gestational weight gain in pregnancy is important, this review is intended to paint the full picture regarding healthy eating in pregnancy. Therefore, to gain an overall view on the challenges and facilitators to healthy eating in pregnancy this present review focused on the challenges and facilitators to healthy eating in pregnancy in general.

### **2.3.3 Existing literature: Barriers to adequate nutrition in pregnancy**

A systematic review by Kavle and Landry (2018) explored factors that was considered important determinants of food choices in pregnancy in low- and middle-income countries. The review focused on women living in low- and middle-income countries, excluding women who were born in low- and middle-income countries but had migrated to high income countries. Exclusion criteria for the review also included studies that focused on micronutrient supplementation and maternal diet in high income countries. Previous antenatal interventions as mentioned above especially in low- and middle-income countries have included micronutrient supplementation. This is because of the unique peculiarities existing in such areas such as anaemia and zinc deficiency making micronutrient and

sometimes macronutrient supplementation a necessity. Therefore, it was pertinent to explore information that captured the perception of pregnant women low- and middle-income countries to the barriers of micronutrient supplementation in pregnancy.

In addition, Ngoganlah et al 2018 explored the determinants of dietary behaviours of African migrant pregnant women and women of childbearing age living in high income countries.

All the reviews identified focused on specific aspects either on gestational weight gain, on low- and middle-income countries, exclusion of micronutrient supplementation, or on African migrant women living in high income countries. No review has been found that explored the perception of pregnant woman to healthy eating in pregnancy as a whole despite there being studies that have been particularly dedicated to that. This review therefore explored challenges to healthy eating and healthy gestational weight gain in pregnancy.

## **2.3.4 Methods**

### **2.3.4.1 Protocol and registration**

The review protocol was registered with PROSPERO (NO: CRD42019120961) and followed the preferred reporting items for systematic reviews and Meta-analyses (PRISMA) framework.

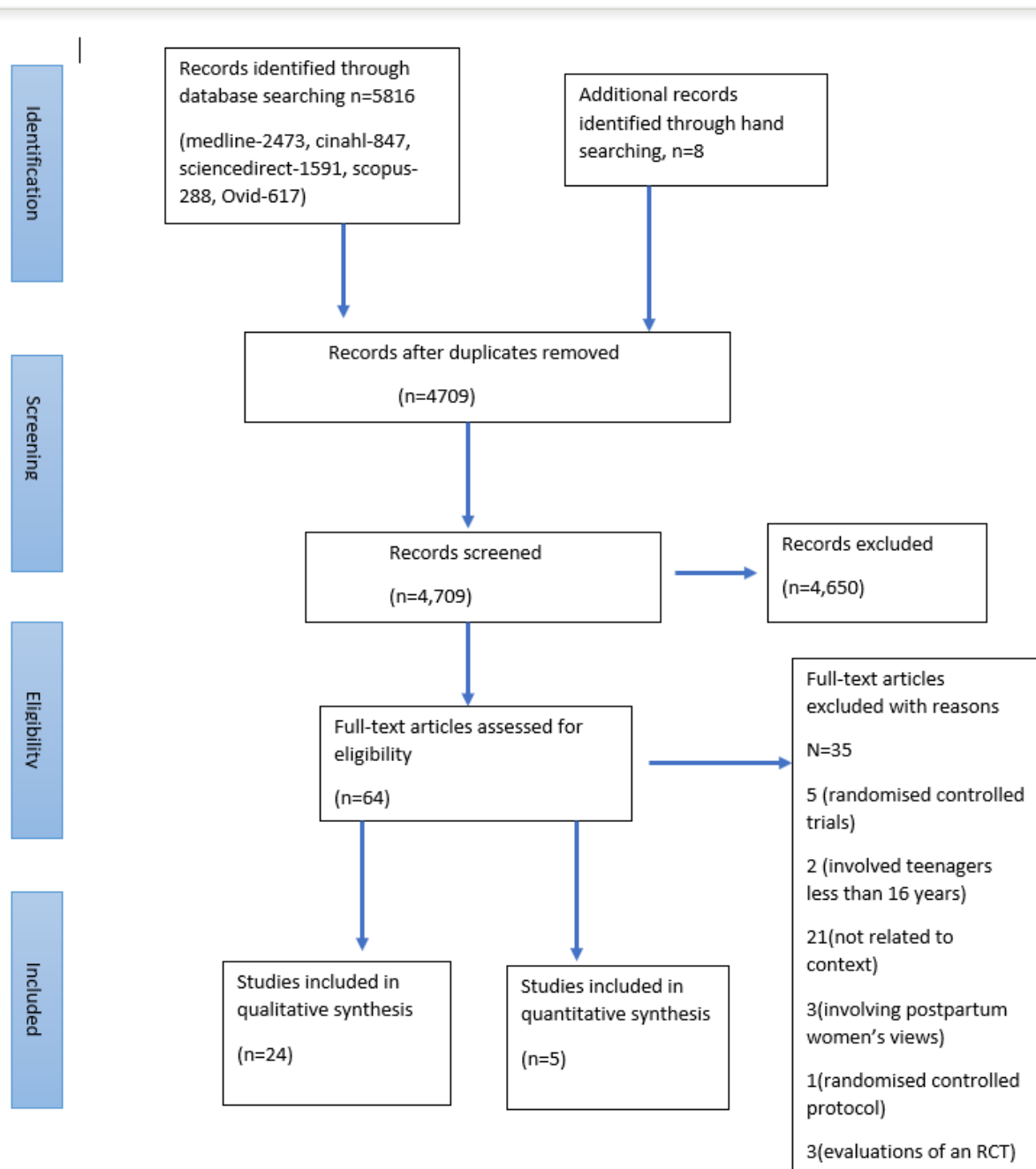


Figure 2.1 PRISMA flow diagram

#### **2.3.4.2 Eligibility criteria**

Figure 1 shows the article identification process and inclusion criteria. Studies selected for inclusion in the review followed the SPIDER framework criteria (sample, phenomenon of interest, design, evaluation, and research type) shown in Table 2 (see appendix 2). The studies addressed any aspects of the challenges and facilitators to healthy eating or healthy gestational weight gain in pregnancy in high and LMIC's. Studies that included pregnant women less than 16 years were excluded from the review. The age of legal consent to intercourse in the UK is considered as 16 years (Petroni et al. 2019; Ahinkorah et al. 2021). Studies that included pregnant women with co-morbidity and those evaluating barriers to healthy eating/weight loss as part of randomized controlled interventions, or the evaluation of randomized controlled trials were excluded. Studies that evaluated general health promoting behaviours in pregnancy were excluded unless healthy eating was evaluated on its own. Tables 3 and 4 (see appendix 2) show the inclusion and exclusion criteria.

#### **2.3.4.3 Information sources**

Major databases were searched including MEDLINE, CINAHL, British nursing index, academic search complete, science direct, SCOPUS from inception till February 2020 because of their relevance to the review question. Search terms used for the review include 'pregnancy', 'healthy eating', 'gestation', 'diet'. An example of the MeSH terms search for CINAHL database is listed in table 5 (refer to appendix). MeSH terms and keywords were combined using Boolean operators (AND, OR). Hand searching was limited to reference list of retrieved articles and studies retrieved were considered against inclusion criteria. Studies were limited to English publications.

There was no restriction placed on geographical location.

#### **2.3.4.4 Data collection process and data items**

Information was recorded using adaptations of pre-developed data extraction sheets based on the Cochrane collaboration data collection template for qualitative review and the Cochrane collaboration data collection template for non RCT's (Higgins and Wells 2011). The data extraction sheet was piloted on two studies and refined accordingly. The information extracted included: study aim, research methodology, characteristics of participants (demographic details, sample size, pregnancy stage and BMI), themes, and key findings, data collection/analysis approach, and conclusions.

#### **2.3.4.5 Quality assessment**

No grading system was used for methodological quality because of the different methodologies involved and the lack of consensus regarding the criteria for evaluating qualitative papers (with the Cochrane handbook labelling the method subjective). However, to reduce bias, the critical appraisal skills program tool (Higgins and Wells 2011) was used to assess qualitative studies and the appraisal tool for cross sectional studies (AXIS tool) (Downes et al. 2016) was used to assess quantitative cross-sectional surveys (see appendix). Tables 6 and 7 (refer to appendix) show the results. Despite some study limitations, no study was excluded based on quality.

#### **2.3.4.6 Data synthesis**

The differences in methodology, methods, and pregnancy stages between the studies meant that meta-synthesis or meta-ethnography was not feasible. Results were therefore synthesized using Popay et al. (2006) narrative synthesis guidance. The synthesis involved extracting the initial descriptive characteristics of the studies, recognizing, developing, and describing patterns in the studies, then exploring relationships between the findings across studies. Overarching themes were developed and presented using thematic analysis. These themes, which represent women's perceptions of the main challenges and facilitators to healthy eating in pregnancy, have been used to structure of the result

### **2.3.5 Results**

Twenty-nine studies, twenty-four qualitative and five quantitative cross-sectional studies were included in the review, the characteristics of which are outlined in Tables 8 and 9 in appendix. Sample size ranged from 6 to 600 with a total of 2,636 pregnant participants. All pregnant women were aged 18 years and above. Thirteen studies were conducted in USA (Groth et al. 2012a; Herring et al. 2012; Ferrari et al. 2013; Goodrich et al. 2013; Groth and Morrison-Beedy 2013; Reyes et al. 2013; Hackley et al. 2014; Anderson et al. 2015; Chang et al. 2015; Groth et al. 2016; Hromi-Fiedler et al. 2016; Kim et al. 2016; Fletcher et al. 2018), four studies in Australia (Begley 2002; Bryant et al. 2018; Lee et al. 2018; Malek et al. 2018), two studies in Bangladesh (Choudhury and Ahmed 2011; Levay et al. 2013), England (Wiles 1998; Tuffery and Scriven 2005) and Japan (Takimoto et al. 2011; Takei et al. 2019) while other locations including Ethiopia (Bezabih et al. 2018), Nepal (Christian et al. 2006), India (Lakshmi 2013), Scotland (Leslie et al. 2013), Ireland (O'Brien et al. 2017) and Sweden (Wennberg et al. 2013) had one study each.

Recruitment was mostly via antenatal clinics, community centres, women and infant centres, and general medical practices, although one study used invitation letters. Qualitative studies used focus group discussions and semi-structured interviews while questionnaires were used for the surveys.

Four studies were conducted in low- and middle-income countries (Ethiopia, Bangladesh, Nepal, and India) while other studies were conducted in high income countries.

#### **2.3.5.1 Thematic analysis**

The themes developed were interrelated with some acting as both facilitators and challenges to healthy eating in pregnancy. Thematic saturation (Popay et al. 2006) was achieved when different studies identified the same theme consistently. The overarching themes were then developed into patterns and presented in table 10 (see appendix).

#### **Challenges and facilitators to healthy eating**

Most of the studies identified pregnancy as a motivator for women to modify their eating habits and lifestyle to suit their baby's needs and for better pregnancy outcomes (Begley 2002; Groth and Morrison-Beedy 2013; Levay et al. 2013; Chang et al. 2015; Fletcher et al. 2018). Women reported that they knew the importance of healthy eating in pregnancy (Levay et al. 2013). Changes adopted included food substitutions (Goodrich et al. 2013), adding more fruits and vegetables (Goodrich et al. 2013; Bezabih et al. 2018), choosing less

greasy foods (Groth and Morrison-Beedy 2013), and improving their dietary supplement intake. There was a lack of nutrition awareness resulting in poor dietary habits for some other women, including restricting of dietary intake so that they would birth smaller babies. The determinants of healthy eating identified are discussed below

### **Knowledge**

Most women viewed information seeking as a part of the pregnancy process and commenced this as soon as their pregnancy was confirmed. Their actions were either passive or active and involved sources such as healthcare providers (Levay et al. 2013; Bryant et al. 2018; Fletcher et al. 2018), antenatal classes (Bryant et al. 2018), the internet (social media) (Bryant et al. 2018; Fletcher et al. 2018), family and friends (Bryant et al. 2018), community (landladies) (Levay et al. 2013), non-governmental organizations health workers (Levay et al. 2013), churches, Young Men's Christian Association (YMCA) and books. A lack of knowledge was regarded as a challenge to healthy eating (Begley 2002; Hackley et al. 2014; Anderson et al. 2015; Groth et al. 2016; Hromi-Fiedler et al. 2016; Kim et al. 2016; Takei et al. 2019), including general nutrition (Begley 2002; Groth et al. 2016) and food preparation knowledge in some studies. Lack of awareness of nutrition guidelines (Tuffery and Scriven 2005; Goodrich et al. 2013; Groth and Morrison-Beedy 2013; Hackley et al. 2014; Groth et al. 2016; Bezabih et al. 2018), low educational status and limited sources of information were also knowledge barriers (Bezabih et al. 2018). Some women mentioned good nutrition as a lifestyle change required in pregnancy, but were vague as to what it constituted (Reyes et al. 2013; Hackley et al. 2014; Groth et al. 2016), the role of diet in a healthy pregnancy, the type and amount of foods they consumed, what was appropriate in pregnancy, components of a healthy diet (Groth et al. 2016) and appropriate portion sizes (Begley 2002; Christian et al. 2006; Reyes et al. 2013; Hackley et al. 2014; Groth et al. 2016; Hromi-Fiedler et al. 2016; Kim et al. 2016; Lee et al. 2018). Pregnant women were also concerned about their ability to meet the recommended daily allowances (Ferrari et al. 2013), resulting in a lack of restraint in eating, with the dominant phrase from low-income African American women being 'eating for two'.

Women generally knew the health benefits of fruits, vegetables, and dietary supplementation in pregnancy (Levay et al. 2013) with dietary supplements reassuring them that their nutrient needs and those of the baby were being met (Malek et al. 2018). Women expressed concern over the risk of excess supplementation, while lacking the knowledge to fully assess this risk (Begley 2002; Malek et al. 2018).

Advice regarding nutrition guidelines in pregnancy was usually provided via printed materials (Bryant et al. 2018) or verbal communication with healthcare providers and was considered

an important reminder for women in some studies (Begley 2002). However, pregnant women in one study had knowledge of healthy eating received from healthcare providers but relied on traditional sources of information such as from older women or landladies in the community (Levay et al. 2013). There was also concern about the depth of information provided with some information received from healthcare providers described as vague, inadequate, confusing, (Ferrari et al. 2013; Bryant et al. 2018) conflicting, ambiguous, often changing, non-specific, and lacking depth, sometimes coupled with inadequate time (Begley 2002) during antenatal visits. Healthcare providers were perceived to focus on avoidance of listeria infections (Begley 2002), blood pressure measurements, issues of abuse and smoking while avoiding topics relating to healthy eating and obesity (Begley 2002; Lee et al. 2018).

Overwhelming and generalised, rather than individualised information was a theme across most studies (Ferrari et al. 2013; Bryant et al. 2018), strongest in studies that recruited African American women in the USA. Women complained that the advice they received was not specific to different religions and ethnicities, which detracted from their inclination to follow it (Ferrari et al. 2013). Women also talked about receiving conflicting healthy eating information from the perinatal clinics, churches and the YMCA (Anderson et al. 2015). In contrast, women who received targeted advice generally considered this a facilitator to healthy eating (Hackley et al. 2014), although some women in this study (Hackley et al. 2014) considered this as contributing to an unhelpful barrage of advice. Nutrition information from social media and social networks was also regarded as overwhelming (Fletcher et al. 2018), with social media in particular considered unreliable, supplying difficult to use, inaccurate, contradictory, and conflicting information.

In the general sense, pregnant women especially from low- and middle-income countries had knowledge of the foods that were considered beneficial for pregnancy. However, there was no indication that they had knowledge regarding portion sizes.

### ***Sociocultural challenges***

Sociocultural factors such as social network (family and friends) influence, social support, family structure, cultural influence and socio-cultural upbringing were regarded as challenges as well as facilitators to healthy eating in pregnancy. These themes were more common in studies that recruited African American, Latina, Ethiopian, Bangladeshi, Nepalese and Indian (Lakshmi 2013) women. There was a constant pressure from women's social networks to increase energy intake for baby's sake (Christian et al. 2006; Choudhury and Ahmed 2011) and for the development of curves by African American women (Choudhury and Ahmed 2011; Groth et al. 2012a; Herring et al. 2012; Reyes et al. 2013; Hackley et al. 2014; Chang

et al. 2015). Women described 'being thicker' or voluptuous as attractive and acceptable in the African culture (Groth et al. 2012a; Herring et al. 2012), although they also believed that there should be a limit to weight gain (Groth et al. 2012a; Goodrich et al. 2013; Anderson et al. 2015). On the other hand, Japanese women expressed a desire for smaller babies and therefore practised food restriction.

Family structure, especially in large multigenerational households, reduced women's control over their eating: sometimes the head of the household made decisions even when women made the purchases and in other cases older children's preferences dictated what was eaten (Reyes et al. 2013; Hromi-Fiedler et al. 2016; Fletcher et al. 2018). Household factors, including heavy maternal workload (Lakshmi 2013), poor spousal support, the restriction of women's decision-making capacity (Levay et al. 2013), social exclusion were also challenges to healthy eating in some studies especially in low and middle income countries (Bezabih et al. 2018).

Sociocultural influences in the form of food taboos/avoidances and cultural and religious implications of foods in pregnancy were important challenges to healthy eating in Ethiopia, Nepal, Indian, immigrant African American and Latina women (Christian et al. 2006; Herring et al. 2012; Lakshmi 2013; Hackley et al. 2014; Hromi-Fiedler et al. 2016). Some foods were classified as "Hot" and "cold" and that determined if they women ate the food or not. For instance, Indian women in Lakshmi (2013) consumed iron rich foods such as meats in pregnancy but at the same time foods such as papaya, sesame seeds, groundnuts, corn, banana, and fermented rice were said to cause abortion and therefore were avoided in pregnancy. Women also practised food restrictions pre and post pregnancy. In addition, there was a deep-seated belief in these practices and customs amongst the women. However, food taboo was not an important predictor of healthy eating for Bangladeshi women (Levay et al. 2013). Religious influences that related to 'fear' that the baby would be deformed was also practised. This affected what type of food that the women cooked or ate and at what time (Choudhury and Ahmed 2011)

Culture also influenced women's desire to eat unfamiliar foods, thereby limiting the variety of healthy foods available to them (Herring et al. 2012; Hackley et al. 2014; Hromi-Fiedler et al. 2016). Eating was regarded as a social event in some cultures (social eating), which became a major influence on women's eating behaviour. Women in two studies described being strongly influenced by the eating behaviour of another person (social facilitation) (Kim et al. 2016; O'Brien et al. 2017).

Most of the studies identified social support as a facilitator of following healthy eating guidelines (Choudhury and Ahmed 2011; Herring et al. 2012; Goodrich et al. 2013;

Wennberg et al. 2013; Hackley et al. 2014; Anderson et al. 2015; Chang et al. 2015; Hromi-Fiedler et al. 2016; Kim et al. 2016; O'Brien et al. 2017; Fletcher et al. 2018). This was especially important for Caucasian women whose eating was strongly influenced by the approval of their social network (Wennberg et al. 2013; Hackley et al. 2014; Anderson et al. 2015; Chang et al. 2015; Hromi-Fiedler et al. 2016; Kim et al. 2016; O'Brien et al. 2017; Fletcher et al. 2018). Social networks were also important in encouraging women to increase their fruits and vegetable consumption and supplement use (Malek et al. 2016b; Takei et al. 2019).

### ***Physiology***

Cravings, nausea and vomiting, food aversion, taste preferences, perceived taste of 'healthful' food, lack of appetite, fatigue and sleepiness collectively summarize important factors affecting healthy eating. Other factors include "lack of space in the stomach for food" (Christian et al. 2006). For women who take iron supplements complained about the "tastelessness of the iron supplements".

Cravings were considered difficult to ignore, and usually attributed to the needs of the foetus and hormonal changes in pregnancy (Tuffery and Scriven 2005; Christian et al. 2006; Choudhury and Ahmed 2011; Herring et al. 2012; Goodrich et al. 2013; Groth and Morrison-Beedy 2013; Reyes et al. 2013; Hackley et al. 2014; Anderson et al. 2015; Groth et al. 2016; Kim et al. 2016). Nausea also prevented some women from eating healthy foods (Tuffery and Scriven 2005; Christian et al. 2006; Choudhury and Ahmed 2011; Reyes et al. 2013; Kim et al. 2016; Lee et al. 2018; Takei et al. 2019). Nonetheless, a small proportion of women reported that nausea acted as a 'facilitator' to healthy eating, for example by preventing weight gain (Reyes et al. 2013; Anderson et al. 2015). Taste preferences (Groth et al. 2016; Hromi-Fiedler et al. 2016; O'Brien et al. 2017) and the perceived taste of healthy foods (Reyes et al. 2013; O'Brien et al. 2017) were considered important influences on food choices prior to pregnancy, and this seemed to continue in pregnancy, with some women considering taste more important than their baby's health (Reyes et al. 2013; Groth et al. 2016). Fatigue and sleepiness were said to constrain cooking and therefore discourage healthy eating (Reyes et al. 2013; O'Brien et al. 2017; Fletcher et al. 2018).

### ***Environment***

Environmental factors such as transport (Reyes et al. 2013; Anderson et al. 2015; Hromi-Fiedler et al. 2016), food access (Hackley et al. 2014), seasonality (Christian et al. 2006; Hromi-Fiedler et al. 2016), inadequate food supply, convenience of fast-food places, obesogenic environment were important determinants of healthy eating (Goodrich et al. 2013; Anderson et al. 2015; O'Brien et al. 2017). Women without transport, particularly

women from WIC programme in the USA, generally purchased cheaper, less healthy groceries from nearby convenience stores. Food access for these women was also restricted by the limited purchasing power of their food stamps (Hackley et al. 2014). For all the women in high-income countries, the obesogenic environment in the home and workplace influenced their ability to engage in healthy eating. Another aspect of the environment was the effect of the social media on food choices of women. The internet was seen as an important source of nutrition information and most women relied on it for their nutrition knowledge. In general, environmental factors were considered enormous barriers to healthy eating.

On the other hand, some women recognised the availability of community support in the environment in terms of healthy eating and exercise groups as facilitators to healthy eating.

### ***Organizational***

Nutrition policies and pregnancy guidelines were described as complex, confusing, always changing, and not tailored to women's needs (Ferrari et al. 2013; Anderson et al. 2015; Kim et al. 2016; Bryant et al. 2018; Lee et al. 2018). For instance, dietary guidelines for pregnancy varied between countries and regulations regarding fish and mercury content changed frequently (Ferrari et al. 2013; Bryant et al. 2018). The list of foods that could and could not be consumed in pregnancy was generally described as huge except in Ethiopia where women reported limited sources of nutrition information as a barrier to healthy eating alongside, poor access to healthcare facilities and poorly equipped health facilities (Bezabih et al. 2018).

### ***Finances***

The cost of healthy food, especially vegetables, insufficient income for women and food rationing was a challenge to healthy eating in some studies (Christian et al. 2006; Choudhury and Ahmed 2011; Levay et al. 2013; Reyes et al. 2013; Chang et al. 2015; Groth et al. 2016; Hromi-Fiedler et al. 2016; Takei et al. 2019) . Women on the WIC programme in the USA relied on food stamps which were generally seen as inadequate for their needs. However, finance did not affect the purchase of supplements for women in one study (Malek et al. 2018).

### ***Health Outcome Expectations***

Recognition of the health effect of healthy eating facilitated women's motivation in most of the studies (Begley 2002; Groth et al. 2012a; Herring et al. 2012; Goodrich et al. 2013; Groth and Morrison-Beedy 2013; Reyes et al. 2013; Hackley et al. 2014; Chang et al. 2015; Hromi-Fiedler et al. 2016; Kim et al. 2016; O'Brien et al. 2017; Fletcher et al. 2018; Lee et al. 2018;

Malek et al. 2018). Some women associated healthy eating with the prevention of metabolic and chronic diseases like diabetes (Herring et al. 2012; Goodrich et al. 2013; Chang et al. 2015; Hromi-Fiedler et al. 2016), whilst most associated it with improved maternal health (Herring et al. 2012; Goodrich et al. 2013; Groth and Morrison-Beedy 2013; Chang et al. 2015; Lee et al. 2018; Malek et al. 2018), improved energy levels (Chang et al. 2015; Hromi-Fiedler et al. 2016) and the prevention of pregnancy complications (Herring et al. 2012; Hromi-Fiedler et al. 2016; Fletcher et al. 2018). Women generally considered healthy eating in terms of its positive effect on foetal health (Wiles 1998; Begley 2002; Groth et al. 2012a; Herring et al. 2012; Goodrich et al. 2013; Reyes et al. 2013; Hackley et al. 2014; O'Brien et al. 2017; Lee et al. 2018; Malek et al. 2018). Nonetheless, some women particularly low-income African American women in the USA, viewed “eating too little” as unsafe for the foetus and perceived any amount of weight gain as beneficial for the baby (Groth et al. 2012a; Herring et al. 2012; Reyes et al. 2013). In contrast, some Caucasian women considered eating too much to be risky for the foetus but still did so, perceiving this as outside their control.

### **Control**

Women who believed they possessed behavioural capacity and self-efficacy were better able to take action geared towards healthy eating and healthy gestational weight gain (Wiles 1998; Anderson et al. 2015; Chang et al. 2015; Hromi-Fiedler et al. 2016; O'Brien et al. 2017; Lee et al. 2018). Some women, particularly those of a higher socio-economic status, felt that they, rather than external factors, controlled their eating and therefore took steps to control their health behaviours.

### **2.3.6 Discussion**

This review provides a narrative summary of pregnant women’s perspectives of the challenges and facilitators to healthy eating in high income and LMIC’s. In high income countries the challenges are largely the same across geographical regions, but alter slightly with socioeconomic status and ethnicity, particularly in relation to fruits/vegetable consumption and vitamin supplementation. LMIC’s evaluated include Bangladesh, Ethiopia, Nepal, and India. Data obtained from LMIC’s were mostly from the rural areas and the slum areas in the urban cities. Considering that maternal malnutrition in the form of obesity is very prevalent in the urban areas of LMIC’s. For instance, maternal obesity rates in LMIC’s exceed 20% (Onubi et al. 2016; Organization 2017), studies evaluating healthy eating challenges in pregnancy is a necessity. In LMIC’s women in most studies seemed to have a knowledge of what foods were considered healthy in pregnancy except in Ethiopia. The nutrition knowledge seemed to be about increase in food consumption and what types of

foods were important in pregnancy. The healthy eating information included eating “more” portions of food including fruits and vegetables without a guideline as to what was considered appropriate and enough. There did not seem to be an awareness of gestational weight gain guidelines or portion sizes. The nutrition knowledge however did not affect attitude or translate into practice.

In high income countries, a lack of general nutrition knowledge and knowledge of nutrition guidelines alongside overwhelming non-individualized information were considered challenges to healthy eating. Knowledge has been mentioned as a determinant of healthy eating in the general population (Munt et al. 2017; Zorbas et al. 2018) and as a determinant of appropriate gestational weight gain (Vanstone et al. 2017). There are however important findings from this review. Although women in rural areas in LMIC's had general nutrition knowledge about foods that were considered important in pregnancy, they did not adhere to the information. They preferred knowledge from older people in the society and in some cases their 'landladies', considering them to be more important sources of information.

In addition, one study reported that women shied away from healthcare providers when they were pregnant because of the judgemental attitude of healthcare providers especially for women who have had multiple pregnancies. In addition, the perception of women in high income countries to information received is an important finding. Pregnant women indicated that although they sought information from health care practitioners, social networks (including friends/family) and social media, the information received was overwhelming and not individualized. Providing tailored nutrition counselling can improve maternal health. Although evidence suggests that women are more likely to act on information received from their healthcare providers (Bryant et al. 2018), evidence from LMIC's in this review suggests otherwise. Therefore, in addition to targeted advice from healthcare providers, context and characteristics of the population is important in determining how the information can be disseminated. It might be important to enlist the help of the community in nutrition knowledge dissemination. In interventions aimed at increasing nutrition knowledge, it is therefore important to consider the type of information and the target audience.

Another factor that emerged in this review is physiology (cravings, nausea, vomiting, food aversions and taste preferences). This supports the broader literature that has identified the effect of physiological changes on healthy eating in pregnancy (Fowles and Fowles 2008). However, in this review, these challenges were mostly described as affecting healthy eating in the first trimester. This is important as most women report that their energy levels return in the second trimester, when they should be able to engage in targeted healthy eating

messages. Overall, this review found that most women regarded physiological influences as less influential on their eating than nutrition knowledge and sociocultural factors.

A significant facilitator to healthy eating in this review was health outcome expectations. This feeds into wider literature which has identified pregnancy as motivating behavioural changes in women (smoking and alcohol consumption). However, a previous review on determinants of healthy eating in pregnancy did not mention health outcome expectations as important. Vanstone et al. (2017) review of barriers to appropriate gestational weight gain identified that women were motivated to change behaviour, but this depended upon the resources available in their social environment. Women in almost all the studies in this review changed their eating behaviour in recognition of the potential negative effects on their own health and that of their baby, although their ability to sustain these behaviours was unclear.

The social layer of influence on healthy eating in pregnancy is related mostly to socio-cultural influences: social network/social support, family structure, cultural influence on food intake including taboos and restrictions, sociocultural upbringing, social facilitation, and social eating. Family structure and social network both played a major role in facilitating or hindering the adoption of healthy behaviours. In addition, social eating and eating for social reasons played significant roles in hindering healthy eating in pregnancy. Family structure, socio-cultural upbringing and cultural influence on food intake were predominantly perceived as challenges to healthy eating in studies of African American women in the USA and in countries in LMIC's. A general socio-cultural influence on food intake amongst African American women related to excess food intake and the belief that this benefitted the baby. This is an important finding for healthy eating interventions targeting this population especially with the higher risk of weight gain and retention in pregnancy. Sociocultural influence on healthy eating has been identified in the general population but generally relate to the socio-cultural acceptability of consuming healthy foods. This is much like the socio-cultural influence of "maintaining a slim body" amongst Japanese and Caucasian women in this review which influences their healthy eating choices. Findings relating to socio-cultural influences in LMIC's that relate to food taboos, avoidances, weight gain, weight restriction and cultural/religious influences is very important. This is because literature has shown that dietary behaviours sometimes remain unchanged post migration especially in pregnancy. Therefore, pregnant women usually maintain their dietary behaviours after migration.

Other factors considered important are the individual's environment and organizational factors. Food access and availability, the obesogenic environment, and transport were considered barriers to healthy eating while some women considered the availability of community support as a facilitator to healthy eating. This echoes the suggestion that the

major determinants of healthy eating in the general population relate to food availability and affordability/access. Some women in this review cited a lack of transport as a barrier to acquiring healthy food, and some low-income women had to prioritise quantity over the quality of food, demonstrating the overlap between environmental and financial factors.

The findings from this review suggest a need for wider level healthy eating interventions that consider individual level influences and social influences on healthy eating in pregnancy.

### **2.3.7 Implications for future research**

This review has identified that sociocultural and environmental influences as well as knowledge are important determinants of healthy eating in pregnancy in both high-income and LMIC's. It has also identified that individualized; targeted information including community network may be more effective than general advice. A comprehensive public health intervention approach targeting knowledge, sociocultural and environmental influences would be useful in addressing the determinants of healthy eating in pregnancy.

### **2.3.8 Limitations**

Most studies included in the review had been conducted over ten years. There are no recent studies that have evaluated the reasons for unhealthy eating in some countries nor checked progress with healthy eating. The exclusion of studies that examined gestational weight gain in pregnancy greatly limits the scope of this review. However, it also enabled the review to capture studies from LMIC's whose focus was not on gestational weight gain and to effectively compare determinants of healthy eating in high income countries against those in LMIC's.

### **2.4 Research gap from systematic review and literature so far**

From the systematic review, pregnant women were motivated to change their eating behaviours in pregnancy for the sake of the health of the foetus, therefore healthy eating interventions in pregnancy is important. The influences on healthy eating lay within knowledge, sociocultural influences, and physiology. This review has indicated that women did not really consider physiology as a very important effect on healthy eating. Apart from knowledge, sociocultural influences seemed to be an important determinant of women's healthy eating choices in pregnancy. Previous studies have explored physiology (Fowles and Fowles 2008; Forbes et al. 2018) and knowledge as important influences on healthy eating in pregnancy. However, there are suggestions that influences of physiology lay within culture (Madziva and Chinouya 2020), suggesting that although physiology could influence healthy eating choices in pregnancy, that it was culturally dictated. In addition, within the review, women who possessed self-efficacy and behavioural capacity were better able to practise healthy eating and control their weight. This suggests that although physiology is an important factor in pregnancy, with improved self-efficacy and capacity, pregnant women are able to practise healthy eating.

In addition, an evaluation of the ethnicities of pregnant women involved in the studies included in the review showed that there were no studies that explored the challenges and facilitators to healthy eating for pregnant African immigrant women living in the UK. What studies existed were conducted in USA and explored challenges and facilitators to healthy eating amongst African American women. Therefore, this study aimed at focusing on Black African immigrant women, as it is believed that there is heterogeneity within the racial classifications such as between Black African, Black American/British and Black Caribbean.

## Section 2

The second part of this chapter consist of a systematic review highlighting the sociocultural influences of dietary behaviours of Black women living in high income countries. The review has been prepared for submission in the Journal of Maternal and Child Nutrition.

### **2.5 Sociocultural influences on dietary behaviours of Black African women in High-Income countries- a systematic review**

#### **2.5.1 Introduction**

Understanding influences of socio-cultural factors on dietary behaviours has gained prominence (Devine et al. 1998; Thairu et al. 2005; Zeeni et al. 2013; Lindsay et al. 2017; Muggaga et al. 2017; Scott et al. 2019; Chakona 2020; Monterrosa et al. 2020; White et al. 2021). Understanding these factors can improve the public discourse on what constitutes a healthy diet and factors that influence dietary behaviours (Monterrosa et al. 2020). This could prove particularly important during the pregnancy period, as dietary behaviours usually influence the health of mother and child (Kleinman 2000; Short and Mollborn 2015). Inadequate dietary behaviours in pregnancy can lead to malnutrition (Bath et al. 2013; Black et al. 2013; De-Regil et al. 2015; Renault et al. 2015; Onubi et al. 2016; Rosenthal et al. 2017). Maternal malnutrition is detrimental to the mother, child and is a public health concern (Delisle 2010; [WHO] 2017).

The consequences of malnutrition in pregnancy are long-term including but not limited to the increased risks for preterm births, stillbirths (Penn et al. 2014; Yao et al. 2014), macrosomia, neural tube defects (Rosenthal et al. 2017), impaired cognitive outcomes (Bath et al. 2013) and stunting(Black et al. 2013), including perpetuating the cycle of obesity in later life for the baby (Kleinman 2000; Alavi et al. 2013; Langley-Evans 2015; Poston et al. 2016). For the mother, this includes increased risks of pre-eclampsia, gestational diabetes, caesarean sections and a general increase in maternal and foetal morbidity and mortality (Callaway et al. 2007; Nehring et al. 2011; Alavi et al. 2013; Thanoon et al. 2015). Most particularly, maternal malnutrition in the form of maternal obesity and overweight has become a public health concern.

Maternal obesity rates and its consequences adversely affect some ethnic groups more than others in high income countries such as black minority ethnic groups (Penn et al. 2014; Snowden et al. 2016; Knight et al. 2019) and they make up a large proportion of the obesity population in high income countries. For instance, black pregnant women in the United Kingdom (UK) make up about 66.6% of the obesity population in pregnancy. Black women as a whole make up 38% of the total obesity population in the UK (Public Health England

(PHE) 2019) and 39.1% in the United States (US). The causes of obesity in this population have been said to be multifactorial linked to migration factors (Kristiansen et al. 2007; MacPherson et al. 2007), cultural perception of body image (Toselli et al. 2016; Whitaker et al. 2016) and the obesogenic environment in high income countries (Heslehurst et al. 2010). However, studies emanating from countries in Africa indicate that obesity is also of public health concern (Onubi et al. 2016). In addition, black pregnant women in high income countries are not necessarily all first-generation immigrants.

Studies show that black pregnant women in various high-income countries have shown an increased risk of developing gestational diabetes, gestational hypertension with a general increase in deaths when compared with other groups (Flanders-Stepans 2000; Knight et al. 2019).

Although regarded as one of the many factors, dietary modification during the pregnancy period would be beneficial for the mother and the child and could address obesity problems (Oteng-Ntim et al. 2012; Thangaratinam et al. 2012; Poston et al. 2015; Dalrymple et al. 2018; Shieh et al. 2018; WHO 2018) and reduce the odds of gestational diabetes (Fair and Soltani 2021). Literature also suggests that women are willing to adopt a change in lifestyle in pregnancy for the sake of the baby (O'Brien et al. 2017). However, studies have suggested that pregnant women do not comply with healthy eating recommendations in pregnancy (Hure et al. 2009; Blumfield et al. 2012a; Morton et al. 2014; Malek et al. 2016a; Bookari et al. 2017a; Caut et al. 2020). Factors that have been suggested to influence adherence/non-adherence include: the pregnancy process itself, level of education (Caut et al. 2020), time (Sui et al. 2013b) the socioeconomic status of the individual, beliefs, preferences, culture, and social and environmental context of the individual (Kadawathagedara et al. 2021).

Studies evaluating the influences on dietary behaviours in minority ethnic groups living in high income countries have tended to focus on recent immigrant communities. For instance, in a systematic review by Ngongalah et al. (2018), pregnant women recruited in the included studies had recently migrated from countries in Africa either sub-Saharan Africa or North Africa. On the other hand, there are several studies that have been dedicated to exploring the influences especially sociocultural influences on dietary behaviours of Black African women who are not first-generation immigrants. There is however no systematic review that has collated the evidence to inform further interventions. Although classified as homogenous, the grouping of ethnic minorities and certainly black minority women as one, tends to camouflage the subtle differences that exist within these communities (Agyemang et al. 2005). As argued by Agyemang et al. (2005), current ethnic capturing of different groups

hides the heterogeneity existing within the groups and makes the provision of culturally appropriate interventions difficult. Furthermore, dietary behaviours are affected by sociocultural circumstances. The definition and particular sociocultural circumstances that affect different ethnic groups differ even though they belong to the same minority or majority ethnic group.

This review will focus on native born Black African pregnant women in high income countries, comparing the socio-cultural influences with recent black immigrant women. In addition, the increasing presence of Black African immigrants in countries like the United States and the United Kingdom suggests the need for more sub-ethnic group analyses of the subtle differences inherent in the black racial identity. Recognizing the multi-diversity, even within the Black African ethnic group, an understanding of the sociocultural influences on dietary behaviours of a specific group within an ethnic group, can promote culturally sensitive, effective, and accessible evidence-based tailored care. Moreover, in identifying barriers and facilitators to healthy eating in pregnancy for black immigrant women, sociocultural factors have been identified, however, the extent to which these factors affect every day decision-making process including food purchases have not been explored.

This review is aimed at synthesizing available qualitative evidence on socio-cultural influences on dietary behaviour in pregnancy for native born black pregnant women living in high-income countries using the qualitative evidence synthesis protocol (Flemming and Noyes 2021). Qualitative research into the perceptions of individuals has the potential to improve understanding based on how individuals interpret the world using their unique personal experiences in the cultural, social, and historical contexts in which they live (Maxwell 2012). This review will consider influences on the food choices of Black African women living in high income countries who do not consider themselves to be immigrants, therefore do not share certain cultural characteristics of black immigrant women but rather have their evolved cultural characteristics.

## **2.5.2 Definition of terms**

### **2.5.2.1 Sociocultural**

The term sociocultural is used frequently in literature when reference is made to social and cultural elements. Sociocultural influences can refer to influences from variables such as norms, values, religion, traditions, culture as would pertain to particular ethnic groups. It is also defined to include the sociocultural environment, including socially acceptable foods, food purchases and food purchase dynamics (Mutsikiwa and Basera 2012).

### **2.5.2.2 Black African**

For the purpose of this review, the term Black African immigrants will be used to refer to people who have recently migrated from Sub-Saharan Africa (Agyemang et al 2005) while native born Black Africans will be used to refer to Black Africans who have been born in high income countries.

### **2.5.3 Materials and Methods**

The review followed the preferred reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines.

#### **2.5.3.1 Study Identification**

A search strategy is attached. Preliminary search of literature was done by AE and revealed that terms used in literature to represent Black women and dietary behaviours were varied. In some studies, they were identified as black and minority ethnic group (BAME, BME) or ethnic minority, in other studies they were referred to as Black Americans. There were no studies in the United Kingdom that specifically addressed Black British or Native-born Black women. Therefore, general studies that included black Immigrants and Black and minority ethnic group were searched for. Other terms that were included were “ethnic groups”, “black minority ethnic” and “coloured population”. The term Black and Minority ethnic group is an umbrella term that includes a heterogenous group of ethnic entities. Therefore, to be eligible for inclusion, the studies must include Black women in the inclusion criteria. Other terms used for dietary behaviours include eating habits or eating behaviours include dietary habits, dietary patterns, dietary behaviours. Studies on asylum seekers or refugee groups were excluded as they were termed as either recent immigrants or forcefully displaced people therefore would have an influence on their dietary behaviours.

In preliminary searches, it was identified that qualitative studies that reported on sociocultural determinants of dietary behaviour in this population usually reported as part of other determinants of dietary behaviours. Therefore, the inclusion/ exclusion criteria were expanded to include studies that included determinants/barriers/ facilitators to healthy eating/eating behaviour/dietary behaviour/ diet quality among this population.

Search terms developed for MEDLINE were also used across other search databases including CINAHL, Scopus, ProQuest, PubMed, and the Cochrane library. Searches were restricted to studies published between 1 January 1970 and September 2021. Between 1950 and 1970 represents the era when the term black British developed, to include the

Windrush generation and people from Africa. An example of subject terms as used in the database search is included in the appendix.

Decisions on what studies to include were taken by AE and JT. After careful reviewing, studies that did not meet the inclusion/exclusion criteria as stated below were removed.

### 2.5.3.2 Inclusion/Exclusion Criteria

Article identification process and inclusion criteria are shown in table 2.1. Selected studies followed the PerSPE (C) TiF framework criteria (Booth et al 2019) as shown in table 2.1

**Table 2.1: Inclusion criteria**

	Review Definition
Perspective	From the perspective of native-born black pregnant women living in high-income countries.
Setting	All high-income countries
Phenomenon/problem	What do we understand about the socio-cultural influences on dietary behaviour in pregnancy for native-born black pregnant women?
Environment	All articles written in English from high-income countries
Comparison	To compare with sociocultural influences on dietary behaviour for black pregnant immigrant women living in high income countries.
Time	1970 to September 2021
Findings	Qualitative findings -in-depth interviews, focus groups, case study Methodology- grounded theory, ethnography, phenomenology

The studies addressed the socio-cultural influences/causes/ determinants/reasons/predictors of dietary behaviours of Black women in pregnancy. Studies that evaluated the sociocultural influences on dietary behaviour in pregnancy as part of a randomized controlled intervention or evaluation of randomized controlled trials were excluded. Studies that explored general

health promoting behaviours in pregnancy were excluded unless dietary behaviour in pregnancy was evaluated on its own. Tables 3 and 4 (appendix 2) show the inclusion/exclusion criteria.

#### Inclusion criteria

1. Qualitative primary studies
2. Human subjects
3. Pregnant women
4. Black pregnant women living in high income countries only, not studies that included black pregnant women as part of the recruited participants unless the sociocultural influences were highlighted separately.
5. Studies that included ethnic minority women with more than 70% of the recruited participant identifying as black.
6. Studies reporting on dietary patterns, dietary behaviours, socio-cultural influences on dietary behaviours, influences on dietary behaviours, determinants of dietary behaviours, barriers, and facilitators to healthy eating in pregnancy. Influences on gestational weight gain,
7. Qualitative studies, interviews, mixed methods studies that analyse the qualitative component separately

#### Exclusion criteria

1. Studies that included asylum seekers and refugees were excluded
2. Studies that were part of an evaluation for a randomised controlled trial were excluded.

#### **2.5.4 Study Selection and Screening**

Selected studies were exported to EndNote 20 (Clarivate Analytics) and NVIVO software. Eligibility screening of titles and abstracts of the selected papers was done by A.E and reviewed by J.T. Full texts of the articles that fulfilled the inclusion criteria were extracted by A.E. Resolution about article inclusion was settled by A.E and JT. Hand searching of the references of included articles was used to identify more articles. The NVIVO software was to code the original studies, in order to build inductive themes from the primary studies and aggregate quotes into themes.

### **2.5.5 Data extraction**

A data extraction form was adapted from the pre-developed data extraction sheets on the Cochrane collaboration template for qualitative reviews and piloted on 2 studies. The final data extraction form included the title/author, geographical location, population, methodological design, participants characteristics, study settings, recruitment, objectives of the study and the theoretical models used in the study.

### **2.5.6 Quality Assessment**

The Critical Appraisal Skills Programme (CASPS) tool for qualitative studies was used to appraise the quality of the included studies. Due to the suggestion from Cochrane methods for evaluating methodological strengths of qualitative studies that not all domains are equal, scores were not assigned to domains. Quality assessment was not used a criterion for study exclusion. However, the CASPS tool was used to make judgements about the clarity of the research practice and reporting standards and less about the methodological quality of the studies included, using it to reflect on the final findings.

### **2.5.7 Data synthesis**

Articles were also imported into the QSR NVIVO software for the management of qualitative data. The essence was to enable line by line coding of the manuscript. Thematic synthesis was used for data synthesis (Thomas and Harden 2008). Inductive line by line coding of the quotations from participants in primary study findings was done by the first author. This was followed by the second order coding of the interpretations by the authors. Themes were derived by grouping similar codes and then overarching were generated based similar conceptual links between the descriptive themes. To avoid presenting participants quotes verbatim, excerpts from the quotes will be used.

### **2.5.8 Results**

#### ***2.5.8.1 Description of studies- Black African women***

Nine qualitative studies that explored the sociocultural influences on dietary behaviour of Black African women were included in the review. The characteristics of the included studies are outlined in tables 2.2 to 2.5. Seven studies were conducted in the USA, one in Norway and 1 in Canada. The studies represented qualitative data from 260 pregnant Black African women. All the studies recruited overweight and obese women. Five studies out of the seven recruited low-income women. Five studies out of nine used in-depth interviews for data collection while the remaining four studies used focus group interviews.

### **2.5.8.2 Quality Appraisal**

A table showing the result of the quality appraisal of included studies have been attached in appendix 3 (table 12). Some of the studies (Garnweidner et al. 2013; Groth et al. 2016; Whitaker et al. 2016) showed no indication that the authors considered their potential bias and influence in the research methodology nor the relationship between the researcher and the participant. Three studies (Goodrich et al. 2013; Reyes et al. 2013; Kim et al. 2016) had insufficient methodological detail in terms of recruitment strategy used. Statements about informed consent was not included in one study (Whitaker et al. 2016) and another study indicated that participants consent was implied (Groth et al. 2012b). As indicated above, no studies were excluded as a result of methodological quality.

### **2.5.8.3 Thematic synthesis**

The systematic review originally planned to extract and synthesise study findings regarding the sociocultural determinants of dietary behaviour for Black African native born or second-generation immigrants and compare with recent Black African immigrants. It soon became apparent that most studies that met the inclusion criteria except one did not stratify immigration status according to recent immigrants, second generation or native-born women. In addition, there was a lack of delineation in the studies reviewed between first/second generation migrants. Therefore, the thematic analysis will attempt to indicate according to the studies what sociocultural determinants were more suited to particular groups.

**Table 2.2: Demographics**

Author	Location	Sample size	Participant characteristics	Study settings
Goodrich et al 2012	USA	25 pregnant	18-39 years Singleton pregnancy (8-23 weeks). Overweight/obese	Clinics/home
Groth et al 2012	USA	26	18 years and above	Women, infants and children services and prenatal care sites
Groth et al 2016	USA	25	18 years and above	Clinics
Kim et al 2016	USA	20	18 years and above	WIC services
Reyes et al 2013	USA	21	18 years and above	Outpatient prenatal clinics
Whitaker et al 2016	USA	15	18 years and above	Clinics/home
Herring et al 2012	USA	31	18 years and above	

**Table 2.3: Characteristics of included studies (Black African women)**

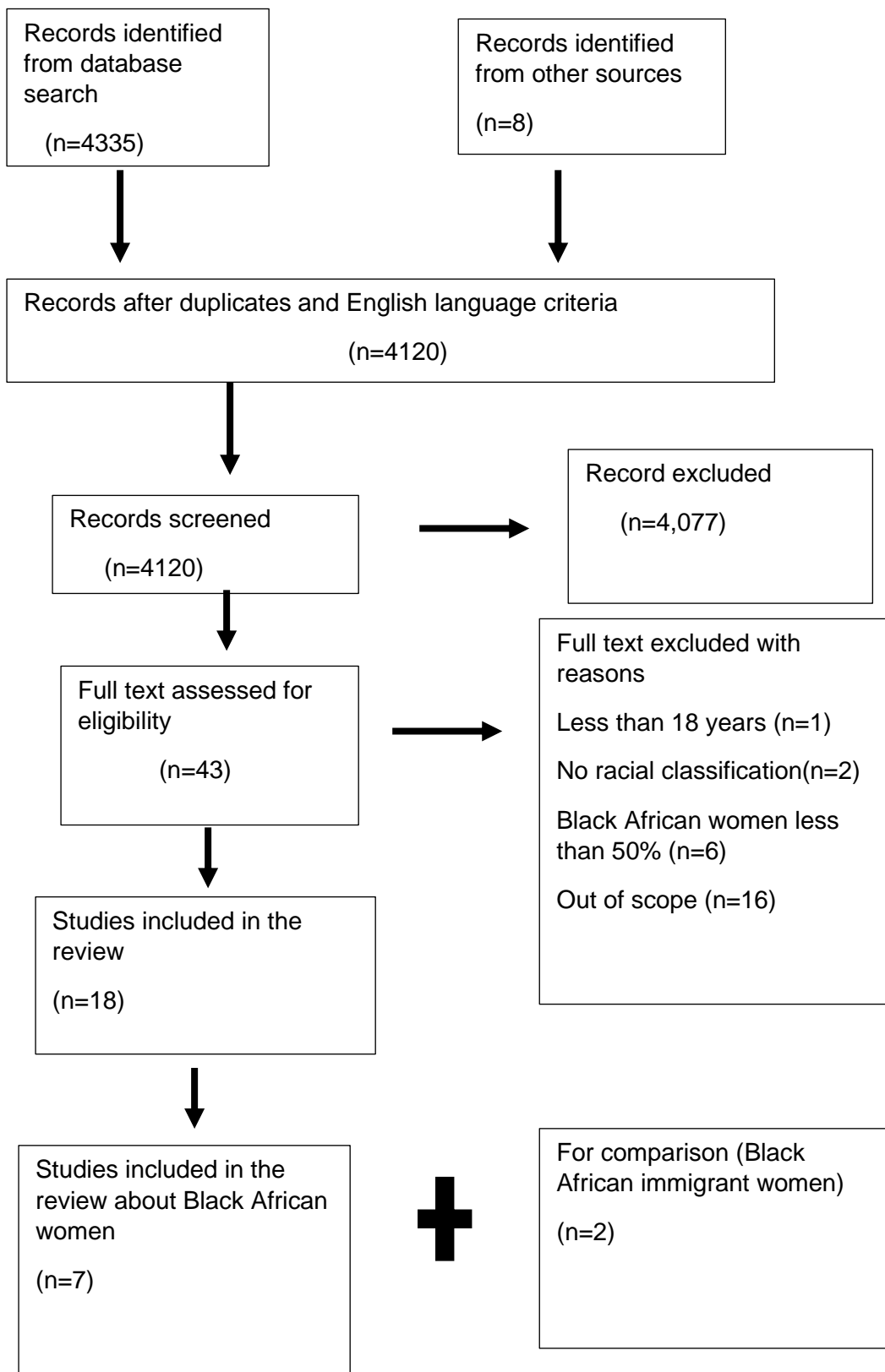
Author	Methodological design	Recruitment method	Data collection method	Objectives	Theoretical models used
Goodrich et al 2012	Thematic analysis		In-depth interviews	Barriers and enablers to healthy eating	Social ecological model
Groth et al 2012	Content analysis	Purposive sampling	Focus groups	How African American viewed weight gain in pregnancy.	
Groth et al 2016	Content analysis		Semi-structured interviews	Factors that affect dietary decision making for pregnant African American women	
Kim et al 2016	Thematic analysis		Focus groups	Explore knowledge, attitude, and perception with regards to weight gain in pregnancy	
Reyes et al 2013	Grounded theory		Semi-structured interviews	Healthy eating limitations for low-income African American women	
Whitaker et al 2016	Content analysis	Purposive sampling	Semi structured interviews	African American women's personal beliefs towards weight gain, physical activity, and healthy eating during pregnancy	Theory of planned behaviours
Herring et al 2012	Grounded theory	Convenience sampling	Focus groups	Perception of low-income African American women about weight gain in pregnancy.	

**Table 2.4: Comparison studies: Demographics**

Author	Location	Sample size	Participant characteristics	Study settings
Garnweidner et al 2012	Norway	17	16 years and above	Antenatal care clinics
Quintanilha et al 2016	Canada	80		Multicultural health brokers Cooperative perinatal program

**Table 2.5: Study characteristics (comparison studies)**

Author	Methodological design	Recruitment method	Data collection method	Objectives	Theoretical model
Garnweidner et al 2012	IPA	Purposive sampling	In-depth interviews	Explore experiences with nutrition related information	Not stratified according to ethnicity
Quintanilha et al 2016	Content analysis		Focus groups	Perception of sociocultural factors that shape health	



**Fig 2.2: PRISMA flow diagram**

#### **2.5.8.4 Thematic synthesis**

Six analytic themes were generated to capture the sociocultural determinants of eating/dietary behaviour in this population.

##### *Social support*

One of the influences on healthy eating for African pregnant women was social support. Two studies (Groth et al. 2016; Quintanilha et al. 2016) reported on different aspects of social support that influenced women's dietary behaviour. One of the studies that highlighted social support explored social support in terms of contrasting pregnancy experiences in the now host country and the home country. Participants indicated that they felt more inclined to be healthy in their home country because of the presence of social support. Everyone in the community were more inclined to help back home compared with the host country where they had to sort things out themselves. These views were from more recent immigrants. Women also explored social support in terms of the lack of support from their immediate family that they lived with, in the now host country. The immediate family in this case would usually be their husbands. The women indicated that unlike their Caucasian counterparts whose husbands were more inclined to help out at home, their own husbands did not help out. This therefore caused stress for the pregnant women. Social support as a theme was more common with women who were recent immigrants. The other study explored social support in terms of child caring responsibilities and home tending responsibilities. Women felt that they had childcare responsibilities and therefore gave less priority to healthy dietary behaviours.

##### *Cultural acceptance of a large body size*

Black African women in two studies (Groth et al. 2012a; Herring et al. 2012) indicated that being overweight was seen as being "thicker", "voluptuous" and was acceptable in the culture. There was an indication that they were not really concerned about their weight gain, indicating that weight gain was normal in pregnancy. Some of the women looked forward to gaining weight in pregnancy because it meant that they would gain weight in the appropriate places. This meant that weight gain would enhance their appearance making them curvy. Although some of the women stated that there was a limit to the weight gain

##### *Food beliefs*

There were different aspects of food beliefs that were highlighted by different studies. Beliefs such as "Eating too little has a detrimental effect on the baby", "weight gain indicates a healthy baby" were repeated in five studies (Groth et al. 2012a; Herring et al. 2012; Goodrich et al. 2013; Reyes et al. 2013; Whitaker et al. 2016). Black women believed that having a

healthy baby meant eating more for the mothers. They indicated that if they ate too little, the babies would be underweight, premature, and unhealthy. This notion was encouraged by the people around the mothers including their significant others and their mothers. For the women that were nudged on by their families, they expressed that even when feelings of hunger were not present, their mothers or support persons would encourage them to eat, in order not to starve the baby.

Some of the women in these studies believed that the lack of dietary restraint was caused by the baby. Some used words like “the baby is never full”, “I need to keep eating”. On the other hand, some women did not also feel that they should eat too much, so as not to have a baby that was too big.

#### *Family influences to eat more*

Closely linked to food beliefs is the family influences to eat more (Groth et al. 2012a; Herring et al. 2012; Reyes et al. 2013; Kim et al. 2016). There was a lot of family pressure from spouses, mothers, in-laws, siblings and even grandparents for the women to eat more. There were indications that the pregnant woman was “eating for two” and therefore should eat larger portions and more frequently. This was however rooted in the belief that eating more meant that the baby would be healthy.

In some studies, the women indicated that their mothers controlled the food environment and decided what would be eaten. This included grocery shopping (Reyes et al. 2013), including what foods were allocated to the food stamps that they received. This meant that healthy food options were not available all the time and the pregnant woman would have to eat what was available. This was really seen for African American women who lived in multigenerational households, who were either native born or had lived in the country for a long time. Black Africans, who were recent immigrants, did not indicate this.

#### *Weight gain is hereditary*

Black African women in two studies (Groth et al. 2012b; Garnweidner et al. 2013) believed that weight gain was hereditary. They also believed that their being overweight could be linked to genetics. Some of the women indicated that they had always been big/hefty prior to pregnancy and that the pregnancy period did not make it better.

#### *Mothers as an influence*

Apart from the encouragement from family members to eat more. Some women in two studies (Herring et al. 2012; Kim et al. 2016) reported influence from their mothers. For instance, some women indicated that the healthy eating guidance from healthcare providers

were usually in direct contrast with their mother's advice. In that case, healthcare providers advice was usually ignored. Pregnant women believed that apart from their mothers having influence, their mothers had gone through the same experience and therefore were more inclined to give better advice.

#### **2.5.8.5 Discussion**

##### ***Overview of findings***

Six analytic themes were developed that captured women's views of perceived sociocultural influences on their dietary behaviour. Black African women in the studies have certain beliefs that affect their dietary behaviour. They include the cultural acceptance of a large body size; food beliefs and that weight gain is hereditary. The cultural acceptance of a large body size although contentious (Cachelin et al. 2002) has been found to be true in the samples in the general population both in high income countries (Lynch and Kane 2014) and in low- and middle-income countries (Naigaga et al. 2018). A large body size is seen to signify wealth, health, and status and therefore very important for Black African women (Naigaga et al. 2018). Although some women in these studies indicated that there was a limit to which weight gain could be acceptable, they however constantly stated a weight gain limit that was far above the Institute for Medicine (IOM) guideline for acceptable weight in pregnancy. Black African women have also been seen to indicate a body size greater than ideal as acceptable body sizes (Lynch and Kane 2014). Such cultural beliefs have important implications in the planning and implementation of a healthy eating intervention for African women.

Food beliefs such as eating more in order to have a healthy baby or eating too little could have a detrimental effect on the baby could be seen as encouraging excess and frequent consumption of calories. This would have an effect as it would lead to the promotion of overweight and obesity in the population. No previous review has highlighted this aspect of eating in pregnancy, although several studies have shown that African American or Black African women have a higher risk of weight gain and retention in pregnancy. Healthy eating interventions that could focus on managing these beliefs could assist in reducing the risk of post-partum weight retention or indeed obesity in the long run thereby reducing maternal and infant morbidity.

The presence or absence of social support as one of the sociocultural influences on dietary behaviour was seen mostly in one study that recruited recently immigrated Black Africans. This can be seen as an important difference that this review has highlighted. Immigrants who had stayed longer in the country or who were determined to be second generation talked about living in multigenerational households and how that influenced their healthy

eating. Although they did not talk about the absence of social support, it was however deduced by the author that family influences to eat more and the presence of their mothers in the household indicated a level of social support that was absent for more recently immigrated women. This point is important in the planning and implementation of interventions, as a “one size fits all” intervention would be unable to meet the needs of these women.

In addition, this review aimed to synthesise and compare evidence on the sociocultural determinants of dietary behaviour of Black African women living in high income countries. The studies included in the review have shown a gap in regard to the indication of immigration status of the individual. This has a lot of implications in terms of determining the health status of the participant. It is evident in literature that the longer an individual stays in a high-income country, the worse the health status of the immigrant. This has been known as the migration paradox. It is important that interventions consider the migration status of individuals in order to develop interventions that best suit the individuals.

#### **2.5.8.6 Strengths and Limitations**

The strength of a qualitative study and hence review lies in its ability to provide in-depth insight to influences on dietary habits based on the individual’s context. Most of the studies included in the review explored the determinants of eating behaviour in low-income Black African women. Obesity in the Black African community is not exclusive to women who are low-income. Limitations of this review include the non-categorization of the ethnic status of the women included in the studies. In addition, qualitative studies explore the views of people at a fixed point in time and may be subject to change, therefore the findings though useful, are not necessarily generalisable.

#### **2.6 Chapter Summary**

This chapter has presented results of two reviews, one exploring the challenges and facilitators to healthy eating in pregnancy and the other exploring the sociocultural influences on healthy eating on Black African women. The paucity of literature concerning the challenges and facilitators to healthy eating amongst Black African immigrant women living in the UK highlights a significant gap in literature. Therefore, this research is carried out to fill the gap noted. The next chapter will focus on the research design and methodology used in this study.