

**AN EXPLORATION OF MINDFULNESS-BASED CONCEPTS, MATERNAL-
FETAL ATTACHMENT, BODY IMAGE AND HEALTH BEHAVIOUR IN
PREGNANCY**

By

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ABSTRACT

Pregnancy has been posited as a ‘teachable moment’ for health behaviour change because women may be more motivated to change their health behaviours and have more contact than usual with healthcare professionals, who can impart healthy behaviour messages. Excessive gestational weight gain can impact on pregnancy and birth outcomes for mother and baby. It can also lead to a higher BMI in subsequent pregnancies and other longer-term health conditions, such as diabetes and obesity in later life. The existence of pregnancy interventions is evidence that pregnancy alone for some women is not sufficient to drive behaviour change to help manage weight gain. Clinical interventions can limit excessive weight gain, but they have faced challenges when translating into community-based programmes. Mindfulness-based concepts have a strong association with well-being, body image and weight-related eating behaviours during pregnancy. This thesis investigated mindfulness-based concepts, maternal-fetal-attachment, body image and weight-related eating behaviours to examine their potential application for future intervention development. Chapter 1 provided an overview of the literature regarding the impact of pregnancy on psychological well-being, body image and eating behaviours, and the role mindfulness-based constructs may play in weight-related health behaviours. Chapter 2 covered the methodological approaches used in this PhD project. Chapters 3, 4 and 5 examined the associations between mindfulness-based concepts, maternal-fetal attachment with well-being, eating behaviours and body image, respectively. Chapter 6 investigated women’s pregnancy experiences in relation to body image and eating before, during and after pregnancy. Chapter 7 investigated midwives’ experiences of discussing weight and healthy eating with pregnant women, and what training they have received to support these interactions. Chapter 8 integrated and discussed the current findings from across all five studies. The findings from this thesis conclude that self-compassion may be an effective target for intervention to improve well-being, body image and eating

behaviours during pregnancy, especially for women at greater risk of excessive GWG. Whilst women want healthy eating information, midwives are not being provided with adequate training to engage effectively in these discussions. Finally, going beyond BMI, by also assessing women's history of eating behaviours, weight and body image issues prior to pregnancy, may also provide additional information to identify women in need of additional support during pregnancy.

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DISSEMINATION

Chapter 3/study 1 has been submitted for publication and is currently under review.

Chapter 4/study 2 has been presented at the Parenting Symposium, Keele University (13 September 2023).

Chapter 6/study 4 has been presented as a poster at the European Health Psychology Society Conference, Portugal (3 September 2024) (see Appendix A1).

Chapters 6 & 7/studies 4 & 5 were published in a Guest Blog on Big Birthas website - See blog online <https://www.bigbirthas.co.uk/weight-and-healthy-eating/> (June 2024) (See Appendix A2).

Chapter 7/study 5 has been presented as a poster at the South West England Maternity & Midwifery Festival & Trailblazer Awards (17 September 2024) (See Appendix A3).

Chapter 7/study 5 has been included in a discussion article published in MIDIRS (June 2024): Parsons H, Egan H, Connabeer K, Mantzios M. (2024) Health and lifestyle in pregnancy: a study to explore the midwife's perspective, *MIDIRS Midwifery Digest*, vol 34, no 2, pp 154-155. (See Appendix A4).

Chapter 7/study 5 has been presented as a poster at a Birmingham City University Faculty Research Day (14 March 2024) (See Appendix A5).

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LIST OF ABBREVIATIONS

ACT:	Acceptance and Commitment Therapy
AAQ-II:	Action and Acceptance Questionnaire - II
BI-AAQ-5:	The Body Image Acceptance and Action Questionnaire – Short form
BIPS:	Body Image in Pregnancy Scale
BMI:	Body Mass Index
DEBQ:	Dutch Eating Behaviour Questionnaire
EE	Emotional Eating
FFMQ:	Five-Facet Mindfulness Questionnaire
GQ:	Grazing Questionnaire
GWG:	Gestational Weight Gain
HCP:	Healthcare Professional
IVF:	Invitro-Fertilisation
MEBS:	Mindful Eating Behaviour Scale
MFA:	Maternal-Fetal Attachment
NHS:	National Health Service
NICE:	National Institute of Clinical Excellence
RE	Restrained Eating
SD:	Standard Deviation
SOCS-S:	Sussex-Oxford Compassion to Self Scale
SOCS-O:	Sussex-Oxford Compassion to Others Scale
SPSS:	Statistical Package for the Social Sciences
WEB-SG:	Weight- and Body-Related Shame and Guilt Scale
WEMWBS:	Warwick-Edinburgh Mental Health and Well-being Scale
WHO:	World Health Organisation

CHAPTER 1: GENERAL INTRODUCTION

1.1. Introduction

Health-impacting behaviours during pregnancy, such as eating, physical activity, smoking, and alcohol consumption, affect women's health and their babies' health (Auerbach et al., 2014; Crozier et al., 2009) and birth outcomes (Vanstone et al., 2020). It is understandable, therefore, that organisations tasked with promoting good health, such as NICE (National Institute for Health and Care Excellence) in the UK, have created guidelines outlining recommended health behaviours for pregnancy, such as healthy eating, exercise, and stopping both smoking and alcohol consumption (Olander et al., 2018). Pregnancy as a life event has been posited in health psychology as a 'teachable moment' for health behaviour change (Lawson & Flocke, 2009). Subsequently, lifestyle change interventions have been created to take advantage of this potential opportunity to improve health behaviours (Olander et al., 2016; Zinsser et al., 2020). Interventions are actions or strategies designed to improve individuals' health behaviours (Hawe, 2015). Health-impairing behaviours during pregnancy such as smoking and drinking alcohol are now well understood to be harmful (Bickerstaff et al., 2012; Mamluk et al., 2017). The guidelines around smoking and alcohol consumption in pregnancy are now very clear: both should be avoided altogether (Grant et al., 2019). However, there is more to health behaviour in pregnancy than simply refraining from smoking or drinking alcohol. Weight-related health behaviours such as eating and exercising during pregnancy can impact on pregnancy and birth outcomes too (Rogozińska et al., 2017; Vanstone et al., 2020) and have lifelong consequences for the health of women and their babies (Morris et al., 2020). The average excessive GWG has been rising in recent years, (Meyer et al., 2024) and the impacts on health and birth outcomes are well-researched (Dodd et al., 2014). Gaining excessive weight in pregnancy poses a challenge to the health systems in England because these factors have been linked to poorer birth outcomes (Siega-Riz et al.,

2020) and to long-term health problems for women and their babies (Mohd-Shukri et al., 2015). Unlike other health behaviours such as smoking and drinking alcohol, pregnant women cannot avoid eating. Therefore, specific guidelines and interventions relating to GWG are increasingly important and necessary when weight gained in pregnancy, especially when not lost post-pregnancy, can impact so profoundly on women and their babies' health (Mohd-Shukri et al., 2015). Specific guidelines and interventions relating to eating behaviour and GWG are increasingly important and necessary when excessive weight gain is linked with future health outcomes for women and babies (Mohd-Shukri et al., 2015). In general, interventions to prevent excessive GWG have focused on food intake rather than on the psychological aspects of eating such as how and why people eat (Bijlholt et al., 2020). Interventions that focus only on dietary habits and PA have been found to be unsuccessful in preventing excessive GWG and further examination of the psychological mechanisms of eating is needed (Skouteris et al., 2010). Mindfulness-based concepts, which include self-compassion, have been explored and revealed a strong connection with well-being and healthy behaviours during pregnancy (Corbally & Wilkinson, 2021; Dhillon et al., 2017; Maagh et al., 2023). Self-compassion can positively impact on health behaviour by reducing emotional distress and fostering healthier responses to negative emotions. As a result individuals are more likely to engage in health behaviours that enhance well-being such as healthy eating and regular exercise, and avoid health-impairing behaviours such as smoking and drinking alcohol (Sirois et al., 2015). Another approach to eating is to consider the way people pay attention to the act of eating itself. Mindful eating, described as the non-judgmental and sustained attention on the sensory elements of eating (Mantzios, 2023), has been associated in helping individuals better manage their weight through developing a healthy relationship with food (Barbosa et al., 2020, p.14) and could be beneficial in addressing problematic eating behaviours in pregnancy (Hutchinson et al., 2017). However,

to date no studies have examined mindful eating and GWG (Bijlholt et al., 2020). Mindful eating has also been shown to go beyond improvements to eating, and has also shown improvements in general well-being (Khan & Zadeh, 2014; Shaw & Cassidy, 2022). To better understand mindful eating, it is necessary to explore both the literature around mindfulness-based concepts from which mindful eating was conceptualised (Mantzios, 2023) as well as consider eating behaviours more specifically, which are both covered later in this chapter.

Another psychological construct associated with health behaviour in pregnancy with little consideration given in the literature to its impact on eating behaviours is ‘maternal fetal-attachment’ (MFA), which describes the bond between a mother and her unborn baby. A woman’s relationship with her unborn baby and her changing body is multifaceted (Malus et al., 2014) and can contribute to body image issues, which are also closely associated with well-being (Duncombe et al., 2008), eating behaviours (Winter, 2016), and GWG (Mehta et al., 2011). Maternal-fetal attachment and body image are discussed later in this chapter.

Much of the literature around pregnancy and health behaviour also cites pregnancy as an ideal time for lifestyle changes to prevent longer-term obesity or weight issues because women are more focused on their dietary intake and more motivated to make changes to their diet (Hillier & Olander, 2017). It is worthwhile exploring this assertion further and to review the literature around pregnancy as a ‘teachable moment’ (Phelan, 2010).

1.2. Pregnancy as a Teachable Moment for Health Behaviour Change

In the field of health psychology a teachable moment is an event in a person’s life where there is an opportunity to make a positive change in health behaviour such as quitting smoking or eating more healthily (Lawson & Flocke, 2009). Pregnancy is seen as a crucial life event and is often considered a prime opportunity for initiating health behaviour changes (Atkinson et al., 2016) and pregnancy interventions have been created to take advantage of

this potential opportunity (Zinsser et al., 2020). Pregnancy as a teachable moment has been explored in the research since the early 1980s across a range of lifestyle related health behaviours such as smoking (McBride et al., 2003), alcohol consumption (Olander et al., 2016) as well as diet and exercise (Rogozińska et al., 2017). In the literature, pregnancy is described as a particularly powerful teachable moment (Phelan, 2010) because women may be especially motivated to improve their health (Olander et al., 2018). During pregnancy women also have increased contact with Healthcare Professionals (HCPs) (Atkinson et al., 2016) who can promote positive lifestyle changes (Olander et al., 2016). The research by Olander and colleagues (2018) found that behaviour change in pregnancy is especially complex due to the quantity and involvedness of behaviour change required of pregnant women. Pregnancy may involve the cessation of previous behaviours (i.e. smoking or drinking alcohol), the maintenance of existing behaviours (i.e. healthy diet and exercise) and the initiation of new behaviours (i.e. taking folic acid and pregnancy vitamins). It is still not well understood why some behaviours change for some women during pregnancy without the need for intervention. For some women behaviour change occurs with a positive pregnancy test, where they are influenced by societal views of acceptable pregnancy behaviours (Atkinson et al., 2016). It is essential to identify what behaviour changes women are more likely to make without intervention and where women may need more help to change their behaviours, so that support and interventions can be more targeted (Hillier et al., 2017). The existence of numerous pregnancy interventions designed to address excessive GWG in particular (Rogozińska et al., 2017) is evidence that although pregnancy may be sufficient to drive behaviour change for some women, the challenges in engaging in effective, sustained behaviour change are not well understood.

1.3. Health Behaviour Change Interventions

In general, some behaviours are easy to define as healthy or unhealthy, presenting a clear differential between them. For example, smoking, drinking alcohol and having a sedentary lifestyle are considered unhealthy behaviours both amongst the public and academics (Lazzeri et al., 2014; Tobias et al., 2007) including during pregnancy (Auerbach et al., 2014). Health-impairing behaviours during pregnancy such as smoking and drinking alcohol are now well-documented as being harmful to the growing fetus (Bickerstaff et al., 2012; Mamluk et al., 2017). The guidelines around smoking and alcohol consumption in pregnancy are currently clear: both should be avoided altogether (Grant, et al., 2019). A scoping review of antenatal behaviour change interventions (Zinsser et al., 2020) found that interventions ranged from single issues, such as smoking, to broader health and lifestyle practices that included diet and exercise. The review concluded that the effectiveness of pregnancy behaviour change interventions was variable. The review found that most interventions focused on education alone, and that they did not contribute any significant changes to behaviour. However, when interventions include psychological and behavioural elements, such as counselling, the interventions were more effective (Zinsser et al., 2020). Weight-related behaviours, such as eating, are more difficult to manage and any advice needs to be well-considered, because unlike the advice for smoking and drinking alcohol, total abstinence is not possible. Further complexities are added because pregnancy significantly increases the risk of a raised BMI five years post birth for pregnant women compared to women who have never given birth (Davis et al., 2021). These factors provide additional rationale to the importance of addressing excessive GWG not only to mitigate the risks associated with excessive GWG during pregnancy and its impact on birth outcomes (Rogozińska et al., 2017; Vanstone et al., 2020) but also due to the longer-term implications on health (Morris et al., 2020).

1.4. Gestational Weight Gain (GWG)

There are currently no international guidelines for GWG and most national guidance follows the US Institute of Medicine (IOM) recommendations (Rasmussen et al., 2009), which are based on observational studies from high income countries (WHO, 2024). However, in February 2024, the World Health Organisation (WHO) called for global data on GWG to address this gap. This emphasises the seriousness of the risks associated with excessive GWG and the pressing need for further research in this field. Despite the majority of European countries publishing guidance on the recommended levels of GWG (WHO, 2016), there are no equivalent specific recommendations for pregnant women in the UK, including for women who start pregnancy with a raised BMI (Nascimento et al., 2011; Peacock et al., 2020). The Institute of Medicine (IOM) sets out guidelines for expected GWG and are based on different BMI levels (Rasmussen et al., 2009), which many countries around the world follow. Although the UK's National Institute for Health and Care Excellence (NICE) and the Royal College of Obstetricians and Gynaecologists (RCOG) have published public health guidelines for pregnant women and healthcare professionals (HCPs) who care for them (NICE, 2010), the guidance is vague and lacks specificity. In summary, the national guideline states that pregnant women should exercise and eat a healthy diet (Heery et al., 2016) and that restricting calorific intake (i.e., dieting) is not advised. It does also state that midwives should dispel the myth of "eating for two" and that no extra calories are needed until the last trimester, when only an extra 200 calories are recommended. However, beyond this the guidance is nebulous and undefined. Whilst midwives are instructed to dispel myths about 'eating for two', other guidance provided to midwives is unclear, such as "discuss eating habits" or "advise pregnant women that a healthy diet and exercise is beneficial for them and their unborn baby" (NICE, 2010). This has resulted in maternity services across the UK interpreting this guidance and creating their own local guidelines, which are grounded in

the medical model of care with a focus on risk, rather than following the national model of an “individualised partnership approach to care” (Goddard, 2023, p5). In the literature, excessive GWG is characterised as weight gain above the recommended levels outlined in national guidelines (Kapadia et al., 2014), which are based on the IOM guidelines. Since the UK does not state any weight gain recommendations, this is also potentially problematic for midwives and the women in their care because ‘excessive’ is not adequately defined. This adds further complexity to the discussion around optimal pregnancy weight gain in the UK. However, for purposes of this thesis, the term excessive GWG is used to reflect its use in the relevant literature.

1.5. BMI and Health

For decades BMI has not only been used to indicate healthy verses unhealthy body size (Prentice & Jebb, 2001) but also as a proxy for health and healthy behaviours (Gutin, 2018). However, issues can arise when BMI is *misused* as a substitute measure for health behaviour, because it is loaded with assumptions and stereotypes about individuals and contributes to societal discrimination and weight stigma (Lee, 2020; Nutter et al., 2024), including during pregnancy (Incollingo Rodriguez et al., 2020). There is also inconclusive evidence of the role of BMI in GWG and excessive GWG has not been exclusively linked to BMI (Schenk et al., 2024). However, the US guidelines for recommended weight gain are based on BMI. Moreover, many of the interventions designed to address GWG select women based on their BMI, often set at a BMI of 30 and above, and only women with a BMI above 30 are signposted for additional support to manage their GWG (i-WIP, 2017). This is also in fact the same recommendation outlined by the NICE public health guideline (NICE, 2022). Evidence shows that excessive GWG can be a factor irrespective of pre-pregnancy BMI (Meyer et al., 2024) and, therefore, using BMI may not be the most appropriate screening criteria. The wealth of evidence linking BMI with unhealthful outcomes in pregnancy cannot

be ignored when half of all maternal deaths during the perinatal period are amongst women with a raised BMI ('Saving Mothers' Lives', 2011). However, the inherent implication that all individuals with a BMI above 30 engage in unhealthy behaviours or that all those with a 'normal' BMI only engage in healthy behaviours, is not founded in the general research. Many individuals with an 'unhealthy' BMI can engage in many types of behaviours that would be considered healthy (Gutin et al., 2021). In pregnancy, both BMI and excessive GWG are associated with poorer outcomes, but they are independent issues and excessive GWG is a rising problem, regardless of pre-pregnancy BMI (Meyer et al., 2024). Therefore, the BMI-centred myopic thinking used to address the growing challenge of excessive GWG may be limiting the opportunity to identify pregnant women who could benefit from additional support. Assessing specific health behaviours affected by pregnancy and associated with weight gain, and identifying potential moderating psychological factors is crucial to deepen knowledge and understanding and inform effective interventions and to provide a more holistic and balanced approach.

1.6. Interventions to Address GWG

To address the issue of excessive GWG, many interventions have been developed over many decades to help pregnant women manage their weight gain during pregnancy (Walker et al., 2018). Interventions have involved lifestyle counselling about healthy eating and regular exercise alongside routine antenatal care (Kunath et al., 2019). These may involve motivational talks by midwives as well as physical and nutritional activities in addition to usual antenatal care (Gyllenstein et al., 2021). While clinical trials have shown that these interventions can limit excessive weight gain, their impact on birth outcomes remains inconclusive (i-WIP, 2017; Teede et al., 2022). These interventions have also faced challenges in effectively translating into community-based programmes, such as fewer resources, competing goals and a lack of expertise compared to clinical settings (Balis &

Houghtaling, 2023). As a result, ongoing research aims to develop approaches that can be successfully applied in non-clinical settings, such as focusing on specifically defined at-risk groups (Walker et al., 2018).

Recent systematic reviews and meta-analyses of weight-related behaviour intervention studies based on diet and/or exercise have been conducted to assess the effectiveness of different approaches (Cantor et al., 2021; i-WIP, 2017; Teede et al., 2022). The meta-analysis of 117 clinical trials of antenatal diet and physical activity-based interventions (Teede et al., 2022) concluded that interventions were effective in preventing excessive GWG and showed benefits for maternal and neonatal outcomes such as lowering the risk of gestational diabetes mellitus (GDM), caesarean births, gestational diabetes and preterm delivery. However, the outcomes varied across the interventions, largely because the intervention components and delivery varied considerably. A meta-analysis of 60 random-controlled trials of diet, physical activity (PA) and lifestyle interventions (Walker et al., 2018) also found that interventions prevented excessive GWG but the authors were unable to make any recommendations relating to the optimal components of effective interventions regarding timing, setting or the ‘ideal’ pregnancy diet. A meta-analysis of 36 worldwide randomised trials of diet and PA based interventions (Rogozinksa et al., 2017) also found that diet and PA interventions did significantly prevent excessive GWG and the risk of caesarean birth but found no strong evidence of any other effect on pregnancy or birth outcomes. Finally, a systematic review of diet, exercise, and/or behavioural counselling interventions (Cantor et al., 2021) reviewed 68 studies and concluded that interventions can limit GWG and reduce the risk of some maternal and neonatal outcomes such as GDM, emergency caesarean birth, and higher birth weights in infants. However, studies have not determined which interventional elements provide the most effective outcomes and there is no optimum duration, frequency, intensity, setting, or diet type for interventions (Walker et al., 2018).

However, it does appear that interventions based around PA alone to manage GWG are less effective at helping women maintain GWG within a healthy range (Du et al., 2019; Šćepanović & Hrvatin, 2020) compared with those that contain a dietary/eating element (Hillier & Olander, 2017). Many of the dietary approaches used in interventions targeting GWG focus almost entirely on dietary food intake and nutritional education (Garmendia et al., 2015; Vieten et al., 2018), despite the evidence that there is no recommended optimal diet for pregnancy (Walker et al., 2018). Interventions designed to target GWG through targeting dietary intake and physical exercise have shown mixed results across different pre-pregnancy BMI groups, with only a few impacting most women gaining excessive weight (de Jersey et al., 2017). Notwithstanding calls from researchers and the IOM to include psychological factors in interventions to address these known limitations of dietary and education-based programmes (B. Hill et al., 2013; Matthews et al., 2018), until recently little was known about the impacts of psychological factors on health behaviours that contribute to GWG (Omidvar et al., 2018). Studies examining psychological factors that contribute to GWG are beginning to emerge in the field and there is growing evidence that psychological distress is associated with excessive GWG. The term ‘psychological distress’ is used in this thesis to include anxiety, depression, stress and other mood disorders common during pregnancy (Obrochta et al., 2020).

More recently researchers have been examining how these factors lead to excessive GWG and how these factors can be applied in interventions to protect against it (Zinsser et al., 2020). The 2009 IOM report (Rasmussen et al., 2009) concluded that stress and depression may be associated with both excessive and inadequate GWG for women. Kubo et al. (2017) found that excessive and inadequate GWG was linked to stress in women with a diagnosis of with GDM who had a pre-pregnancy BMI within a normal range. They surmised that the GDM diagnosis may have contributed to their stress, which impacted on their GWG.

Hartley et al. (2015) observed a link between GWG and depression but not with stress or anxiety showing that even when exploring psychological factors and GWG, there are no clear conclusions. The differences in these findings may be explained because studies used different BMI categories to group women, and studies varied in terms of diversity of their samples. There was also no consensus on how different psychosocial factors were defined or measured which may also explain the differences. To address these discrepancies, researchers have sought to examine how psychological factors impact on GWG, for example by exploring problematic eating behaviours such as overeating in response to psychological distress (Braig et al., 2020). Eating due to cravings and in response to negative emotions caused by psychological distress is also common during pregnancy, and can lead to excessive GWG (Athar et al., 2021). Unlike smoking and drinking alcohol, eating is essential for survival and most people eat every day, which means making choices about what to eat, how much and when, potentially many times a day (Meule & Vögele, 2013). Consequently, adjusting eating behaviours during pregnancy to manage weight gain is more complex in pregnancy compared to other stages in life (Donofry et al., 2021). During pregnancy women face additional challenges due to significant psychological, physical and social changes (Costa et al., 2021), and psychosocial adjustments they make to their life in readiness for motherhood, (Salmela-Aro et al., 2001). These changes can lead to psychological distress, such as anxiety, depression, stress and other mood disorders, which are common in pregnancy (Obrochta et al., 2020) and are adversely associated with maternal health and well-being (Daalderop et al., 2023). Psychological distress is also adversely associated with maternal health and well-being, and subsequently affecting weight-related eating behaviours (Braig et al., 2020) and normal eating behaviours can become disrupted (Donofry et al., 2021).

1.7. Eating Behaviour - General Theory and Research

The central physiological and biological mechanisms of eating and the theory of appetite regulation, an aspect of eating behaviour, involves the brain's control over whether we eat or not, and when we stop. This involves the release of hormones to manage hunger cues and signal cessation of eating (Dovey, 2010). However, this aspect of eating behaviour is beyond the scope of this thesis. To distinguish between the physiological and biological with the psychological aspects of eating, this thesis is concerned with what are sometimes referred to in the literature as eating behaviour 'styles' (Coulthard et al., 2021; Ouwens et al., 2015). In particular, this thesis discusses eating behaviour styles that are most associated with weight gain, both within non-pregnant and pregnant populations. Quantitative research uses psychometric questionnaires to measure different aspects of eating habits, such as an individual's different styles or preferences of eating. The survey questions used in these instruments are also used to inform interview schedules in qualitative research. It is these aspects of eating that can be measured through questionnaires and explored through interview that this thesis is focused on.

Whilst there is general consensus over what constitutes healthy and unhealthy behaviours, whether during pregnancy or not (Auerbach et al., 2014; Lazzeri et al., 2014), determining what is healthy or unhealthy eating is more complex. Defining and discussing in any depth the concept of healthy eating is beyond the scope of this thesis. However, it needs stating that people interpret healthy eating differently (Bisogni et al., 2012). Healthcare professionals who engage in discussions about healthy eating are almost exclusively focused on healthy 'diet', which focusses on the food itself rather than on the action of eating (Black et al., 2014). When healthy eating is used in the literature it often refers to diet, and often talks about 'good' and 'bad' foods (Walter et al., 2017) and healthy eating often relates to a diet that is balanced, moderate and varied (Croll et al., 2001; Lake et al., 2007). NICE include

the terms ‘eating habits’, ‘healthy diet’ and ‘healthy eating’ in their public health guidance for pregnant women and HCPs interchangeably (NICE, 2010), with no reference to specific eating behaviour styles. In the literature, the term ‘healthy eating’ is used as a synonym for ‘healthy diet’ usually referring only to food and nutrition rather than different styles of eating (Krebs-Smith et al., 2018; Reedy et al., 2018). In this thesis, the terms ‘eating behaviour’ and ‘eating behaviours’ are used throughout to mean styles of eating, and not diet. The thesis uses the term ‘healthy eating’ to encompass both diet and eating behaviours. This approach is taken because differentiating between the two is challenging and this usage aligns with the common perspective of the public and HCPs. Various styles of eating behaviours will be discussed individually and in detail.

1.8. Eating Behaviour in Pregnancy

Eating disorders and disordered eating have attracted extensive attention in the pregnancy research (Chan et al., 2019; Tanofsky-Kraff & Yanovski, 2004), although there are other problematic eating behaviours that are linked with excessive weight gain in pregnancy, that do not reach the threshold for these labels (Daundasekara et al., 2017; Donofry et al., 2021). Eating disorders are diagnosed mental health conditions that are included in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (APA, 2013) and include anorexia nervosa, bulimia nervosa, and more recently added, binge eating disorder (Pike & Striegel-Moore, 1997). Disordered eating includes types of eating that do not meet the criteria for DSM-5 but can still impact negatively on health outcomes such as food addiction (Wiss & Brewerton, 2017) and orthorexia, an obsession with healthy eating (Koven & Abry, 2015) and night eating (Gallant et al., 2012). However, there is another group of eating behaviours, distinct from eating disorders or disordered eating (Bijlholt et al., 2020), but are nonetheless problematic for health (Meule & Vögele, 2013). One such eating behaviour is emotional eating, which is associated with weight gain in the general population

(Koenders & van Strien, 2011), and can lead to excessive weight gain in women after pregnancy (Jakkola et al., 2013). In a response to psychological distress individuals overeat or eat food denser in calories from fat and/or sugar (Van Strien et al, 2012). Emotional eating involves using the comforting and soothing effects of certain foods to ease emotional distress (Onur et al., 2022). During pregnancy, women encounter rapid physical and psychological changes, which can result in emotional eating (Altazan et al., 2019).

While there is growing research into emotional eating in pregnancy, little attention has been paid to another type of eating that can lead to weight gain in the general population, grazing (Lane & Szab, 2013). This eating behaviour involves uncontrolled and repetitive consumption of small amounts of food, often high in fat and/or sugar. Most research on grazing has been conducted with bariatric patients, showing a connection between this style of eating with weight gain (Mantzios, Egan, Bahia, et al., 2018). Although the research on grazing is limited and entirely unexplored in pregnancy, it has been identified as a potentially problematic eating behaviour. Due to its association with weight gain, grazing should be considered in a study investigating eating behaviours during pregnancy.

1.9. Mindfulness-Based Concepts

In the research, mindfulness has been found to be linked with health behaviours through enhancing emotional regulation, specifically by reducing the long-term effects of negative emotions through acceptance of negative experiences, rather than denial or avoidance of them (Sala et al., 2020). As a result, mindfulness can help individuals engage in health-promoting behaviours even when experiencing negative emotions. Many reasons why mindfulness may assist in engaging with healthier eating behaviours have been posited in the literature (Gilbert & Waltz, 2010). An increased awareness on any impulses to eat certain unhealthy foods may be at play. Moreover, maintaining new healthy eating habits can be challenging, and mindfulness could help reduce negative emotions associated with such

circumstances. Mindfulness may also reduce the propensity to react to negative thoughts and feelings by engaging in problematic eating behaviours.

The effectiveness of these concepts to change health behaviour during pregnancy and early motherhood has also been investigated, including in relation to eating behaviours and GWG (Bijlholt et al., 2020; Hennelly et al., 2020; Lindsay et al., 2021). Studies have found that mindfulness-based interventions can protect against psychological distress in pregnancy, such as depression (Corbally & Wilkinson, 2021), anxiety and stress (Dhillon et al., 2017) and are associated with reducing weight-related eating behaviours, such as emotional eating (Carbonneau et al., 2021; Fekete et al., 2021; Thompson & Bardone-Cone, 2022).

1.10. Self-Compassion as a Concept

Self-compassion refers to being compassionate towards oneself (Neff, 2003) and comprises of three components: mindfulness, self-kindness and common humanity. Self-kindness is being kind to oneself in the face of failure. Common humanity is accepting that failure is simply a part of the human experience. Mindfulness is paying attention in the present moment without judgement (Kabat-Zinn, 2003). Self-compassion is positively correlated with health-promoting behaviour in non-pregnant populations (Holden et al., 2021) including healthy eating (Mantzios & Giannou, 2018), and taking regular exercise (Campion & Glover, 2016). Research shows that self-compassionate individuals are less likely to be affected by life's setbacks and failings that can impact on well-being (Zessin et al., 2015) and can cope better with life's challenges (Ewert et al., 2021). As well as impacting on psychological and physical health, self-compassion-based interventions have been found to be effective at enhancing self-regulation of health behaviours including eating behaviours in the general population (Biber & Ellis 2019). They are also more likely to pursue healthy behaviours even in difficult circumstances, such as following a healthy eating plan despite coping with work or family stressors (Neff & Tirsch, 2013). A compassion-based programme

found that self-compassion protected against psychological distress in a group of non-pregnant trainee psychologists (Finlay-Jones et al., 2017). Since the authors concluded their programme was low-cost, accessible and flexible enough to adapt for different groups they developed a protocol to test the programme with pregnant women (Finlay-Jones et al., 2020). However, there has been no publication of further research on this. Research into self-compassion and psychological well-being in pregnancy is growing and results are promising. Studies have found women with higher levels of self-compassion experience fewer depressive symptoms during pregnancy and early motherhood (Felder et al., 2016; Fourianalistyawati et al., 2018; Pereira et al., 2016). Self-compassion is also linked with better physical health (Phillips & Hine, 2021). Although this has not been explored in pregnancy, this is especially relevant considering the prevalence of physical conditions in pregnancy, such as nausea and pelvic pain, which can cause physical distress (Nissen et al., 2023). Self-compassion is emerging in the literature around eating behaviours in pregnancy, albeit mainly focused on disordered eating (Baskin et al., 2021) and the postnatal period (Carbonneau et al., 2021; Thompson & Bardone-Cone, 2022). Baskin et al. (2021) found that self-compassion played a protective role in disordered eating behaviour during pregnancy. They concluded that self-compassion and eating behaviour warranted further investigation especially to develop potential antenatal interventions. Furthermore, Fekete and colleagues (2021) discovered that self-compassion was associated with less emotional eating in pregnancy. Since pregnancy is a time of both psychological and physical changes, and a time when eating habits can be affected, the research offers promising signs that self-compassion can improve psychological and physical health, as well as protect against some weight-related eating behaviours, and therefore, demands additional research. Whilst the research around self-compassion and eating behaviours in pregnancy is increasing, it still trails behind the extensive attention mindfulness has garnered.

1.11. Mindfulness as a Concept

Mindfulness has risen sharply in popularity amongst researchers exploring psychological well-being in pregnancy (Corbally & Wilkinson, 2021; Dhillon et al., 2017; Matvienko-Sikar et al., 2016a). Overall, the research suggests that interventions seem to be most effective in populations at risk of psychological distress or who already engage in problematic eating behaviours. The research findings from various studies among clinical populations suggest that mindfulness-based interventions can offer protection against certain psychological issues such as depression (Corbally & Wilkinson, 2021; Dhillon et al., 2017; Matvienko-Sikar et al., 2016a). Another systematic review conducted by Taylor and colleagues (2016) did not find significant improvements in depression, anxiety, or stress post-intervention, nor any enhancements in mindfulness. They concluded that their results were limited because the participants were already a healthy population. This supports other research that suggests interventions do not always transfer well from clinical to community settings (Walker et al., 2018), which can result from lack of engagement with some parts of the community (Glasgow & Estabrooks, 2018) and complex socioeconomic factors such as deprivation, food access and housing issues (Balis et al., 2023). Similar limitations were observed with a mindfulness-based intervention to effect weight-related behaviour change (Hennelly et al., 2020). The results from this UK-based study were mixed. Hennelly and colleagues (2020) concluded that although the intervention was feasible and cost-effective, any behaviour change noted was insignificant because the participants were healthy, with a normal BMI, and relatively homogenous in terms of socio-demographic criteria. In the US, Vieten et al. (2018) developed the ‘Mindful Moms’ training intervention. The eight-week programme recruited 110 participants and was found to be feasible and effective at reducing stress and preventing overeating for women at high risk of excessive GWG. These studies

strongly suggest that interventions are most effective when targeted at individuals who are already in an at-risk group.

1.12. Psychological Flexibility as a Concept

Psychological flexibility is another mindfulness-based construct associated with psychological well-being and health behaviours (Doorley et al., 2020). Psychological flexibility is the ability to adapt thoughts, feelings and behaviours to changing situations, especially in light of difficult circumstances (Whittingham & Mitchell, 2021). It has formed the basis for weight-related behaviour change interventions in the general population and is rooted in Acceptance and Commitment Therapy (ACT) (Niemeier et al., 2012). There are six elements of ACT - acceptance, being in the present moment, understanding of oneself, personal values and taking action in line with those values and finally, cognitive defusion, a technique to help people manage uncomfortable thoughts and feelings. Similar to self-compassion and mindfulness, there is a noticeable correlation between psychological flexibility and well-being (Kashdan & Rottenberg, 2010) and interventions have shown the ability to enhance psychological flexibility (Whittingham et al., 2021). While there is limited literature on psychological flexibility during pregnancy, Vieten et al. (2018) previously incorporated ACT into their mindfulness-based intervention, and Waters et al. (2020) developed the first intervention specifically based on ACT, targeting the improvement of psychological flexibility and well-being in women with mood disorders. Over eight weeks group therapy sessions were run by clinical staff trained in ACT. Women at risk of mood related conditions were taught techniques intended to improve psychological flexibility. The exercises were mapped across the six elements of ACT. Sessions were also tailored to the perinatal period including mindfulness exercises that focused on the unborn baby, childbirth and early motherhood) and modules that focused on self-compassion. There is much cross-over between ACT, mindfulness and self-compassion and the techniques also improved

mindfulness and self-compassion. While the intervention has shown its effectiveness, feasibility, and safety, the need for trained therapists may present potential challenges in terms of costs and delivery. Nevertheless, it could be an effective approach for strengthening mindfulness (Levin et al., 2013) and self-compassion (Yadavaia et al., 2014).

There is some overlap between these psychological factors, as self-compassion and psychological flexibility have mindfulness as the common component, and all three can be modified through mindfulness training and practice (Neff et al., 2013). In relation to its use in eating behaviours, the practice of mindfulness brings an awareness not only to what is eaten but why it is eaten in relation to physical and psychological motivations for eating (Warren et al., 2017). Through the application of mindfulness the phrase ‘mindful eating’ has been coined and is described as “a non-judgmental awareness of physical and emotional sensations while eating” (Framson et al., p2., 2009). A systematic review of mindful eating and weight-related programmes (Fuentes Artiles et al., 2019) found significant reduction in weight and were found to be more effective with longer-term results than alternative diets in non-pregnant populations. Overall, the programmes were cost-effective and offered a practical approach, although the heterogeneity of participants and duration of the interventions were noted as limitations to address in future research. O’Reilly et al. (2014) conducted a literature review into the efficacy of mindfulness-based interventions for managing obesity-related eating behaviours. They found that the interventions that were most successful included mindful eating training. The ‘Mindful Moms’ intervention (Vieten et al., 2018) also included mindful eating training and this may have contributed to its success.

Pregnancy is an especially interesting time to research the concept of compassion, both to others and to oneself, because the fetus is neither ‘self’, nor entirely ‘other’ as it is not yet a “real individual” (Cranley, 1981, p. 284). Moreover, many interventions are based around the premise that behaviour change is driven by a woman’s desire to reduce risk to her

unborn baby and consequently many interventions focus on risk-related advice (Olander et al., 2018). Moreover, many local maternity services approaches to gestational weight management are risk-focused, especially around risks to the fetus (Goddard et al., 2023). However, Ross (2012) found that as a woman's perception of risk to her baby reduced so did her adherence to healthy behaviours. This suggests that approaches that focus solely on the risk to the baby are not sufficient for behavioural change. Since many interventions focus on the mother's perspective of her baby's health (Olander et al., 2018), the mother-fetus relationship and its impact on health practices warrant further investigation.

1.13. Maternal-Fetal Attachment and Health Behaviour

According to attachment theory (Bowlby, 2005), a secure adult attachment brings mental and physical health benefits and is a predictor of health-promoting behaviours in the general population (Navarro-Gil et al., 2021). Lindgren (2001) suggested that the strength of the bond between mother and her unborn baby (the fetus), referred to in the literature as 'maternal fetal-attachment' (MFA) is the strongest predictor of healthy behaviour during pregnancy. MFA describes how a pregnant woman thinks and feels about her unborn baby (Van den Bergh & Simons, 2009) and has been the subject of research for over five decades (Barone et al., 2014). Studies examining MFA and broader health behaviour have largely found a positive relationship (Jussila et al., 2020; Lindgren, 2001), although the research into MFA and eating behaviour remains under-researched (Alhusen et al., 2012). The smoking in pregnancy research found that a stronger MFA was more likely associated with smoking cessation (Jussila et al., 2020) and lower MFA was linked with more smoking during pregnancy (Magee et al., 2014). An intervention that used ultrasound exposure to enhance MFA found a significant and negative relationship with alcohol consumption (Sedgmen et al., 2006). Other studies have also discovered that MFA can be improved through interventions such as listening to baby's heartbeat, or using mindfulness techniques (Shreffler et al., 2019).

A more recent study, The FinnBrain Birth Cohort Study (Jussila et al., 2020) investigated the impact of MFA on smoking during pregnancy but, unlike Lindgren (2001), they only found a relationship on one subscale ‘giving of oneself’. This particular element of MFA relates to a woman feeling that the pregnancy is worth her effort, that she accepts the changes to her body, and is willing and motivated to adopt healthy behaviour for the sake of her baby’s health (Jussila et al., 2020). A woman’s relationship with her changing body, her unborn baby and with her pre-pregnancy self is complex (Malus et al., 2014) and is influenced by the physical changes to the body necessary for the growing fetus (Stafford et al., 2024). The changes to the body during pregnancy can affect body image, which is also associated with well-being (Duncombe et al., 2008), eating behaviours (Winter, 2016), and GWG (Mehta et al., 2011). Therefore, it is worthwhile to closely examine body image and its relationships with mindfulness-based concepts in the pregnant population.

1.14. Body Image in Pregnancy

Body image refers to an individual’s internal perception of their external appearance and includes one’s thoughts, beliefs and behaviours (Roomruangwong et al., 2017), and body image can be positive or negative (Uçar et al., 2018). Satisfaction with one’s own body image, also referred to as ‘body image acceptance’ in the literature (Przybyła-Basista et al., 2020), is especially complex during pregnancy due to rapid changes in a relatively short space of time (Watson et al., 2015) and is a particularly risky time for developing disruptions to body image for some women (Nagl et al., 2019). Body image can be affected by a perceived view of the ideal body shape and size (Watson et al., 2015). Images in the media can put pressure on women regarding what normal pregnant bodies should look like (Winter, 2016). This can lead to women becoming dissatisfied with their own bodies and holding a distorted view of their own body, known as ‘body image disturbance’ (Nagl et al., 2019).

Body image disturbance is strongly associated with eating behaviours, such as restrained eating, which can impact on the growing fetus and the newborn infant (Winter, 2016). Body image disturbance is also associated with emotional eating that can lead to excessive GWG (Roomruangwong et al., 2017). Self-compassion is known to have a protective effect on body image in non-pregnant populations (Braun et al., 2016) but its effect on body image in pregnancy is largely unresearched. The literature around the relationship between body image and maternal-fetal attachment has shown inconsistent findings. Haedt and Keel (2007) found no relationship between maternal-fetal attachment and body image whilst Malus et al. (2014) found a negative relationship. Nagl et al. (2019) found a link between body image disturbance, impaired MFA and weight regulation problems including with restrained eating. Some findings suggest an improved body image in pregnancy suggesting that some women relax their body image ideals during pregnancy (Nagl et al., 2019). The variations in these findings regarding MFA and body image may be explained by the complex and unique nature of the rapid bodily changes that take place during pregnancy. They may also be affected by factors such as whether pregnancies were planned or not, which may not have been captured. Studies may also have used different methodologies, which could also account for the inconclusive findings. Due to stigma associated with weight, body image disturbance is also linked with shame and guilt (Thompson et al., 2003). As a result, HCPs may be reluctant to engage in weight management conversations for fear of exacerbating feelings of shame or guilt, which increase anxiety for pregnant women (Atkinson, 2018), adding a further complexity to the development of services and interventions, including in relation to the settings and context in which those services are delivered.

1.15. Weight Stigma, Ethnicity and Clinical Settings

The use of negative stereotypes and discrimination of individuals based on their body weight or size is known as ‘weight stigma’ (Puhl et al., 2020). Healthcare settings are commonly associated with weight stigma where HCPs may display weight bias and discriminatory behaviour (Talumaa et al., 2022), especially towards individuals with a raised BMI or with problematic eating behaviours (Remmert et al., 2019). Midwives are the main maternity care provider to pregnant women in the UK and are tasked with discussions about healthy lifestyles and may refer pregnant women to specialised services including weight management services (Atkinson, et al., 2017). However, midwives may not be prioritising discussions about health behaviour change during antenatal discussions with women (Talbot et al., 2024). Research has identified some challenges to midwife-led referrals to interventions and the delivery of interventions within clinical settings (Furness et al., 2014; Goddard et al., 2023). Additionally, some midwives display weight bias or endorse weight-related stereotypes (Hodgkinson et al., 2017), and as a result enact weight stigma (Ryan et al., 2022). As already discussed, midwives may evade discussions about weight altogether due to the fear of enacting weight stigma but also to avoid their own discomfort (Atkinson, 2018; Christenson et al., 2018). Weight stigma and how it impacts on both women and their midwives adds a further complication when considering intervention development. Most of the research around GWG includes mainly White women (Rogozinksa et al., 2017). It is important to note, however, that Black and Asian women are more likely to have adverse birth outcomes compared to White women (Mahase, 2021). Black women are four times more likely than White women to die during childbirth, demonstrating significant health inequalities dependent on ethnicity. There is also evidence that racial inequality exists in health care settings (Hobbs, 2018) and women from racially minoritized communities are less likely to access medical services (Adamson et al., 2003). Although one meta-analysis of 36

clinical trials did not identify any differences in GWG in respect of ethnicity (i-WIP, 2017), it is crucial to include women from different ethnic communities into the research because any intervention developed from its findings must strive to be applicable and suitable to women of all cultural and ethnic backgrounds.

1.16. Research Aims and Rationale

This research project had three main aims. First, to examine the impact of pregnancy on well-being, eating behaviours and body image, and the potential role of psychological factors in addressing poor well-being, problematic eating and body image issues. The study investigated the relationships between self-compassion, mindfulness, psychological flexibility, maternal-fetal-attachment, with body image and eating behaviours linked with GWG. The research project focusses on eating behaviours rather than diet or nutrition. Second, to explore the idea of pregnancy as a ‘teachable moment’ to help better understand health behaviour change during pregnancy (Olander et al., 2018) and to examine why some women find it more difficult to change their health behaviour. Using McBride et al.’s (2003) teachable moment model as a conceptual framework, the research also explored factors that may identify and help those at risk of engaging in behaviours associated with excessive GWG. Third, this project aimed to ensure the inclusion of women from racially-minoritised groups in the research population to address the underrepresentation of these women in pregnancy research, an issue which persists despite evidence that these populations often face greater health disparities (MMBRACE-UK, 2022).

The research findings will be used to develop recommendations for maternity service providers to promote healthy weight management behaviours. Although there has been significant growth in pregnancy-related research in some areas, such as mindfulness, there is still limited understanding of the role of self-compassion and psychological flexibility in pregnancy, as well as certain eating behaviours, such as grazing. Given the challenge facing

maternity services in promoting overall health and well-being during pregnancy in England (Mohd-Shukri et al., 2015), where a significant and growing number of women experience weight-related health concerns (NHS England (2021), pregnancy presents an ideal opportunity to encourage positive health behaviour change (Lawson et al., 2009; Shloim et al., 2015). Therefore, research is necessary to build upon previous work by exploring key concepts that could be applied in services and interventions to promote positive health behaviours throughout pregnancy and early motherhood.

1.17. Contributions to the Existing Research

This research project aimed to address three knowledge gaps. First, it sought to explore the concept of pregnancy as a teachable moment and why it may not lead to sustained behaviour change for all women. Second, it looked at the impact of pregnancy on well-being, eating behaviours and body image, and the role of psychological factors such as self-compassion, mindfulness, psychological flexibility and maternal-fetal attachment in protecting against poor well-being, problematic eating behaviours and body image issues. Third, the study aimed to reach a diverse population, including Black and Asian women, who are at increased risk of adverse birth outcomes compared to White women (Mahase, 2021). Black women are an under-researched population in pregnancy studies (Edge, 2008) and this research project aimed to address this research deficit. The study has enriched our understanding of health behaviour during pregnancy and has contributed to the existing body of evidence regarding mindfulness-based concepts that can promote a healthy pregnancy.

1.18. Overview of the Thesis

Pregnancy is suggested in the literature as a particularly powerful ‘teachable moment’ for health behaviour change and may be an opportune time for women to eat more healthily. During pregnancy, women are more motivated to change their health behaviours and they also have more contact than usual with healthcare professionals. During antenatal care,

midwives have the opportunity to discuss healthy eating with the pregnant women in their care. However, there are barriers to midwives engaging in effective conversations about healthy eating that can bring about sustainable behaviour change. Moreover, factors unique to pregnancy can make behaviour change and sustaining healthy eating especially difficult for women. Pregnancy can be a time of psychological vulnerability when conditions such as anxiety are common, contributing to the challenges faced by women who want to engage in healthy behaviours and eat more healthily. Problematic eating behaviours, such as emotional eating, can lead to excessive gestational weight gain (GWG), which can impact on pregnancy and birth outcomes for mother and baby. It can also lead to a higher BMI in subsequent pregnancies and other longer-term health conditions, such as diabetes and obesity in later life. Pregnancy is also a unique experience in relation to body image. At a time when the body is undergoing rapid change, diverging away from normal body weight, size and shape, body image can become distorted and can contribute to poorer psychological wellbeing and problematic eating. The existence of pregnancy interventions is evidence that pregnancy alone for some women is not sufficient to drive behaviour change to help manage weight gain. Clinical interventions have been shown to limit excessive weight gain, but they face challenges when translating into community-based programmes. Whilst the research is limited, evidence shows that mindfulness-based concepts have a strong association with well-being, body image and weight-related eating behaviours during pregnancy. Exploring mindfulness-based concepts, maternal-fetal attachment, problematic eating, and body and weight-related issues during pregnancy would provide a deeper understanding of how these constructs affect pregnant women. Such research would also offer further insight into how these elements can be used in antenatal care to support women's mental well-being and help them sustain healthy eating behaviours. The current thesis presents a series of mixed methodology research studies, aiming to explore mindfulness-based concepts, maternal-fetal-

attachment, body image and weight-related eating behaviours from the perspectives of women and midwives. This research will also provide further understanding to determine the potential application of these constructs in future intervention development.

1.19. Chapter Outline of the Thesis

The following chapter (Chapter 2) outlines the methodological approaches taken to address the aims and research questions of this thesis. This chapter also includes a reflexivity element outlining the researcher's positionality in carrying out this research project. Within the individual research study chapters (Chapter 3-7), the initial chapters – the quantitative phase of the thesis – utilises a cross-sectional study design to collecting and analysing quantitative data (Chapter 3-5), and later chapters – the qualitative phase – uses an interview study design to data collection and analysis (Chapters 6-7). Chapter 3 explores the interrelationships between mindfulness-based concepts, maternal-fetal attachment and psychological well-being in pregnancy and examined whether mindfulness-based concepts may be a suitable target to improve well-being during pregnancy especially for women with low maternal-fetal attachment or those living with a medical condition. Chapter 4 examines how mindfulness-based concepts and maternal-fetal attachment relate to emotional eating, restrained eating, grazing, and the consumption of sugar and fat during pregnancy. Chapter 5 investigates mindfulness-based concepts and maternal-fetal attachment in relation to body image in pregnancy, exploring body image flexibility and weight and body related shame and guilt. Chapter 6 explores women's eating behaviours and body image before and during pregnancy, and in early motherhood. Chapter 7 explores the experiences of midwives in providing healthy lifestyle advice to pregnant women in their care. The final chapter, Chapter 9, provides an overview and synthesis of the findings from this thesis and presents them in light of the previous literature. This chapter also acknowledges some limitations of this

research and discusses some implications for clinical practice and recommendations for future research.

CHAPTER 2: GENERAL METHODOLOGY

2.1. Introduction

In Chapter 2, an overview of the methods used within this thesis is provided. Five research studies were conducted (Chapters 3-7) to meet the research aims. This chapter details ethical considerations, methodologies, measures and data analysis strategies across all studies. Further detail about the methods used in each study can be found in individual study chapters. For this PhD research project, an explanatory mixed methods design (Creswell & Plano Clark, 2017) was chosen across two stages, beginning with a quantitative phase and followed by a qualitative phase. Whilst qualitative and quantitative methods offer different research approaches, they provide complementary knowledge that adds a deeper and broader understanding of the research questions (Navarrete, 2009). These different yet complementary approaches have been combined in this project to further develop the knowledge in the field. Phase one comprises three cross-sectional studies (studies 1-3) and phase two comprises two interview studies with new mothers (study 4) and with NHS midwives (study 5).

2.2. Research Project Planning and Design

The studies were carefully ordered so early findings could inform later phases. For example, the interrelationships identified between the variables in Chapters 3-5 informed the interview schedules for the qualitative studies in Chapter 6-7. A mixed methods approach is becoming increasingly acknowledged and accepted in the psychology field to fully explore “complex psychological phenomena” (Rohleder, & Lyons, 2014, p1). Employing a mixed methods design allowed the researcher to investigate the interrelationships between the mindfulness-based concepts and maternal-fetal attachment with eating behaviour and body image during pregnancy to determine which aspects warranted deeper examination both with new mothers and midwives so that the research could inform the future development of recommendations

for maternity providers. This PhD research project aimed to explore mindfulness-based concepts, maternal-fetal-attachment, body image and weight-related eating behaviours from the perspectives of women and midwives. This research will also provide further understanding to determine the potential application of these constructs in future intervention development. Cross-sectional and interview-based approaches were used to explore psychological factors that influence well-being, body image and eating behaviours during pregnancy, whilst providing deeper insights into the impact of pregnancy on women and the key role midwives play in helping women to navigate the challenges pregnancy can bring.

Phase one used a quantitative methodology to investigate self-compassion, mindfulness, psychological flexibility, maternal-fetal attachment, wellbeing, eating behaviours and body image in pregnancy. A cross-sectional study design was the most appropriate choice to address the research questions in the quantitative studies due to its efficiency for exploring new areas of research (Spector, 2019). In addition the design is an inexpensive and time-saving approach to collecting quantitative data (Setia, 2016). The online method was used due to the opportunity it offers to recruit a suitable sample size at a low cost whilst ensuring anonymity of all participants (Rice et al., 2017). Phase two was informed by the results from phase one and used qualitative methods to explore the experiences of women during pregnancy and to investigate midwives' experiences of their interactions with pregnant women about health behaviour. A qualitative approach supports intensive data collection methods that provide richer data from a purposive sample (Navarrete, 2009), which was needed in order to answer the research questions.

2.3. Research Philosophy

In this thesis, the researcher has adopted a philosophical foundation based on an interpretivist research paradigm. The researcher has taken a relativist view ontologically, with an interpretivist stance at the epistemological level. The aim was to understand how

psychological concepts influenced women's behaviours and experiences during pregnancy within the UK maternity and health services context, and to explore the role and experiences of NHS midwives in the realm of pregnancy health behaviour. Although this research used a mixed methodology, the researcher's stance is that their world view did not change during the research and remained consistent during the quantitative research studies. Many mixed methods projects describe that a viewpoint can change over the lifespan of a research project, for example, from positivist to interpretivist (Holmes, 2020). Others advocate for a single flexible paradigm such as pragmatism, which takes a 'whatever works best to answer the research question' approach (Adu et al., 2022). Academics suggest that this single, flexible approach provides a bridge between the contradictory positions of positivism and interpretivism in mixed methodologies (Kaushik & Walsh, 2019). However, this does not adequately reflect the researcher's view, which is that a world view is largely unchanging, or that whilst the methods used were flexible in this thesis, the underpinning paradigm did not shift. Although quantitative methods were used in the design of the project to identify key concepts and interrelationships for further qualitative exploration, the method does not change the underlying researcher's philosophy. Further discussion of the researcher's positionality is discussed in section 2.9 of this chapter.

2.4. Quantitative Measures

This section outlines the measures used across the quantitative phase of the project (Chapters 3-5). The internal consistency has been tested and Cronbach's alpha scores for each scale used are reported in the individual study chapters. The scales used throughout this phase can be found in Appendix C1.

(a) Sussex-Oxford Compassion for the Self Scale - (SOCS-S; Gu & Strauss, 2019):

The SOCS-S consists of 20 items to measure compassion towards oneself.

Participants are instructed to indicate how they feel about each statement using a

5-point Likert scale ranging from 1 (definitely yes) to 5 (definitely no). The scale has five subscales: *recognising suffering* (SOCS-SRS) (e.g., I'm good at recognising when I'm feeling distressed), *understanding universality of suffering* (SOCS-SUS) (e.g., I understand that everyone experiences suffering at some point in their lives), *feeling for the person suffering* (SOCS-SFS) (e.g., When I'm going through a difficult time, I feel kindly towards myself), *for tolerating uncomfortable feelings* (SOCS-STF) (e.g., When I'm upset, I try to stay open to my feelings rather than avoid them), and *act to alleviate suffering* (SOCS-SAS) (e.g., I try to make myself feel better when I'm distressed, even if I can't do anything about the cause). The internal consistency of the SOCS-S has been tested and reported in the individual study chapters. Scale can be found in Appendix C1.

(b) Sussex-Oxford Compassion for Others Scale - (SOCS-O; Gu & Strauss, 2019):

The SOCS-O consists of 20 items to measure compassion towards others. Participants are instructed to indicate how they feel about each statement using a 5-point Likert scale ranging from 1 (definitely yes) to 5 (definitely no). The scale has five subscales: *recognising suffering* (SOCS-ORS) (e.g., I recognize when other people are feeling distressed without them having to tell me), *understanding universality of suffering* (SOCS-OUS) (e.g., I understand that everyone experiences suffering at some point in their lives), *feeling for the person suffering* (SOCS-OFS) (e.g., When someone is going through a difficult time, I feel kindly towards them), *for tolerating uncomfortable feelings* (SOCS-OTF) (e.g., When someone else is upset, I try to stay open to their feelings rather than avoid them), and *act to alleviate suffering* (SOCS-OAS) (e.g., When others are struggling, I try to do things that would be helpful). Scale can be found in Appendix C1.

SOCS-O and SOCS-S are newly developed instruments and are beginning to be used in health psychology (Kim & Seo, 2021) due to their good psychometric properties making them appropriate scales to use for this study. Prior to this research, these scales have not been used in a pregnant population as far as the researcher is aware.

- (c) Five Facet Mindfulness Questionnaire - Short form (*FFMQ-SF*; *Bohlmeijer et al., 2011*): The FFMQ-SF consists of 24 items to measure mindfulness. Participants are instructed to respond to statements about their everyday experiences (e.g., I'm good at finding words to describe my feelings) using a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The scale has five subscales: observing (e.g., When I take a shower or a bath, I stay alert to the sensations of the water on my body), describing (e.g., I'm good at finding words to describe my feelings), *acting with awareness* (e.g., I don't pay attention to what I'm doing because I'm daydreaming, worrying or otherwise distracted), *non-judging* (e.g., When I have distressing thoughts or images, I 'step back' and am aware of the thought or image without getting taken over by it) and *non-reacting* (e.g., I believe some of my thoughts are abnormal or bad and I shouldn't think that way). A mindfulness-specific scale is included in the proposed study for validation purposes since self-compassion, compassion and maternal-fetal attachment have not been researched together previously, and the findings may not perform as expected for this population. The internal consistency of the FFMQ-SF has been tested and reported in the individual study chapters. Questionnaire can be found in Appendix C1.
- (d) Acceptance and Action Questionnaire – (*AAQ-II*; *Bond et al., 2011*): The AAQ-II consists of 7 items to measure psychological flexibility. Participants are instructed

to respond to statements about their thoughts and feelings using a 7-point Likert scale ranging from 1 (never true) to 7 (always true). Statements include “I’m afraid of my feelings”, “emotions cause problems in my life” and “worries get in the way of my success”. The AAQ-II was included because it is a useful predictor of health behaviour (Doorley et al., 2020; Kashdan & Rottenberg, 2010). The internal consistency of the AAQ-II has been tested and reported in the individual study chapters. Questionnaire can be found in Appendix C1.

- (e) Maternal-Fetal Attachment Scale - (*MFAS*; *Cranley, 1981*): The MFAS consists of 24 items and measures a mother’s thoughts and feelings towards her unborn baby. Participants are instructed to indicate how true each statement is for them using a 5-point Likert scale ranging from 1 (not at all true) to 5 (always true). The scale has five subscales: differentiating from self (e.g., I enjoy watching my tummy jiggle as the baby kicks inside), interacting with the fetus, (e.g., I talk to my unborn baby), attributing characteristics to the fetus (e.g., I’m really looking forward to seeing what the baby looks like), giving of self (e.g., I feel all the trouble of being pregnant is worth it), and role taking (e.g., I picture myself feeding my baby). MFAS is the most widely used scale for measuring the mother-fetus relationship (McNamara et al., 2019). The internal consistency of the MFAS has been tested and reported in the individual study chapters. Scale can be found in Appendix C1.

- (f) Prenatal Health Behaviours Scale – Revised (PHBS-R; Deluca & Lobel, 1995): The PHBS-R consists of 24 items and measures healthy and unhealthy behaviours during pregnancy. Using a 5-point Likert scale ranging from 0 (never) to 4 (very often), participants are instructed to indicate how often they undertook particular behaviours (e.g., In the last two weeks, how often did you: exercise for at least 15

minutes, get enough sleep, eat fatty or oily foods?). The internal consistency of the *PHBS-R* has been tested and reported in Chapter 3. Scale can be found in Appendix C1.

- (g) Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant, et al., 2007)). The WEMWBS consists of 14 items and measures positive mental wellbeing. Participants are instructed to indicate how often they experienced different feelings over the previous two weeks using a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time). Statements include “I’ve been feeling optimistic about the future”, “I’ve been feeling interested in new things” and “I’ve been feeling cheerful”. The WEMWBS is a well-established scale for measuring general psychological wellbeing and has been used within pregnant populations (Steen et al., 2015). The internal consistency of the WEMWBS has been tested and reported in Chapter 3. Scale can be found in Appendix C1.
- (h) Mindful Eating Behavior Scale - (*MEBS; Winkens et al., 2018*): The MEBS consists of 20 items to measure mindful eating across four mindful eating domains (Focused Eating, Awareness of Hunger and Satiety Cues, Eating with Awareness, and Eating without Distraction). Participants are instructed to respond to statements about their eating behaviours using a 5-point Likert scale ranging from 1 (never) to 5 (very often). The scale is made up of four domains: mindful eating domain one - focused eating (MED1) (e.g., I notice flavours and textures when I’m eating my food), mindful eating domain two – awareness of hunger and satiety cues (MED2) (e.g., I trust my body to tell me when to eat), mindful eating domain three - eating with awareness (MED3) (e.g., I snack without being aware that I am eating) and mindful eating domain four - eating without distraction

(MED4) (e.g., My thoughts tend to wander while I am eating). The internal consistency of the domains has been tested and reported in Chapter 4. Scale can be found in Appendix C1.

- (i) Dutch Eating Behaviour Scale - (*DEBQ*; *van Strien et al., 1986*): The DEBQ consists of three subscales to measure eating behaviours. This study used two of the subscales, emotional eating (e.g., “do you have the desire to eat when you are feeling lonely?”) and restrained eating (e.g., “do you watch exactly what you eat?”) which consist of 23 items. Participants are instructed to respond to statements about their eating behaviours using a 5-point Likert scale ranging from 1 (never) to 5 (very often). The internal consistency for the subscales has been tested and reported in Chapter 4. Scale can be found in Appendix C1.
- (j) The Dietary Fat and free Sugar–Short Questionnaire - (*DFS-SF*; *Francis & Stevenson, 2013*): The DFS-SF consists of 25 items to measure fat and sugar consumption. Participants are instructed to indicate the frequency they ate certain high fat and high sugar foods over the past year using a 5-point Likert scale ranging from 1 (less than one per month) to 5 (5+ per week). This scale provides an easy, low-cost measure for assessing dietary intake of fat and sugar (Francis & Stevenson, 2021). The internal consistency for the DSF-SF has been tested and reported in Chapter 4. Questionnaire can be found in Appendix C1.
- (k) Grazing Questionnaire - (*GQ*; *Lane & Szabó, 2013*): The GQ consists of eight items to measure psychological flexibility. Participants are instructed to respond to statements about their thought and behaviours relating to grazing using a 5-point Likert scale ranging from 0 (never) to 4 (all of the time). Grazing is explained as “repeatedly eating small quantities of food” and included questions such as “do you find yourself picking at or nibbling food continuously?” and

“have you ever felt compelled or driven to eat, even when not hungry?”. Grazing behaviour is strongly associated with obesity (Lane & Szabó, 2018) so this was an appropriate scale to include in this study. The internal consistency for the GQ has been tested and reported in Chapter 4. Questionnaire can be found in Appendix C1.

- (1) Body Image in Pregnancy Scale - (*BIPS; Watson et al., 2017*): The BIPS consists of 36 items to measure body image during pregnancy. Participants are instructed to respond to statements about different aspects of body image using a Likert scale. The scale is divided into seven subscales: F1 preoccupation with physical appearance (e.g., I spent a lot of time thinking about my pregnancy weight), F2 dissatisfaction with strength-related aspects of one’s body (e.g., How happy are you with your muscle tone during pregnancy?), F3 dissatisfaction with complexion (e.g., How happy are you with your facial complexion during pregnancy?), F4 sexual attractiveness (e.g., I prefer not to let my partner see my naked pregnant body), F5 prioritisation of appearance over function (e.g., I think more about how my pregnant body feels than how it looks), F6 appearance related to behavioural avoidance (e.g., Have you avoided exercising during pregnancy because your flesh might wobble?) and F7 dissatisfaction with body parts (e.g., How happy are you with your ankles during pregnancy?). The scale reference points were different for each subscale. For subscale relating to body dissatisfaction ranges from 1 (completely dissatisfied) to 5 (completely satisfied). For subscale relating to body image importance the scale ranges from 1 (strongly disagree) to 5 (strongly agree). For subscale relating to engagement with appearance related behaviours the scale ranges from 1 (never engaged) to 5

(constantly engaged). The internal consistency for the BIPS has been tested and reported in Chapter 5. Scale can be found in Appendix C1.

- (m) Body Image Acceptance and Action Questionnaire-5 - (*BI-AAQ-5*; Basarkod et al., 2018): The BI-AAQ-5 consists of 5 items to measure body image flexibility. Participants are instructed to respond to statements about different aspects of their body using a 7-point Likert scale ranging from 1 (never true) to 7 (always true). Statements include “worrying about my weight makes it difficult for me to live a life that I value” and “I will have better control over my life if I can control my negative thoughts about my body”. The internal consistency for the BI-AAQ-5 has been tested and reported in Chapter 5. Questionnaire can be found in Appendix C1.
- (n) Weight- and Body-Related Shame and Guilt Scale - (*WEB-SG*; Conradt et al., 2007): The WEB-SG consists of 12 items to measure shame and guilt in relation to weight and body. These variables are referred to *weight/body-related shame* and/or *guilt* throughout this chapter. Participants are instructed to respond to statements about feelings of guilt and shame in relation to their body and weight using a 5-point Likert scale from 0 (never) to 4 (always). Statements relating to shame include “when I am in a situation where others can see my body (e.g. pool, changing room) I feel ashamed” and “I avoid exerting myself physically in front of others because I feel embarrassed”. Statements relating to guilt include “when I have eaten more than I want, I experience feelings of guilt” and “when I can’t manage to work out physically, I feel guilty”. The internal consistency for the WEB-SG has been tested and reported in Chapter 5. Scale can be found in Appendix C1.

2.5. Data Analyses for Quantitative Phase

SPSS v28 statistical software, was used to analyse the data in all quantitative studies. Descriptive statistics were run to determine characteristics/background information, such as age, height, weight, ethnicity and education, relationship, employment statuses of the participants, trimester groups (Trimester one: 4-12 weeks; Trimester two: 13-27 weeks; Trimester three: 28+ weeks). An ANOVA test was used to compare the mean scores of participants across the three groups. An independent t-test was used to compare the mean scores of participants who were expecting their first baby (primiparous women) with those who were on a subsequent pregnancy (multiparous women), and to compare those who were living with a medical condition to those who were not.

In studies one, two and three (Chapters 3-5) Pearson's bivariate correlations were conducted to assess the associations between the predictor and outcome variables. A multiple regression analysis was also conducted in study one (Chapter 3) to explore the predictability of mindfulness and maternal-fetal attachment on well-being. Preliminary analyses and visual inspections ensured that the necessary assumptions for this analysis were met. Next, in all three quantitative studies, the variables were tested as moderators between the predictor and outcome variables. Moderation was selected because it allowed for the assessment of each moderator variable's contribution to the strength and direction of the relationship between the predictor (independent) and outcome (dependent) variables. Moderation analysis is widely used in social sciences and in healthy psychology research, and is helpful in determining the type of people who may be affected by variables of potential use in intervention (A. F. Hayes, 2018). Preliminary analyses and visual inspections of scatterplots and graphs ensured that the necessary assumptions of normality, linearity, multicollinearity and homoscedasticity for this analysis were met.

2.6. Qualitative Measures

In Chapter 6, a demographic questionnaire was created on Microsoft Forms and the link sent to participants to collect background information, such as age, height, weight, ethnicity as well as their relationship, education and employment status. An interview schedule (see Appendix D1) was developed informed by the results of the quantitative research phase and the literature. Example questions covered topics such as pregnancy as a good time to change health behaviours (“Do you think that pregnancy is a good time for making changes in how you take care of your health? and “Did you feel that you had to make changes because you were pregnant?”), thinking about coping with stress and low mood (“What did you do to help you cope with these emotions?” and “Would you ever use food or exercise to help you cope with stress or low mood?”), thinking about eating during pregnancy (“Talk to me about your eating when you were pregnant” and “were your eating habits different during pregnancy?”), and considering body and weight changes (“Did you ever think about the fact that your body and weight were going to change during pregnancy?” and “How did you feel about that?”). A debrief sheet was emailed to participants after the interview took part.

In Chapter 7, a demographic questionnaire was created on QuestionPro and the link sent to participants to collect background information, such as band, job role, work setting, years as a midwife and ethnicity. An interview schedule (see Appendix D2) was developed informed by the results of the quantitative research phase, the findings from study four (Chapter 6) and the literature. Example questions covered topics such as signposting and referrals (“What do you do if you are concerned about a woman’s weight gain?” and “Are there any resources you have that you might use with a woman in relation to healthy lifestyles”), communication, training and guidance (“Do you have a specific way of opening a discussion about healthy lifestyle that you use?” and “What are some of the challenges in

discussing a healthy lifestyle with women in your clinic?”), and their beliefs and perceptions about weight (“What do you think are the main reasons women gain too much weight during pregnancy?” and “To what extent do you think midwives own personal experiences, knowledge and beliefs about healthy living impacts on how they might deliver lifestyle information to the women they see?”).

2.7. Reflexive Thematic Analysis for Qualitative Phase

In Chapters 6-7, interviews on Microsoft Teams were recorded and transcribed by Microsoft Teams. Interviews conducted in person were recorded on a university recording device. Transcripts generated by Microsoft teams were cleaned and checked against the recording. All interviews were transcribed using the orthographic method, which capture participants’ words *verbatim* to maintain all original meanings (Howitt, 2011). Reflexive Thematic Analysis (RTA) (Braun et al., 2021) was used in Chapters 6-7 to analyse the interview transcription data, which is a robust and valid framework for coding and analysing qualitative data and has been widely used across health and wellbeing research (Braun & Clarke, 2014). An inductive approach was used in Chapter 6, and both a deductive and inductive approach was used in Chapter 7 applying an interpretivist perspective and subjectivist orientation to analysing and interpreting the data (Braun & Clarke, 2006). This philosophical framework was used to capture the participants’ meanings within the context of their experiences. RTA was used to capture meaning-based, interpretative stories (Braun & Clark, 2022). Theoretically the analysis should reflect patterns from across the dataset ensuring participant’s voices remain central to the narrative that runs through all themes generated from the data. From a practical perspective this means that RTA allows the inclusion of a variety of participant experiences within a single theme, synchronously unifying diverse participant experiences whilst remaining true to the central essence of the theme, as well as ensuring all themes tell a cohesive story from the dataset. RTA emphasises reflexivity as a

central tool for the researcher in the analysis of data and is a key focus in this method, which allows the theoretical framework of RTA to be meaningfully translated into good qualitative research practice (Braun & Clarke, 2019). Braun and Clarke's updated six phases (previously named 'steps' in an earlier version) were used to interpret the data and generate themes to answer the research questions. Semantic and latent themes were developed to retain the surface meaning of participants' words as well as offering a deeper understanding of participants' experiences (Braun et al., 2006). Maintaining the original meanings of participant's words meant the researcher could discover themes inductively from the data prior to any interpretation taking place. The systematic yet flexible approach of RTA (Braun & Clarke, 2023) provided an applicable framework to analyse the data, create codes and generate themes. The researcher's active role and positionality in the qualitative phase of the PhD is discussed in section 2.9 of this chapter. RTA has been used in studies with similar data collection methods (Furness et al., 2011; Olander et al., 2011). The orthographic method of transcription was used to transcribe the audio recordings capturing participants' words verbatim (Howitt, 2016) to safeguard all original meanings (Campion & Glover, 2016). Initially, with the research questions in mind, the researcher read through the transcripts twice to become familiar with the data, making initial notes of possible areas of interest. The researcher used NVivo to conduct the initial coding of the data. Codes were then reviewed to assist in the creation of themes. Codes were reviewed, grouped and regrouped a number of times during this process. Using NVivo the researcher reviewed the transcripts line-by-line, highlighting words and phrases of particular interest. The researcher repeated this step whilst noting words or phrases that related to the research questions. In NVivo, initial codes were assigned to these highlighted words and phrases, including ideas that were either a repeated pattern within a single transcript or ideas that appeared across the dataset. Once the codes were refined and grouped together, themes were generated. Finally, the themes were

subsequently reviewed by the researcher and a title was ascribed that best captures the extracts and codes included within that theme.

2.8. Ethical Considerations

Ethical approval was granted for each of the research studies (Chapters 3-7) from the Business, Law and Social Sciences Ethical Review Committee of Birmingham City University and Barnardo's Ethical Review Committee. Research also complied with the British Psychological Society Code of Ethics and Conduct (2021). The ethical approval letters for each research study can be found from Appendix B1 to Appendix B6.

In the quantitative phase, the online surveys included study information and the consent form to participate prior to starting the survey. Participants were also given the opportunity to record a code, which would allow them to withdraw their data at a later stage and retain the anonymity of participation. A strict inclusion criterion ensured all participants were aged eighteen or over. Additional measures were used to minimise any psychological distress by excluding any participant with a current or past serious mental illness diagnosis, any previous experience of a stillbirth or neonatal loss, and for study two, three and four a previous diagnosis of an eating disorder. The criteria were revised for study five to only exclude participants with a diagnosis of an eating disorder within five years. This was to reflect the recovery model of mental disorders (Jacobson & Greenley, 2001), where people with a prior diagnosis of a mental illness can recover. Before joining a study, participants were asked to confirm that they met the eligibility criteria. At the end of the survey or following an interview, participants were provided with debrief information reiterating their right to withdraw and which contained a range of support resources should the participant have experienced any distress during or after the study. Interview transcripts were pseudonymised to protect participant's confidentiality. All data were stored on the university's secure network to adhere to university policies.

2.9. Reflexivity

During this research project my beliefs, or paradigm, as a researcher have not changed and this context informed my research philosophy, which is outlined above (Salvador, 2016). Although this position may be contentious, other researchers have taken a similar view to me in mixed methods project. McChesney and Aldridge (2019) presented a study in which researchers upheld a single ontological and epistemological perspective underpinned by interpretivism throughout a mixed method project. It is argued that positivism and interpretivism exist on a spectrum, and that new qualitative researchers should determine their own place on this spectrum (Ruffa & Evangelista, 2021). My place on this spectrum does not have a label. While ‘post-positivism’ leans towards positivism by definition, there may be a need for an interpretivist equivalent (perhaps ‘pre-interpretivist’), where I would feel comfortable placing myself.

As a researcher, I also recognise my potential impact on the PhD research project design. I am a white, middle-class, heterosexual, non-disabled female who has given birth twice, but is beyond child-bearing age. I appreciate that my positionality will have shaped all aspects of this research project, including sample selection, participant recruitment, the interpretation of the data, and the formation of any meanings extrapolated and creation of themes in the qualitative studies (Palaganas et al., 2017). Regarding my “insider/outsider” positionality as a researcher (Råheim et al., 2016, p. 2), I acknowledge myself as an “outsider” for both qualitative studies. I am older than the participants in study four and, in terms of study five, I am not a medical health professional and I do not have a clinical background. However, given my experience as a Doula and antenatal teacher, which was known by five of the women in study four, and four of the midwives in study five, I have a good understanding of the work of midwives and of pregnancy and maternity services. In addition, I did notice that those midwives who knew my professional background and

experience appeared to talk to me as though I had an awareness of their situation. Whilst I am not in a clinical role, they seemed to acknowledge a shared experience of working in the ‘birth world’ that I think provided me with access to information and comments that I may not have otherwise had. I believe this could have resulted in obtaining data otherwise not possible (Finch, 1984). Recognising any possible power dynamic between myself as the researcher and the participants in study four as a result of my ‘outsider position’ is important (Finch, 1984; Råheim et al., 2016). In order to retain transparency throughout (Galdas, 2017), and to avoid the supposed “Hollywood plot” (Palaganas et al., 2017, p. 435), which falsely identifies positive findings, I reflected repeatedly on my own professional and personal experience. I achieved this by consistently engaging in self-reflection and reflexive practice, utilising audio and written journals, and having regular meetings with my supervisory team to address any potential impact on the findings. Awareness and discussion of any possible assumptions made by me meant that the interpretation of data and any themes generated remained balanced and truly reflected the participants’ perspectives and experiences (Campion & Glover, 2016).

During this PhD, I kept written and audio journals to record my reflexive and reflective thoughts. Extracts from these journals are included below. The diary approach was used to capture my considerations and thought processes throughout the PhD duration but especially at important decision-making moments. This was particularly helpful when making research design plans or considering making changes to them. Reflexivity played a crucial role in enabling me to consider different factors as circumstances changed and when research methodologies shifted from the original study design.

2.10. Extracts from PhD Journal Kept by Researcher

Procrastination: The Enemy of Progress

“I still haven’t started my lit review for my PG cert. I keep putting it off. I am doing everything else other than starting it. My new mantra for the new year has to be not “Just do it”, but “Just start! For god’s sake Helen, just get on with it. It won’t start itself” (Audio journal, 10 November, 2021) (Underlined for emphasis)

I used my audio journal to document my progress. It was a helpful way for me to reflect on how far I had come, as well as consider any changes I needed to make. The strength of having an audio record of my PhD journey, is that not only do I record the words, but also the tone of those spoken words. I can hear the emotion in those words, emotion can be so easily lost in the written word, that is so easily captured and heard in an audio recording. In this extract I can hear the frustration with myself for putting off starting this work, and the annoyance with my procrastination. I can also easily hear in my voice my mood and how it changes throughout. It reflects the up and down emotional journey of my PhD for me. I think the strength of these emotions may have been lost if I had only used a written journal to record my reflective and reflexive journey.

Support, Feedback and Supervision

“I had a face-to-face supervision to go through my moderation data. Working through it on a flipchart has really helped me understand and be clearer on the story the data is telling me. I feel so much more confident now.” (From audio journal, 4 November 2022)

Handling and making sense of quantitative data was not my strength and I had to work very hard at deepening my understanding, especially around moderation. My supervisors recognised this and holding in person sessions to go through this with me helped my understanding and confidence of quantitative data, the analysis, interpretation of the data and building the ‘story’ from the data.

Decision-Making and Adapting Research Plans

“I have reflected on some recent events – a discussion with my community contact and some feedback I received from a professional contact who I had asked to share my study. They both raised similar concerns about only recruiting women who may have had a higher body weight in pregnancy. After discussing this with my supervisors I have decided to include women with a range of BMIs so that all women’s voices are heard. This may also provide me with the opportunity to see if there are any differences or patterns based on BMI.” (From audio journal, 10 January 2023)

Although I did not explicitly state the nature of these concerns in my journal, they related to potentially creating weight stigma by only asking for women with a raised BMI to take part or excluding women from racially-minoritised groups if they did not have a raised BMI. I was able to reflect on the views from those who were helping me recruit participants into my interview study adjust my recruitment accordingly. This decision turned out to be very helpful and contributed to some key findings, which would have been missed if I have persisted with my original plan.

Pilot Interviews and Adapting the Questions

“I realised the power of the pilot interview today. I did two pilots with my last study and tweaked the questions a little, but today I found out how they can potentially uncover a whole, new area that I hadn’t considered myself. My pilot interview with [removed name] uncovered something that I hadn’t even thought about. It was a total revelation. So I have developed a new question to include in future interviews. I am really excited about this new area of discussion for my interviews.” (From audio journal, 12 August 2023)

This was another significant moment for study 5, and consequently lead to some very interesting findings that created a theme for this study. Although I had used pilot studies in a

prior masters' research project and in my previous interview study 4 and had always told my tutees who I supervised for their master's research projects to do one or two pilot interviews to test their interview schedule, it was not until this moment that I really understood the power and usefulness of the pilot interview. I thought I had covered all bases, mainly from reading the literature and informed by my previous research. I used the pilot interview as an opportunity to not only tweak the wording of the interview questions, but also to allow the participant to expand the question areas and this expanded the entire research topic.

Learning from Other Researchers

“Today I had a meeting with another PhD researcher who is doing some research with Barnardo's. She gave me some great ideas of how to recruit for my study and suggested some strategies that worked for her. I don't feel so overwhelmed where to start now, although sounds like most of it is just persistence and keep turning up.”

(From audio journal, 6 June 2023)

During this PhD, I have taken advantage of any and all contacts I meet. I have not been afraid to ask for help and this extract demonstrates how I used contacts of contacts to gain new ideas and strategies to reach potential participants. This particular interaction not only provided me some useful recruitment suggestions, but it also reminded me that recruitment of participants is mainly about persistence, keep showing up, recognising that some trips won't be fruitful, whereas you may stumble on some unexpected places that turn out to be very effective. It reminded me that the challenges of participant recruitment are common in PhD research, and I am not alone. Working with and learning from other PhD students is one of the main pieces of advice I would give to any future PhD student.

CHAPTER 3/STUDY 1: SELF-COMPASSION, MINDFULNESS AND PSYCHOLOGICAL FLEXIBILITY MAY BE EFFECTIVE TARGETS FOR INTERVENTION TO PROMOTE WELL-BEING AND BEHAVIOUR CHANGE DURING PREGNANCY

3.1. Abstract

Background: Pregnancy can be a time of psychological vulnerability when psychological conditions such as anxiety are common. Maternal-fetal attachment has been used as a target for interventions in pregnancy to enhance psychological well-being. Whilst the research is limited, evidence shows that mindfulness-based concepts are associated with better well-being during pregnancy. The present study explored the interrelationships between mindfulness-based concepts, maternal-fetal attachment and psychological well-being in pregnancy and examined whether mindfulness-based concepts may be a suitable target to improve well-being during pregnancy especially for women with low maternal-fetal attachment or those living with a medical condition. **Method:** One hundred and eight pregnant participants between 4- and 39-weeks' gestation completed an online questionnaire to measure their levels of mindfulness, self-compassion, psychological flexibility, maternal-fetal attachment and well-being. **Results:** The study found that women living with a medical condition had significantly higher levels of maternal-fetal attachment and that self-compassion was strongly correlated with well-being. Mindfulness was a predictor of well-being in pregnancy and had a moderating effect on well-being for women with low levels of maternal-fetal attachment. Psychological flexibility and *acting to alleviate suffering* (self-compassion) were also moderators of the relationship between maternal-fetal attachment and well-being and remained stable regardless of maternal-fetal attachment levels. **Conclusions:** Mindfulness, self-compassion and psychological flexibility may be effective targets for intervention to improve psychological well-being, especially amongst women with low levels

of maternal-fetal attachment or those living with a medical condition. Limitations and recommendations for future research are discussed.

3.2. Background

For some women pregnancy can be a positive time in life (Smith et al., 2020) providing a protective barrier against psychological disorders with increased emotional well-being (Dennis et al., 2007). However, for others, pregnancy is a period of increased psychological vulnerability (Barone et al., 2014) when conditions such as anxiety are common (McNamara et al., 2019a). Psychological difficulties, such as anxiety, depression and mood disorders may result in women being less likely to take care of their health (Nicoloso-SantaBarbara et al., 2017). Understanding why some women experience poorer psychological well-being than others has been extensively researched and focuses on factors such as internal psychological traits, stress, social class, employment, income, lifestyle, social support systems and ethnicity, as well as considerations relating to the impending birth (Christian, 2012; Zilcha-Mano, 2017). Consequently, interventions have been developed to improve psychological well-being (Costa et al., 2021; A. L. Finlay-Jones et al., 2020; Vieten et al., 2018). Psychological constructs, such as mindfulness-based concepts in particular, have been examined to establish whether they may provide a buffering effect against these factors (A. L. Finlay-Jones et al., 2020; Vieten et al., 2018).

One psychological construct specifically relevant to pregnancy well-being is concerning a woman's thoughts and feelings towards and interactions with her unborn baby. It has been the subject of research for over five decades (Barone et al., 2014) and is most commonly referred to in the literature as 'maternal-fetal attachment' (MFA) (Cranley, 1981). There has been much debate in the literature during that time relating to defining and measuring this, including whether attachment is an accurate description of the measured concept (Cunen et al., 2017; McNamara et al., 2019a). Aside from recognising the debate

around definitions and the various instruments available to measure MFA, this chapter does not add to this particular discussion, which has been thoroughly covered in the literature (Walsh, 2010). The current study has used Cranley's definition and measure of MFA (Cranley, 1981) for three reasons. First, it is the one that appears most frequently in the literature. Second, this paper is concerned primarily with well-being rather than MFA outcomes. Third, any discussion around definition and measure whilst interesting, does not contribute directly to answering the research questions in this chapter.

Higher levels of MFA have been linked with better psychological well-being in pregnancy (McNamara et al., 2019a) and with health-promoting behaviours (Lindgren, 2001). As a result, this construct has been used as a target for intervention to improve psychological well-being (Abasi et al., 2013) and pregnancy health behaviours (Cunen et al., 2017). The intervention study by Abasi et al. (2013) found that educating women about MFA did improve well-being but their inclusion criteria excluded women with any pregnancy-related psychological problems, women who may be most vulnerable to poor well-being. Mahmoudi et al. (2021) investigated MFA and well-being amongst women with an unplanned pregnancy – a group potentially more likely to experience difficulties developing an attachment to the fetus (Pisoni et al., 2014). Their MFA training did not improve attachment, nor reduce anxiety or depression but it did reduce prenatal distress and worry, which was significant. They concluded that inclusion of a psychological element in the intervention may have impacted more positively on the mother's psychological well-being. Perwitasari et al. (2019) also tested an MFA intervention to improve well-being and although they found that the intervention did reduce depressive symptoms, the results were not significant and outlined some limitations that may have affected the results, such as small sample size, cultural factors and timeframes in the methodology. Both studies suggest that MFA as a target for intervention may help improve MFA itself but has a limiting impact on well-being, especially

amongst vulnerable groups who may already be experiencing poor well-being. In addition to the impacts of an unplanned pregnancy on well-being, a history of pregnancy loss can also impact on psychological well-being during a subsequent pregnancy (Branjerdporn et al., 2021).

Despite the high prevalence of pregnancy loss (Tommy's, 2023), the research on its impact on MFA remains inconclusive. Some studies have found that levels are lower for women who have experienced a previous loss (Armstrong & Hutti, 1998) and that women often delay developing an attachment to their fetus as a form of defence mechanism protecting themselves against another potential loss (Armstrong, 2002; Gaudet et al., 2010) referred to as 'emotional cushioning' (Côté-Arsenault & Donato, 2011). However, other studies have found no significant difference in women who have experienced a loss and those who have not (Branjerdporn et al., 2021; Mehran et al., 2013). Where the literature is clear is that previous pregnancy loss impacts negatively on psychological well-being in a subsequent pregnancy when women experience greater levels of stress (Branjerdporn et al., 2021; Gaudet et al., 2010).

To identify constructs and interventions that could support well-being in this population, one study investigated the associations between MFA and mindfulness (Golmakkani et al., 2021) and found some associations between mindfulness and MFA subscales but did not find any significant relationships between the overall scores. Psychological constructs such as mindfulness-based concepts, inclusive of mindfulness, self-compassion and psychological flexibility have been examined to establish whether they can provide a buffering effect against mood disorders and/or promote well-being (A. L. Finlay-Jones et al., 2020; Vieten et al., 2018) and appear relevant in enhancing the availability of support and interventions during pregnancy. Mindfulness is the purposeful attention to the present moment, accompanied by a non-judgmental awareness, typically practiced through

meditation (Kabat-Zinn, 2003). The research into mindfulness interventions in pregnancy reflects the findings from non-pregnant groups. Mindfulness practice during pregnancy increases psychological well-being, reduces psychological conditions such as anxiety, depression and stress (Dhillon et al., 2017; Pan et al., 2019; Vieten et al., 2018), enhances maternal-fetal bonding (Shreffler et al., 2019) and improves maternal health behaviours (Hennelly et al., 2020). In a systematic review on mindfulness-based pregnancy interventions, Matvienko-Sikar et al. (2016) found that mindfulness practice showed promising results for improving well-being during pregnancy. Despite the methodological differences of the interventions used in the studies included, they concluded that mindfulness-based interventions may be especially beneficial for more vulnerable groups where they are experiencing anxiety and depression.

Another mindfulness-based construct that may helpfully contribute to the field is self-compassion. Self-compassion is defined as being compassionate to oneself at times of struggle, and is comprised of three components: self-kindness, common humanity and mindfulness (Neff et al., 2019). The research into self-compassion as a concept for use in well-being interventions during pregnancy is still in its infancy compared to mindfulness. Felder et al. (2016) investigated depression and anxiety during pregnancy and found significant correlations with self-compassion and concluded that further research is warranted to consider self-compassion as a target for intervention to enhance well-being during pregnancy. Townshend and Caltabiano (2019) also examined depression during pregnancy and researched both self-compassion and mindfulness. They concluded that an intervention targeting the self-compassion component *self-kindness*, and the mindfulness elements *observing* and *acting with awareness* may provide a protective effect against depression in pregnant women. This study strongly indicates that these concepts are distinctive and worthy of equal consideration when studying well-being during pregnancy. Self-compassion

interventions may also be helpful for vulnerable women such as those who have experienced a previous pregnancy loss (Maagh et al., 2023).

Both mindfulness and self-compassion have been shown to enhance well-being and it appears that they may work in slightly different ways. Finlay-Jones et al. (2020) posit that mindfulness-based interventions focus on the awareness and acceptance of feelings without judgement, whilst self-compassion interventions focus on a deliberate intention to change to a positive mindset. These differences may also elicit different outcomes, although it remains unclear which is most effective for improving pregnancy well-being and merits closer examination.

Similarly, psychological flexibility is an emerging mindfulness-based construct associated with psychological well-being and health behaviour but differs in delivery and potential outcomes. Founded in the literature and interventions of Acceptance and Commitment Therapy (ACT), it describes elements such as cognitive defusion, values and commitment that are set to enable behaviour change (S. C. Hayes, 2004). Further explanation of this construct can be found in Chapter 1. Like self-compassion and mindfulness, there is a clear connection between psychological flexibility and well-being (Kashdan & Rottenberg, 2010) and similarly psychological flexibility can be modified through intervention (Whittingham & Mitchell, 2021). The literature around psychological flexibility in pregnancy is limited. Waters et al. (2020) developed a novel intervention for pregnancy using ACT designed to enhance psychological flexibility and manage mood disorders during pregnancy. Although Vieten and Astin (2008) had reviewed ACT as part of the development of their mindfulness-based intervention, Waters et al. were the first to base an intervention specifically around this therapy to promote psychological flexibility and improve well-being in a sample of women with mood disorders. The intervention was effective, feasible and safe, and participants reported finding it helpful for reducing their mood and anxiety symptoms.

However, it was delivered by trained therapists, which may have cost and delivery implications in some healthcare and community settings.

Considering the association between MFA and well-being combined with the inconsistent findings in the literature, continued investigation of MFA as a suitable target for an intervention still has considerable merit. The potential limitations of improving MFA give credence to the need for deeper exploration of other psychological constructs such as self-compassion, mindfulness and psychological flexibility, which may provide more effective targets to improve maternal well-being and health behaviour. The current study aimed to answer three research questions. First, are mindfulness, self-compassion, psychological flexibility and MFA associated with well-being in pregnancy? Second, which psychological constructs provide a buffering effect against poor well-being in pregnancy? Third, can mindfulness-based constructs be effective targets to improve well-being in pregnancy? The research findings were used to inform the design of the qualitative phase of the PhD project.

3.3. Method

Study Design

A cross-sectional design was used to collect data on multiple variables from participants at a single point in time (see Chapter 2, p.42 for more details). The aim of study one was to investigate the relationship between the predictor variables: scores of self-compassion, compassion to others, mindfulness, maternal-fetal attachment, psychological flexibility and the outcome variables: general mental health and well-being and pre-natal health behaviours. A link to the survey in Qualtrics and a participant recruitment poster were shared on social media to obtain quantitative data. A strict inclusion and exclusion criterion ensured all participants were aged eighteen or over, did not have a current or past serious mental illness diagnosis, or any previous experience of a stillbirth or neonatal loss.

Participants

A total of 148 pregnant English-speaking participants were recruited through social media and professional contacts, which included antenatal teachers, pregnancy yoga teachers, doulas and other birth professionals. Participants were excluded for having missing data ($n = 30$) and a further ten participants were excluded due to not fitting the inclusion criteria: not pregnant ($n = 4$), male ($n = 1$), non-UK residents ($n = 2$), previous stillbirth or neonatal loss ($n = 3$). A power analysis determined that, with alpha set at .05 and power set at .08, 102 participants were required to detect a medium effect size (Cohen, 1992). Therefore, data from a total of one hundred and eight female participants ($n = 108$) were included in the study. Participants were not offered any incentive for taking part. Participants recorded demographic information (see Table 3.1). A full demographics table can be found in Appendix C1.

Materials

A demographics questionnaire (see supplementary materials) was included to collect data relating to age, gender, parity, gestation, due date, height and weight (to calculate BMI), ethnicity, previous and existing medical conditions, spousal/partner status, employment status, and the highest level of education attained. Refer to Chapter 2 (p. 43-50) for further details of the following measures.

Table 3.1. Participant demographic information (study 1)

FACTOR	<i>n</i>	%
Gestation (by trimester)		
1st trimester (4-12 weeks)	16	15
2nd trimester (13-27 weeks)	45	42
3rd trimester (28+ weeks)	47	43
Parity		
1st pregnancy	48	44
NOT 1st pregnancy	60	56
Health Conditions		
Yes	18	17
No	89	83
Prefer not to say	1	0.9
Ethnicity		
White	94	88.7
Asian, Black and Mixed backgrounds	14	11
Medical Conditions (most frequently reported)		
Anxiety/Depression		5
Autoimmune thyroiditis		1
Asthma		1
Gestational Diabetes		3
Hyperemesis		2

Sussex-Oxford Compassion for the Self Scale - (*SOCS-S*; Gu & Strauss, 2019): The *SOCS-S* consists of 20 items to measure self-compassion using a 5-point Likert scale ranging

from 1 (definitely yes) to 5 (definitely no). The present study produced a Cronbach's alpha of .9 for the full SOCS-S scale demonstrating excellent internal consistency and reliability for this sample, with scores of .78 for *recognising suffering* (SOCS-SRS), .76 for *understanding universality of suffering* (SOCS-SUS), .8 for *feeling for the person suffering* (SOCS-SFS), .71 for *tolerating uncomfortable feelings* (SOCS-STF), and .8 for *acting to alleviate suffering* (SOCS-SAS).

Sussex-Oxford Compassion for Others Scale - (SOCS-O; Gu & Strauss, 2019): The SOCS-O consists of 20 items to measure compassion towards others using a 5-point Likert scale ranging from 1 (definitely yes) to 5 (definitely no). The present study produced a Cronbach's alpha of .93 for the full SOCS-O scale demonstrating excellent internal consistency and reliability for this sample, with scores of .89 for *recognising suffering* (SOCS-ORS), .88 for *understanding universality of suffering* (SOCS-OUS), .76 for *feeling for the person suffering* (SOCS-OFS), .62 for *tolerating uncomfortable feelings* (SOCS-OTF) and .88 for *acting to alleviate suffering* (SOCS-OAS).

Prenatal Health Behaviours Scale - Revised (PHBS-R; Deluca & Lobel, 1995): The PHBS-R consists of 24 items and measures healthy and unhealthy behaviours during pregnancy (DeLuca & Lobel, 1995) using a 5-point Likert scale ranging from 0 (never) to 4 (very often). Internal consistency calculation was defined by Cronbach's alphas. There are few health behaviour scales created for or validated for use during pregnancy. It was considered more appropriate to use a pregnancy-specific measure wherever possible due to the complexities of health behaviour during the prenatal period (Olander et al., 2018). However, the present study produced a Cronbach's alpha below 0.7 for both subscales (health-promoting items and health-impairing items) and therefore data collected from these subscales were not included in any further analysis.

Warwick-Edinburgh Mental Well-Being Scale - (WEMWBS; Tennant et al., 2007): The WEMWBS consists of 14 items and measures positive psychological well-being using a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time). The WEMWBS is a well-established scale for measuring psychological well-being and has been used within pregnant populations (Steen et al., 2015). The present study produced a Cronbach's alpha of .9 demonstrating a high internal consistency, reliability and validity.

Maternal-Fetal Attachment Scale - (MFAS; Cranley, 1981): The MFAS consists of 24 items and measures a mother's thoughts and feelings towards her unborn baby using a 5-point Likert scale ranging from 1 (not at all true) to 5 (always true). MFAS is the most widely used scale for measuring the mother-fetus relationship (McNamara et al., 2019). The present study produced a Cronbach's alpha of .83 demonstrating good internal consistency, reliability and validity with scores for the subscales of .41 differentiating from self, .62 for interacting with the fetus, .68 for attributing characteristics to the fetus, .48 for giving of self and .66 for role taking.

Five Facet Mindfulness Questionnaire - Short Form (FFMQ-SF; Bohlmeijer et al., 2011): The FFMQ-SF consists of 24 items to measure mindfulness using a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). A mindfulness-specific scale is included in the proposed study for validation purposes since self-compassion, compassion and maternal-fetal attachment have not been researched together previously, and the findings may not perform as expected for this population. The present study produced a Cronbach's alpha of .73 for the full scale demonstrating moderate internal consistency, reliability and validity, with scores for the subscales of .45 for *observing*, .82 for *describing*, .6 for *acting with awareness*, .84 for *non-judging* and .74 for *non-reacting*.

Acceptance and Action Questionnaire – (AAQ-II; Bond et al., 2011): The AAQ-II consists of 7 items to measure psychological flexibility using a 7-point Likert scale ranging from 1 (never true) to 7 (always true). The present study produced a Cronbach's alpha of .9 demonstrating excellent internal consistency, reliability and validity. The AAQ scale measures psychological *inflexibility*.

Procedure

Recruitment occurred between January and May 2022. Potential participants accessed the survey via a link that also included the participant information form, consent form and the demographic questionnaire. All participants completed the survey online. At the end of the survey all participants were directed to debrief information, which provided details about the aim and purpose of the study and resources for additional support. The study complied with the British Psychological Society Code of Ethics and Conduct (2021) and was approved by the University's Ethics Committee (reference: Parsons /#9902 /sub2 /R(C) /2022 /Jan /BLSS FAEC) (see Appendix B1 for ethics approval letter).

Statistical Analyses

All statistical analyses were conducted using IBM SPSS v28. Mean scores of variables between different groups were analysed using ANOVA and independent t-tests. Data was initially explored through bivariate correlations (Pearson). A multiple regression analysis was also conducted to examine the predictive qualities of the independent variables. Moderation effects were interpreted using PROCESS (Model 1) (A. F. Hayes, 2018) with a bootstrap sample of 5000, where variables were centred to their means. Simple effects coefficients were computed for three values of the moderator (i.e., 1 SD below the mean, at the mean, and 1 SD above the mean). For all analyses, p values ≤ 0.05 were considered statistically significant.

3.4. Results

Analysis of Mean Scores

The sample was analysed to compare the mean scores of the two parity groups - those expecting their first baby ($n = 48$) and those expecting a subsequent baby ($n = 60$). An independent sample t-test was used to analyse the variable scores between these two groups. The test showed that MFA scores were significantly higher in participants expecting their first baby ($M = 90.98$, $SD = 10.48$) compared to those on a subsequent pregnancy ($M = 83.83$, $SD = 10.81$), $t = 3.373$, two-tailed $p = .001$. An independent sample t-test was also used to analyse the mean scores between those living with a medical condition and those who were not. The test showed that MFA scores were significantly higher in participants living with a medical condition ($M = 91.12$, $SD = 9.56$) compared to those who were not ($M = 85.68$, $SD = 11.27$), $t = 2.116$, two-tailed $p = .001$.

Correlational Analyses

Pearson correlation tests were performed to explore any initial relationships between the independent variables (maternal-fetal attachment, self-compassion, mindfulness, psychological flexibility and subscales) and the dependent variable (well-being) (See Tables 3.2 & 3.3 for correlations).

Initial correlation analyses revealed that well-being significantly correlated with many of the independent variables including self-compassion and all its subscales, mindfulness and its subscales except non-reacting as well as psychological flexibility. Well-being also significantly correlated with MFA and two subscales *attributing characteristics* and *giving of self*. The MFA subscale *attributing characteristics* had a significant positive relationship with the mindfulness subscales *non-judging* [$r = .75$, $p < .001$] and *observing* [$r = .22$, $p = .03$]. Results demonstrated that as self-compassion, mindfulness and MFA scores increase, and AAQ scores decrease, well-being scores increase.

Table 3.2. Means and standard deviations of variables and bivariate correlations to well-being (study 1)

	<i>M</i>	SD	Correlation to Well-being <i>r</i>	<i>p</i>
MFA	86.6	11.6	.22*	.03
Mindfulness (full scale)	50.4	6.7	.58**	<.001
Observing	9.7	2.2	.23*	.02
Describing	10.4	2.5	.46**	<.001
Acting with awareness	9.4	2.0	.25*	.01
Non-judging	11.3	2.6	.54**	<.001
Non-reacting	9.5	2.3	.17	.07
SOCS-S	70.4	8.9	.59**	<.001
SOCS-SRS	14.7	2.2	.41**	<.001
SOCS-SUS	17.5	1.1	.33**	<.001
SOCS-SFS	12.5	2.4	.52**	<.001
SOCS-STF	12.3	2.6	.45**	<.001
SOCS-SAS	13.6	2.4	.53**	<.001
Psychological inflexibility	0.02	0.81	-.58**	<.001

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Notes: *M* = mean, SD = standard deviation, *r* = correlation coefficient, *p* = significance level; the AAQ scale measures psychological *inflexibility*. SOCS-S = self-compassion; SOCS-SRS = recognising suffering; SOCS-SUS = understanding universality of suffering; SOCS-SFS = feeling for the person suffering; SOCS-STF = tolerating uncomfortable feelings; SOCS-SAS = acting to alleviate suffering

Interestingly, the correlational analysis conducted on the two parity groups found that the MFA scores for women on a first pregnancy did not significantly correlate with well-

being [$r = -.02, p = .44$], but those on a subsequent pregnancy did [$r = .36, p = .01$]. In addition, the correlational analysis conducted on the two groups with or without medical conditions identified that the correlation was stronger between well-being and self-compassion amongst the group living with a medical condition [$r = .75, p < .001$], compared the group without a medical condition [$r = .55, p < .001$].

Compassion to others (SOCS-O) only correlated with mindfulness (see Table 3.3). Given there were no associations with well-being or MFA, the SOCS-O scale did not necessitate further exploration in this study.

Table 3.3. Means, standard deviation, bivariate correlations between gestation, maternal-fetal attachment, mindfulness, self-compassion, compassion to others, well-being, psychological flexibility (study 1)

Questionnaire scores	1	2	3	4	5	6	M	SD
(1) GESTATION							24.1	9.7
(2) MFA	.33**						86.6	11.6
(3) FFMQ	.16	.20*					50.4	6.7
(4) SOCS-S	-.14	.17	.43**				70.4	8.9
(5) SOCS-O	.00	.07	.22*	.15			84.1	8.4
(6) WEMWBS	.08	.22*	.58**	.59**	.22*		47.9	7.1
(7) AAQ	-.04	-.15	.57**	.48**	-.04	.58**	19.7	7.5

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Note: MFA - maternal-fetal attachment scale; FFMQ - mindfulness scale; SOCS-S - self-compassion scale; SOCS-O - compassion to others scale; WEMWBS – mental health and well-being scale; AAQ - psychological flexibility scale

Regression Analyses between Mindfulness, Maternal-Fetal Attachment and Well-Being

A multiple regression analysis was conducted to explore the predictability of mindfulness and maternal-fetal attachment on well-being. Preliminary analyses and visual inspections ensured that the necessary assumptions for this analysis were met. The model obtained was statistically significant [$F = 26.66, p = .001$] and the predictive capacity calculated through adjusted R square was .33. This suggests that both mindfulness and MFA predict 33% of well-being scores. Results indicated that only mindfulness demonstrated significant predictive abilities ($B = .57, p < .001$), whereas MFA did not ($B = .09, p = .29$). Specifically, a one unit increase on the mindfulness scale, lead to a .57 increase in well-being. Notably, results indicated that only the *describing* ($B = .28, p < .01$) and *non-judging* ($B = .45, p < .001$) dimensions of mindfulness demonstrated significant predictive abilities whereas *observing* ($B = .19, p = .19$), *acting with awareness* ($B = .00, p = .60$), and *non-reactivity* ($B = .04, p = .60$) did not. This indicates that being able to describe your own emotions and being non-judgmental in relation to those emotions are both predictive of well-being within a pregnant population.

Moderation Analyses

Moderation analysis tested mindfulness, its components *non-judging* and *describing*, and psychological flexibility as potential moderators of observed relationships between MFA and well-being (see Figure 3.1). Further explorations found that mindfulness and *non-judging* were significant moderators at the low level only (see Table 3.4 and Figure 3.2). Results indicate that the significant positive relationship between MFA and well-being becomes insignificant as mindfulness and *non-judging* scores increase, and have a negative effect at the highest level of mindfulness and *non-judging*. *Describing* was not a significant moderator which failed at the highest order interaction but there was significance at the high level only (see Table 3.4 & Figure 3.2). Results indicate that the significant positive relationship

between mindfulness and well-being is insignificant as *describing* scores increase and have a slightly negative effect at the highest level of *describing*. Further analysis tested self-compassion and its sub-scales. The element SOCS-SAS was a significant moderator of the observed relationship between MFA and well-being. SOCS-SAS was a significant moderator (at $< .05$) at the low level of SOCS-SAS only (see Table 3.4 & Figure 3.3). Results indicate that the significant positive relationship between mindfulness and well-being is insignificant as SOCS-SAS scores increase. Psychological flexibility was also a potential moderator of the observed relationship between MFA and well-being. AAQ was a significant moderator at the high level of AAQ score only (see Table 3.4 & Figure 3.3). Results indicate that the significant positive relationship between mindfulness and well-being is insignificant as psychological inflexibility scores decrease. (Note the AAQ scale measures psychological *inflexibility*).

Figure 3.1. Moderating model of BMI predicting eating behaviours with self-compassion and mindfulness as moderator (study 1)

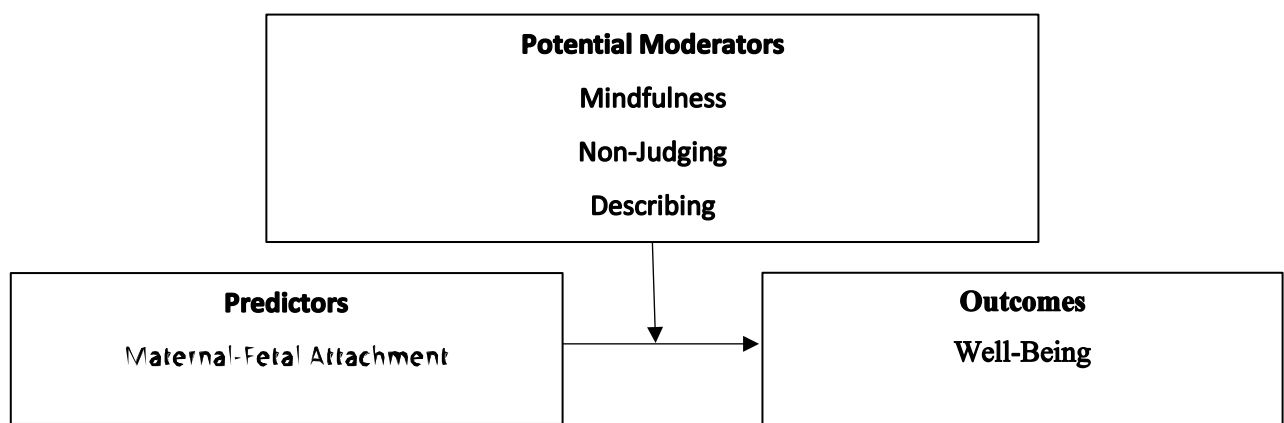
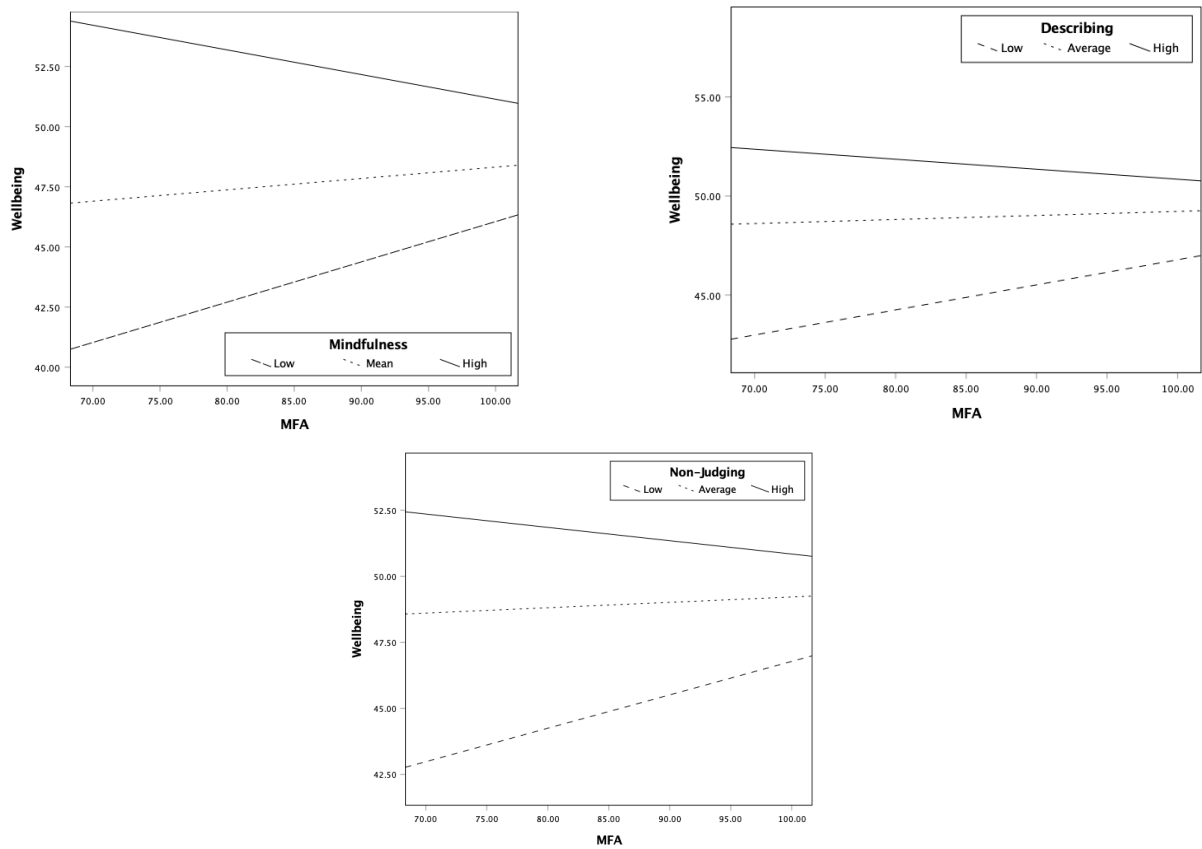


Table 3.4. Conditional effects of mindfulness, non-judging, describing, acting to alleviate suffering and psychological inflexibility on the relationship between MFA and well-being (study 1)

		<i>b</i>	<i>p</i>	95% CI	
Mindfulness	- 1 SD	.17	.019	.03	.31
	MEAN	.05	.365	-.06	.15
	+ 1 SD	-.10	.206	-.26	.06
Non-judging	- 1 SD	.13	.035	.01	.25
	MEAN	.02	.739	-.10	.14
	+ 1 SD	-.05	.546	-.22	.12
Describing	- 1 SD	-.03	.686	-.21	.14
	MEAN	.09	.128	-.03	.20
	+ SD	-.21	.014	.04	.37
SOCS-SAS	- 1 SD	.15	.042	.01	.30
	MEAN	.07	.227	-.04	.17
	+ SD	-.02	.776	-.18	.13
Psychological inflexibility	- 1 SD	.02	.812	-.13	.16
	MEAN	.05	.089	-.01	.19
	+ SD	-.10	.029	.02	.30

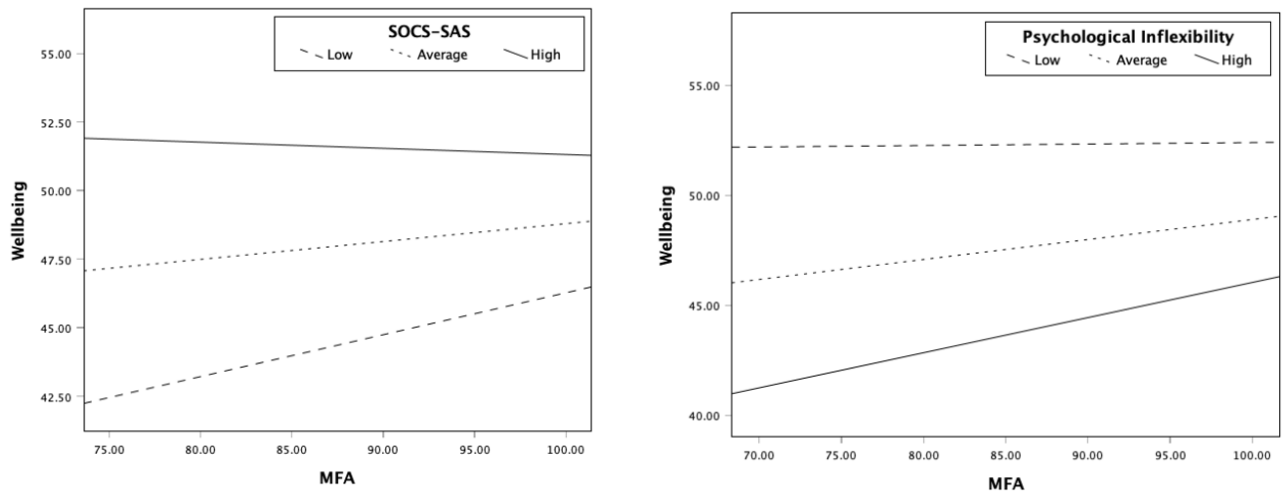
Note: SOCS-SAS = self-compassion subscale acting to alleviate suffering

Figure 3.2. Moderation graphs of MFA predicting well-being with mindfulness, describing and non-judging as moderators (study 1)



Note: Moderation graphs of MFA predicting well-being 1 SD below the mean of mindfulness/describing/non-judging (low), the mean of mindfulness/describing/non-judging and 1 SD above the mean of mindfulness/describing/non-judging.

Figure 3.3. Moderation graphs of MFA predicting well-being with acting to alleviate suffering (SOCS-SAS) and psychological inflexibility as moderators (study 1)



Note: Moderation graphs of MFA predicting well-being 1 SD below the mean of SOCS-SAS/psychological inflexibility (low), the mean of SOCS-SAS (acting to alleviate suffering)/Psychological Inflexibility and 1 SD above the mean of SOCS-SAS/psychological inflexibility. The AAQ scale measures psychological *in*fexibility.

3.5. Discussion

This exploratory study aimed to investigate the associations between mindfulness-based concepts, maternal-fetal attachment (MFA) and psychological well-being during pregnancy. Findings indicated that there was a positive association between psychological well-being and both mindfulness and MFA, which aligned with previous research (Matvienko-Sikar et al., 2016b; McNamara et al., 2019a). Contrary to expectations, MFA did not emerge as a significant predictor of well-being, whilst mindfulness did. In relation to parity, first-time expectant mothers demonstrated higher MFA scores. For non-first-time expectant mothers, MFA was significantly associated with both self-compassion and well-being. These results suggest the importance of considering parity when examining well-being in pregnancy. This is in contrast to the review by Yarcheski et al. (2009), who found that parity had a low effect on MFA and concluded, therefore, that parity did not warrant further consideration.

MFA was also positively associated with gestation, which is observed in other research (Alhusen, 2008). This study also found that the *observing* element of mindfulness increased along with gestation. In addition, *attributing characteristics to the fetus* was associated with the *observing* element of mindfulness, which also corresponds to the literature (Golmakani et al., 2021). However, this study also found links between overall MFA and mindfulness, which Golmakkani et al. did not.

Additionally, women living with a medical condition had significantly higher MFA scores. Also, their self-compassion scores were significantly linked to well-being. Self-compassion and well-being were also strongly associated in this group. In other words, self-compassion could play a protective role in well-being for pregnant women living with a medical condition. However, it is challenging to draw comparisons with previous literature due to variations in how medical conditions are defined and studied. Most existing studies focused on psychological factors like anxiety, depression, or stress (Cunen et al., 2017), while others examined well-being in relation to pregnancy related medical conditions, such as gestational diabetes (Napoli et al., 2020). Nevertheless, the study suggests that self-compassion may be worth exploring further as it demonstrated a positive association with well-being in pregnant women with medical conditions.

Further explorations found that mindfulness had a significant moderating effect on well-being for women with low levels of MFA. This was not observed in women with higher MFA scores. This means that mindfulness may have a greater effect on well-being for women with poor attachment to their unborn baby, which may be useful for women whose pregnancy is unplanned and connecting with their unborn baby may be more difficult (Armstrong & Hutti, 1998; Mahmoudi et al., 2021; Pisoni et al., 2014). An intervention aimed at enhancing psychological well-being that avoids specific focus on the fetus may be more appropriate for all pregnant women whether their pregnancy is planned or not.

The results in this study relating to MFA reflect the inconclusive and mixed findings in the literature and the limited evidence of its efficacy in interventions (Cunen et al., 2017). Coupled with its less predictive ability on well-being observed in this study, MFA interventions may not be the most effective way to support women's well-being during pregnancy.

Self-compassion and psychological flexibility consistently moderate the relationship between MFA and well-being irrespective of MFA levels. This suggests that behaviour change interventions based on these constructs may be beneficial for all women, irrespective of their level of attachment to their fetus. Constructs that especially contain elements that focus on action, such as psychological flexibility, are also particularly valuable in behaviour change interventions where identifying specific behaviours that target motivation and action are crucial.

One further contribution this study makes to the existing literature is its use of the relatively novel compassion scales SOCS-S and SOCS-O (Gu & Strauss, 2019). An advantage of using the SOCS-S is that it includes a subscale specifically measuring the action taken in order to reduce or alleviate suffering SOCS-SAS, which is not covered in other self-compassion scales. In the context of developing interventions aimed at promoting well-being and behaviour change during pregnancy, acting on motivations to be compassionate to oneself may hold unique significance that needs to be explored further. The SOCS-O scale (compassion for others) (Gu & Strauss, 2019) did not appear to capture any potential significance to the baby, which could be potentially explored further in qualitative research in order to examine the separation or not of the baby from the self.

In conclusion, results are consistent with other literature that has explored the associations between mindfulness and psychological well-being in pregnancy (Sigal-Zilcha-Mano, 2017). In this study participants' MFA scores varied based on parity and on the

presence of a medical condition. The moderating effects of mindfulness varied depending on MFA levels, whereas self-compassion and psychological flexibility were unaffected by changing MFA levels. This study has contributed new evidence to the pregnancy literature in relation to self-compassion and mindfulness and may suggest that additional investigation is required into these concepts as effective targets for an antenatal well-being and behaviour change intervention.

Limitations

Despite the exploratory nature of the study, some limitations should be noted. First, the demographic of participants included mainly white, University (or equivalent) educated participants, those married or living with a partner and those in employment. This means that the results may not be applicable to other ethnic communities, demographic backgrounds or those from more vulnerable backgrounds – populations who may be at greater risk of lower well-being and under-represented in pregnancy research (Edge, 2008) as well as facing health inequalities (Adamson et al., 2003). Second, the exclusion criteria may have resulted in recruiting participants with existing good levels of well-being, who are impacted by fewer factors that contribute to poorer well-being, and this may have affected the findings. Further research is needed to expand the demographic and eligibility of participants to include women from more vulnerable groups, different cultural backgrounds and different pregnancy histories.

Implications for Future Research and Intervention Development

This exploratory study found that mindfulness was a stronger predictor of well-being than MFA. Previous maternal-attachment focused interventions have required specialised resources and expert clinicians (Sedgmen et al., 2006; Shreffler et al., 2019), while a mindfulness-based intervention could offer a simpler, more accessible, and more cost-effective approach with potential for alternative, non-meditative, and lifestyle interventions

(Czerwinski et al., 2020; Mantzios & Giannou, 2018) that can be applicable to all pregnant women irrespective of their connection with their fetus or previous pregnancy history.

Providing further evidence and building a case for future intervention development may have clear implications for optimal care in the field.

CHAPTER 4/STUDY 2: A CROSS-SECTIONAL STUDY EXAMINING THE RELATIONSHIPS BETWEEN MINDFULNESS-BASED CONCEPTS AND EATING BEHAVIOURS DURING PREGNANCY

4.1. Abstract

Background: The association between BMI, weight gain and eating behaviours, during pregnancy is complex. Pregnant women with a raised BMI are more likely to engage in eating behaviours most closely associated with weight gain in the general population. Emotional eating, which is eating in response to psychological distress, can lead to overeating and subsequently excessive weight gain. Restrained eating, which involves restricting dietary intake, is also linked with weight gain as this pattern of eating is often followed by periods of overeating. Grazing is the uncontrolled and repetitive eating of small amounts of food and is also linked with weight gain amongst the general population. Mindfulness-based constructs and mindful eating have been linked to reducing these types of problematic eating behaviours. Eating behaviours during pregnancy is a topic of interest for researchers studying gestational weight gain. While there is growing research into emotional and restrained eating in pregnancy, little attention has been paid to other types of eating such as grazing and mindful eating. Additionally, it is unclear which mindfulness-based concepts can help pregnant women develop eating habits that promote a healthy pregnancy. This study looked at how self-compassion, mindfulness and psychological flexibility relate to emotional eating, restrained eating, grazing, and the consumption of sugar and fat during pregnancy. **Method:** One hundred and twenty-nine pregnant participants between 4- and 41-weeks' gestation completed an online questionnaire to measure their levels of self-compassion, mindfulness, psychological flexibility, emotional eating, restrained eating, grazing, fat and sugar consumption and mindful eating. **Results:** In this study, BMI is negatively correlated with eating with awareness (mindful eating) and positively correlated with emotional eating and

grazing. Emotional eating and grazing also showed the strongest correlations with self-compassion, psychological flexibility and mindful eating at highly significant levels. The study also found that self-compassion and psychological flexibility were moderators of the relationship between BMI and emotional eating. Self-compassion also moderated the relationship between BMI and awareness of hunger and satiety cues (mindful eating). The relationship between BMI and both emotional eating and mindful eating was strongest amongst multiparous women, or who were living with a medical condition. **Conclusions:** BMI may not be the only factor to consider when considering gestational weight gain; an awareness of emotional eating and other eating behaviours during pregnancy could also be worthwhile. Self-compassion and psychological flexibility may be useful targets for intervention to protect against emotional eating during pregnancy. Such an intervention would be especially beneficial for pregnant women who measure high for emotional eating and low for mindful eating especially if they are multiparous, living with a medical condition, and/or with a raised BMI.

4.2. Background

In the pregnancy literature, there is an emphasis on gestational weight gain (GWG) in relation to birth and pregnancy outcomes (Mohd-Shukri et al., 2015; Vanstone et al., 2020). Numerous studies, included in the meta-analysis conducted by Ruifrok and colleagues (2015) show excessive GWG is linked with maternal health complications, such as pre-eclampsia, gestational diabetes, post birth weight retention and an increased risk of a caesarean birth with its associated surgical risks. Therefore, it is often GWG and the prevention of excessive GWG that is the focus for many studies and interventions. However, women's physical and emotional well-being are inextricable during pregnancy (Faria-Schützer et al., 2015), and the psychological component of weight-related health behaviours needs further consideration in the discussion surrounding weight and more general well-being in pregnancy.

Currently the National Institute of Clinical Excellence (NICE) (2022) publish no GWG recommendations in the UK. The guidance provided by NICE states mainly that pregnant women should exercise and eat a healthy diet (Heery et al., 2016). In the US, GWG recommendations vary based on BMI at the start of pregnancy (Rasmussen et al., 2009). This is interesting because the role of BMI in GWG is inconclusive, despite BMI being associated with problematic eating behaviour that is linked with weight gain (Donofry et al., 2021; Jaakkola et al., 2013a).

Pregnancy is a time of increased vulnerability for engaging in problematic eating behaviours (Donofry et al., 2021) that are known to be linked with weight gain in non-pregnant populations. Common eating behaviours associated with weight gain include emotional eating and restrained eating (Daundasekara et al., 2017), consumption of fat and sugar (Mantzios, Egan, Hussain, et al., 2018a), consumption for non-hunger reasons (Boggiano, 2016), and grazing (Lane & Szabó, 2013). Despite the apparent link between these eating behaviours and weight gain in the general population, little is known about the prevalence and impact of them on pregnancy weight gain (Tang et al., 2020) and the topic is largely under-researched (Chan et al., 2019). Van der Wijden et al., (2014) examined behavioural factors to determine which were significant drivers in GWG. They found that eating behaviours had limited significance, whereas a “healthy pregnancy attitude”, which they described as “the attitude towards regular exercise, a healthy diet and healthy weight gain in favour of a healthy pregnancy” (p307), contributed to higher motivation to manage weight gain during the later stages of pregnancy. In Hutchinson et al.’s study of mindful eating in pregnancy (2017), the ‘emotional response’ element of the Mindful Eating Questionnaire (Framson et al., 2009), was particularly evident in pregnancy and was linked with unhealthy eating choices. They found that mindful eating may support both physical and mental health and can more generally promote all round well-being. This shines a light on the

importance of considering eating in pregnancy more holistically than just considering weight gain. Pregnancy brings with it many physiological and psychological changes and consequently can be a challenging period for some women (Costa et al., 2021) when psychological distress, the term used both in the literature and in this chapter to include mood disorders such as anxiety, stress and depression, is common during pregnancy (Obrochta et al., 2020) and associated with higher GWG (Altazan et al., 2019). Careful consideration of psychological health and associated constructs could further the understanding of the impact of pregnancy on eating behaviour and which psychological elements might be worthy of exploration for use in interventions to improve pregnancy health more broadly.

Due to the physical and psychological changes taking place during pregnancy, well-being can be significantly impacted (Costa et al., 2021). In light of the link between psychological well-being, problematic eating behaviours and GWG (Hutchinson et al., 2017), further inquiry of eating behaviours closely linked to well-being, such as emotional eating, is warranted. Emotional eaters eat to reduce negative emotions (Macht, 2008) such as in a response to psychological distress, often turning to high energy foods dense in sugar and fat that have comforting and soothing effects (Onur et al., 2022). The eating behaviour known as restrained eating involves restricting calorific intake to control weight gain and has drawn the attention of researchers for several decades (Polivy et al., 2020). Restrained eating is often followed with episodes of overeating and has been associated with weight gain in the general population (Meule et al., 2013). Whilst the research into restrained eating in pregnancy is limited, it has also been linked with excessive GWG (Shriver et al., 2023) but has been found to lead to higher weight loss in the postnatal period (Bijlholt et al., 2020). Additionally, women with a history of restrained eating prior to pregnancy have a higher pre-pregnancy BMI and hold more negative attitudes towards GWG, which may impact on their eating behaviours (Heery et al., 2016). Subsequently, further study of restrained eating during

pregnancy is warranted. Mindfulness is known to act as a potential moderator between emotional eating and psychological distress in the general population (Pidgeon et al.'s, 2013). Since it has been found that pregnancy can be a time of psychological distress, an examination of this type of eating behaviour with psychological constructs associated with improving both eating behaviours and psychological well-being, such as mindfulness-based concepts, would be useful.

Mindfulness-based concepts, including self-compassion, are positively correlated with healthy eating in non-pregnant populations (Mantzios, Egan, Hussain, et al., 2018a). However, research examining these concepts with eating behaviours during pregnancy is still in its infancy. Hennelly et al. (2020) developed a mindfulness-based pregnancy intervention to elicit healthier behaviours. Although the intervention was safe and practical, they concluded that it was not feasible because the participants were already healthy, with a normal BMI, and relatively homogenous in terms of socio-demographic criteria. Subsequently any behaviour change noted was insignificant and those with low levels of well-being were more likely to drop out of the study, which could have impacted their results. Self-compassion can also play a protective role in problematic eating behaviour during pregnancy (Baskin et al., 2021). In this study, Baskin and colleagues concluded that self-compassion and eating behaviour justified further investigation especially to develop potential antenatal interventions. Self-compassion has been linked to greater motivation because it fosters resilience, reduces self-criticism and drives an individual to prioritise self-care (Neff, 2016). This may explain why self-compassionate individuals are more likely to pursue healthy behaviours, such as persisting with a healthy eating plan (K. Neff & Tirch, 2013). Psychological flexibility, which refers to the ability to adapt thoughts and actions in changing, often challenging situations and is grounded in Acceptance and Commitment Therapy (ACT) (Doorley et al., 2020). Further explanation of this construct can be found in

Chapter 1. Like self-compassion, psychological flexibility is associated with well-being and behaviour change and warrants closer inspection in the pregnant population. Both self-compassion and psychological flexibility may play a positive role in health behaviour change (Biber & Ellis, 2019; Doorley et al., 2020) and promote better health (Kashdan & Rottenberg, 2010; Phillips & Hine, 2021).

Interventions designed to change eating behaviour and tackle weight management have mainly used food diaries, in which individuals document all foods and beverages that they consume (Pears et al., 2012; Raber et al., 2021). These methods rely on recording or calculating food intake, which have limitations in terms of accuracy. Food diaries are also time-consuming for participants and unreliable because they depend heavily on participant memory and may not be completed accurately due to embarrassment, shame or a desire to be seen as a 'healthy' person (Helsel et al., 2007; Sharman et al., 2023). As a result, researchers have been calling for the inclusion of psychological factors to be considered when assessing eating behaviours and yet most studies still rely on food diary-based approaches. Measuring eating behaviours through psychometric tools could offer a suitable alternative to self-reported food diaries because these measures are useful in terms of understanding different psychological aspects of eating behaviours (Savage et al., 2019) and provides further rationale for this study.

Emotional wellbeing during pregnancy is closely connected to a woman's attachment to her unborn baby, known as maternal-fetal attachment (Cranley, 1981). Maternal-fetal attachment has been identified as a factor that may contribute to positive health practices (Abasi et al., 2013) and is a key predictor of healthy behaviour during pregnancy (Lindgren, 2001), such as quitting smoking (Jussila et al., 2020; Magee et al., 2014) or avoiding alcohol (Sedgmen et al., 2006). Additionally, the strength of this attachment has been found to be positively associated with good emotional wellbeing (Perwitasari et al., 2019). Although, the

impact of emotions on eating behaviours has been extensively studied (Macht, 2008), research examining the link between maternal-fetal attachment and eating behaviours remains largely unexplored or has focused on eating disorders (Lai et al., 2006). The focus for pregnancy research has not only been relatively narrow in terms of eating behaviours, with a clear predilection for eating behaviours that reach clinical thresholds, but it has also been narrow in terms of the population examined.

The majority of the research around GWG related behaviours includes mainly White women (Rogozinksa et al., 2017). However, the literature shows that interventions may be more effective if targeted at already at-risk groups (Mohd-Shukri et al., 2015), such as women from minority ethnic backgrounds who are already at greater risk of poorer birth outcomes (Mahase, 2021) and who already face health inequalities (Hobbs, 2018). The current study addressed this gap by recruiting women from ethnically diverse backgrounds. The existing research in this area is growing but is still limited, and given the challenge facing maternity services and the wider healthcare system in managing the growing obesity problem in England (Mohd-Shukri et al., 2015) pregnancy could be the ideal time to address this issue (Lawson & Flocke, 2009; Shloim et al., 2015a).

A pregnancy-focused investigation of eating behaviours linked to weight gain and mindfulness-based constructs linked with problematic eating behaviours contributes to the literature. The findings from the current study can also add to the potential application of mindfulness-based concepts for use in interventions to improve pregnancy and longer-term health. The current study investigated the relationships between mindfulness-based concepts and their potential impact on eating behaviours in pregnancy. The study aimed to answer two research questions. First, what are the associations between mindfulness-based concepts, maternal-fetal attachment, and eating behaviours during pregnancy. Second, what role do mindfulness-based concepts and maternal-fetal attachment play in eating behaviours during

pregnancy? The research findings were used to inform the design of the qualitative phase of the PhD project.

4.3. Method

Study Design

A cross-sectional design was used to collect data on multiple variables from participants at a single point in time (see Chapter 2, p.42 for more details). The aim of the study was to investigate the relationships between the predictor variables: scores of self-compassion, mindfulness, maternal-fetal attachment, psychological flexibility and the eating behaviour outcome variables (mindful eating, fat and sugar consumption, emotional eating, restrained eating, grazing and motives to eat palatable foods). A link to the Qualtrics survey was shared on social media and on the platform Prolific, which was also used for this study. A strict inclusion and exclusion criterion ensured all participants were aged eighteen or over, did not have a current or past serious mental illness diagnosis, any previous experience of a stillbirth or neonatal loss or a current or previous diagnosis of an eating disorder.

Participants

A total of 148 participants were recruited for the study from various sources such as social media platforms (Facebook, Instagram, Twitter), WhatsApp groups, the Prolific platform and professional contacts. Nineteen participants were excluded due to not fitting the inclusion criteria: not pregnant ($n = 1$), and others for having missing data ($n = 18$). A power analysis determined that, with alpha set at .05 and power set at .08, 117 participants were required to detect a medium effect size (Cohen, 1992). Therefore, 129 participants were sufficient for the aims of this study. Participant ages ranged from 19 to 45 years ($M = 32.23$, $SD = 5.06$; Range = 26). Participants provided demographic information (see Table 4.1) including their height and pre-pregnancy weight. This allowed for the calculation of participants' BMI, which ranged from 17.36 to 44.98 ($M = 26.21$, $SD = 5.99$). Twenty-three

individuals reported living with various medical conditions (see Table 4.1). A full demographics table can be found in Appendix B2.

Table 4.1. Participant demographic information (study 2)

FACTOR	n	%
Gestation (by trimester)		
1st trimester (4-12 weeks)	14	11
2nd trimester (13-27 weeks)	50	39
3rd trimester (28+ weeks)	65	50
Parity		
1st pregnancy	45	35
NOT 1st pregnancy	84	65
Health Conditions		
Yes	23	18
No	105	81
Prefer not to say	1	1
Ethnicity		
White	92	73
Asian, Black and Mixed backgrounds	33	27
Medical Conditions (most frequently reported)		
Anxiety/Depression		12
ADHD		1
Asthma		2
Gestational Diabetes		3
Crohn's disease		2
Short cervix		1
Hyperemesis gravidarum		1
Unspecified disability		1

Materials

A demographics questionnaire was also included to collect data relating to age, gender, parity, gestation, due date, height and pre-pregnancy weight (to calculate BMI), ethnicity, previous and existing medical conditions, relationship status and employment status, and their highest level of education attained. Refer to Chapter 2 (p.43-50) for further details of the following measures.

Sussex-Oxford Compassion for the Self Scale - (*SOCS-S*; Gu & Strauss, 2020): The SOCS-S consists of 20 items to measure compassion towards oneself using a 5-point Likert scale ranging from 1 (definitely yes) to 5 (definitely no). The present study produced a Cronbach's alpha of .9 for the full SOCS-S scale demonstrating excellent internal consistency and reliability for this sample, with scores of .85 for *recognising suffering* (SOCS-SRS), .83 for *understanding universality of suffering* (SOCS-SUS), .78 for *feeling for the person suffering* (SOCS-SFS), .8 for *tolerating uncomfortable feelings* (SOCS-STF), and .88 for *acting to alleviate suffering* (SOCS-SAS).

Maternal-Fetal Attachment Scale - (*MFAS*; Cranley, 1981): The MFAS consists of 24 items and measures a mother's thoughts and feelings towards her unborn baby using a 5-point Likert scale ranging from 1 (not at all true) to 5 (always true). MFAS is the most widely used scale for measuring the mother-fetus relationship (McNamara et al., 2019). The present study produced a Cronbach's alpha of .84 demonstrating good internal consistency, reliability and validity.

Five Facet Mindfulness Questionnaire - Short Form (*FFMQ-SF*; Bohlmeijer et al., 2011): The FFMQ-SF consists of 24 items to measure mindfulness using a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). A mindfulness-specific scale is included in the proposed study for validation purposes since self-compassion, compassion and maternal-fetal attachment have not been researched

together previously, and the findings may not perform as expected for this population. The present study produced a Cronbach's alpha of .73 demonstrating moderate internal consistency, reliability and validity with sub scale scores of .43 for *observing*, .76 for *describing*, .76 for *acting with awareness*, .73 for *non-judging* and .7 for *non-reacting*.

Acceptance and Action Questionnaire – (*AAQ-II; Bond et al., 2011*): The AAQ-II consists of 7 items to measure psychological flexibility using a 7-point Likert scale ranging from 1 (never true) to 7 (always true). The AAQ-II was included because it is a useful predictor of health behaviour (Doorley et al., 2020; Kashdan & Rottenberg, 2010). The present study produced a Cronbach's alpha of 0.99 demonstrating excellent internal consistency, reliability and validity.

Mindful Eating Behaviour Scale - (*MEBS; Winkens et al., 2018*): The MEBS consists of 20 items to measure mindful eating across four mindful eating domains (Focused Eating, Awareness of Hunger and Satiety Cues, Eating with Awareness, and Eating without Distraction) using a 5-point Likert scale ranging from 1 (never) to 5 (very often). The present study produced Cronbach's alpha scores for mindful eating domain one - focused eating (MED1) of .78, mindful eating domain two - awareness of hunger and satiety cues (MED2) of .84 and for mindful eating domain three - eating with awareness (MED3) of .88 demonstrating moderate to good internal consistency, reliability and validity. The Cronbach's alpha for mindful eating domain four - eating without distraction (MED4) was .58, demonstrating poor internal consistency for this domain and was therefore omitted from any further analysis. The MEBS tool has not been used in pregnant populations providing another novel element to this study.

Dutch Eating Behaviour Scale - (*DEBQ; van Strien et al., 1986*): The DEBQ consists of three subscales to measure eating behaviours. This study used two of the subscales, emotional eating and restrained eating, which consist of 23 items using a 5-point Likert scale

ranging from 1 (never) to 5 (very often). The present study produced Cronbach's alphas for each subscale as follows: .93 (emotional eating) and .96 (restrained eating) demonstrating excellent internal consistency, reliability and validity.

Grazing Questionnaire - (*GQ*; Lane & Szabó, 2013): The GQ consists of 8 items to measure psychological flexibility using a 5-point Likert scale ranging from 0 (never) to 4 (all of the time). The present study produced a Cronbach's alpha of .86 demonstrating good internal consistency, reliability and validity. Grazing behaviour is strongly associated with weight gain (Lane & Szabó, 2018) so this was an appropriate scale to include in this study.

The Dietary Fat and Free Sugar-Short Questionnaire - (*DFS-SF*; Francis & Stevenson, 2013): The DFS-SF consists of 25 items to measure fat and sugar consumption using a 5-point Likert scale ranging from 1 (less than one per month) to 5 (5+ per week). The present study produced a Cronbach's alpha of .84 demonstrating good internal consistency, reliability and validity. This scale provides an easy, low-cost measure for assessing dietary intake of fat and sugar (Francis & Stevenson, 2021).

Procedure

Recruitment occurred between April and November 2022. Potential participants accessed the survey via a link that also included the participant information form, consent form and the demographic questionnaire. All participants completed the survey online. At the end of the survey all participants were directed to debrief information, which provided details about the aim and purpose of the study and resources for additional support. Funding was obtained from the University to recruit participants using the platform Prolific and to recruit three community researchers who recruited 16 women for this study from racially-minoritised groups, women whom the researcher would not have otherwise reached. Participants were recompensated for taking part. The study complied with the British Psychological Society Code of Ethics and Conduct (2021) and was approved by the

University's Ethics Committee (reference: Parsons /#10248 /sub2 /R(C) /2022 /Apr /BLSS FAEC). The ethics approval letter can be found in Appendix C2.

Statistical Analyses

All statistical analyses were conducted using IBM SPSS v28. Pearson correlation analyses were conducted to explore the interrelationships between all scales and subscales. Participants were grouped into one of three trimester groups (Trimester one: 4-12 weeks; Trimester two: 13-27 weeks; Trimester three: 28+ weeks). An ANOVA test was used to compare the mean scores of participants across the trimester groups. An independent t-test was used to compare the mean scores of participants who were expecting their first baby (primiparous women) with those who were on a subsequent pregnancy (multiparous women), and to compare those who were living with a medical condition to those who were not. Correlation analyses was also conducted for each of these groups. Moderation effects between variables were interpreted using PROCESS (Model 1) (A. F. Hayes, 2018) with a bootstrap sample of 5000, where variables were centred to their means. Simple effects coefficients were computed for three values of the moderator (i.e., 1 *SD* below the mean, at the mean, and 1 *SD* above the mean). For all analyses, p values ≤ 0.05 were considered statistically significant.

4.4. Results

Descriptive statistical analysis was conducted including the calculation of mean scores and standard deviations for all full scales (see Table 4.2) and for the self-compassion and mindfulness subscales (see Table 4.3). Further inferential statistical testing was carried out including correlation and moderation analyses.

Correlational Analysis

Pearson correlation tests were conducted to investigate the relationships between the independent variables (BMI, gestation, maternal-fetal attachment, self-compassion,

mindfulness, psychological flexibility and subscales) and the dependent variables (focused eating (MED1), awareness of hunger and satiety cues (MED2), eating with awareness (MED3), fat and sugar consumption, emotional eating, restrained eating, and grazing). Relationships were found between the full scales (see Table 4.4) and subscales (see Tables 4.5 and 4.6) as discussed below.

Eating Behaviours with Significant Correlations with the Independent Variables

In the study, BMI correlates negatively with eating with awareness (MED3) and positively with both emotional eating and grazing (see Table 4.2). No other correlations with BMI were found. When examining the different eating behaviour variables, emotional eating and grazing showed the most correlations with the mindfulness-based independent variables at highly significant levels. Emotional eating was found to have very significant negative correlations with self-compassion, mindfulness, and psychological flexibility (see Table 4.3). Grazing only had a very significant negative correlation with psychological flexibility (see Table 4.3). When examining the different eating behaviour variables, emotional eating and grazing showed the strongest negative correlations with mindfulness at highly significant levels (see Table 4.4). (Note the AAQ scale measures psychological *inflexibility*, for the sake of clarity and consistency, the results are described in terms of psychological flexibility).

There were also significant, and in many cases very significant, negative correlations between emotional eating and all self-compassion subscales except *recognising suffering* (see Table 4.5). All three domains of mindful eating are significantly correlated with emotional eating in a negative direction (see Table 4.6). This means that as self-compassion, mindfulness, psychological flexibility, and mindful eating increase, emotional eating decreases. These findings suggest that these concepts may be helpful in addressing emotional eating behaviour. Furthermore, grazing is very significantly negatively correlated with all three domains of mindful eating (see Table 4.4). Additionally, both emotional eating and

grazing are significantly associated with gestation, suggesting that these eating habits escalate as pregnancy progresses (see Table 4.4).

Consumption of dietary fat and sugar, and restrained eating also positively correlated significantly with psychological flexibility (see Table 4.4). These results mean that psychological flexibility could potentially be useful for pregnant women with differing eating behaviours including those who eat foods high in fat and sugar, those who may overeat due to psychological distress or those who may restrict their diet (restrained eating), all types of eating behaviours associated with weight gain, pregnancy and birth outcomes as well as long-term health complications (Gardner et al., 2012; Heery et al., 2016; Vieten et al., 2018). This may be especially useful for those who engage in grazing behaviours, especially given that this type of behaviour increases as pregnancy progresses.

Self-compassion and mindfulness showed significant, and in many cases very significant, correlations with all mindful eating domains (see Table 4.4). This is unsurprising given that all scales are measuring mindfulness in some form, but this finding perhaps reinforces that the mindful eating scale used in this study is a valid and reliable measure of *mindful* eating in particular. Other mindful eating instruments, such as the mindful eating questionnaire (Framson et al., 2009), have received some criticism amongst academics in the mindful eating field for measuring other aspects of eating behaviour and not being entirely focused on the mindful element of eating (Mantzios, 2023).

Table 4.2. Means and standard deviations of variables and bivariate correlations to BMI
(study 2)

Variables	<i>M</i>	<i>SD</i>	Correlation to BMI	
			<i>r</i>	<i>p</i>
Gestation	26.29	9.44	.02	.85
Mindfulness	48.18	6.63	-.18*	.05
Self-compassion	70.14	11.64	-.19*	.04
Psychological inflexibility	21.69	9.05	.05	.63
MFA	90.05	12.20	.08	.39
MED1 Focused eating	20.43	2.88	-.15	.09
MED2 Hunger & satiety	18.72	3.85	-.15	.09
MED3 Eat with awareness	10.88	3.15	-.38**	<.001
Emotional eating	33.43	13.05	.26**	.00
Restrained eating	25.29	8.80	-.1	.29
Grazing	12.73	5.20	.23*	.01
Fat & sugar	59.19	12.64	.07	.45

Table 4.3. Means and standard deviation for subscales for self-compassion and mindfulness (study 2)

Variables	<i>M</i>	<i>SD</i>
1. SOCS-SRS	15.01	2.48
2 SOCS-SUS	17.17	2.71
3. SOCS-SFS	12.5	3.12
4. SOCS-STF	12.45	2.96
5. SOCS-SAS	13.02	3.12
6. Observing	9.92	1.95
7. Describing	9.67	2.49
8. Acting with awareness	9.43	2.32
9. Non-judging	8.72	2.26
10. Non-reacting	10.43	2.37

Note: Items 1 to 5 are self-compassion subscales: SOCS-SRS = recognising suffering, SOCS-SUS = understanding universality of suffering, SOCS-SFS = feeling for the person suffering, SOCS-STF = tolerating suffering, SOCS-SAS = acting to alleviate suffering; items 6-10 are mindfulness subscales

Table 4.4. Bivariate correlations between the variables (study 2)

Questionnaire scores	1	2	3	4	5	6	7	8	9	10	11	12
(1) Gestation												
(2) BMI	.02											
(3) SOCS-S	.07	-.19*										
(4) FFMQ	.13	-.18*	.57**									
(5) AAQ	-.16	.05	-.37**	-.66								
(6) MFA	.22*	.08	.28**	.27**	-.26**							
(7) MED1	-.03	-.15	.28**	.28**	-.08	.20*						
(8) MED2	-.06	-.15	.30**	.30**	-.1	.26**	.57**					
(9) MED3	-.13	-.38**	.20*	.29**	-.17	.01	.28**	.26**				
(10) DFFS	.06	.07	.01	-.11	.18*	.01	-.02	-.01	-.39**			
(11) Grazing	.19*	.23*	-.09	-.31	.25**	-.15	-.33**	-.34**	-.61**	.43**		
(12) RE	-.08	-.1	-.15	-.04	.19*	-.12	.15	.04	.11	.03	.01	
(13) EE	.18*	.26**	-.27**	-.33**	.24**	-.11	-.26**	-.36**	-.57**	.25**	.63**	.18*

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Note: SOCS-S = self-compassion scale; FFMQ = mindfulness scale; AAQ = psychological inflexibility scale; MFA = maternal-fetal attachment scale; MED1 = focused eating, MED2 = hunger and satiety Cues, MED3 = eating with awareness; DFFS = dietary fat & sugar scale; RE = restrained eating subscale; EE = emotional eating subscale

Table 4.5. Bivariate correlations for self-compassion subscales (study 2)

Questionnaire scores	1	2	3	4	5	6	7	8	9	10	11	12	13
(1) Gestation													
(2) BMI	.02												
(3) SOCS-SRS	0	-.07											
(4) SOCS-SUS	.07	-.24**	.61**										
(5) SOCS-SFS	.07	-.12	.52**	.36**									
(6) SOCS-STF	.02	-.13	.51**	.30**	.81**								
(7) SOCS-SAS	.1	-.2*	.49**	.33**	.83**	.81**							
(8) MED1	-.03	-.15	.32**	.29**	.18*	.19*	.19*						
(9) MED2	-.06	-.15	.25**	.16	.25**	.26**	.30**	.57**					
(10) MED3	-.13	-.38**	.22*	.32**	.11	.11	.08	.28**	.26**				
(11) DFFS	.06	.07	-.06	-.12	0	.13	.06	-.02	-.01	-.39**			
(12) Grazing	.19*	.23*	-.14	-.17	0	-.04	-.02	-.33**	-.34**	-.61**	.43**		
(13) RE	-.08	-.1	-.18*	-.06	-.13	-.06	-.18*	.15	.04	.11	.03	.01	
(14) EE	.18*	.26**	-.17	-.27**	-.25**	-.18**	-.2*	-.26**	-.36**	-.57**	.25**	.63**	.18*

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Note: 3 to 7 SOCS-S subscales: SOCS-SRS = recognising suffering, SOCS-SUS = understanding universality of suffering, SOCS-SFS = feeling for the person suffering, SOCS-STF = tolerating suffering, SOCS-SAS = acting to alleviate suffering; MED1 = focused eating, MED2 = hunger and satiety cues, MED3 = eating with awareness; DFFS = dietary fat & sugar scale; RE = restrained eating subscale; EE = emotional eating subscale

Table 4.6. Bivariate correlations for mindfulness subscales (study 2)

	1	2	3	4	5	6	7	8	9	10	11	12	13
(1) Gestation													
(2) BMI	.02												
(3) Observing	.09	-.14											
(4) Describing	.08	-.08	.30**										
(5) Acting with awareness	.05	.27**	.15	.27**									
(6) Non-judging	.16	-.03	.33**	.29**									
(7) Non-reacting	0	-.02	-.06	.20*	.35**	-.17							
(8) MED1	-.03	-.15	.38**	.20*	.21*	.08	-.03						
(9) MED2	-.06	-.15	.43**	.24**	.11	.15	-.02	.57**					
(10) MED3	-.13	.38**	.21*	.17	.30**	.07	.09	.28**	.26**				
(11) DFFS	.06	.07	-.1	.04	-.12	-.04	-.1	-.02	-.01	.39**			
(12) Grazing	.19*	.23*	.27**	-.12	.3**	-.13	-.09	.33**	.34**	.61**	.43**		
(13) RE	-.08	-.1	-.01	-.07	.03	.03	-.08	.15	.04	.11	.03	.01	
(14) EE	.18*	.26**	.26**	-.15	.27**	-.18*	-.1	.26**	.36**	.57**	.25**	.63**	.18*

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Note: 3 to 7 FFMQ-SF subscales; MED1 = focused eating, MED2 = hunger and satiety cues, MED3 = eating with awareness; DFFS = dietary fat & sugar scale; RE = restrained eating subscale; EE = emotional eating subscale

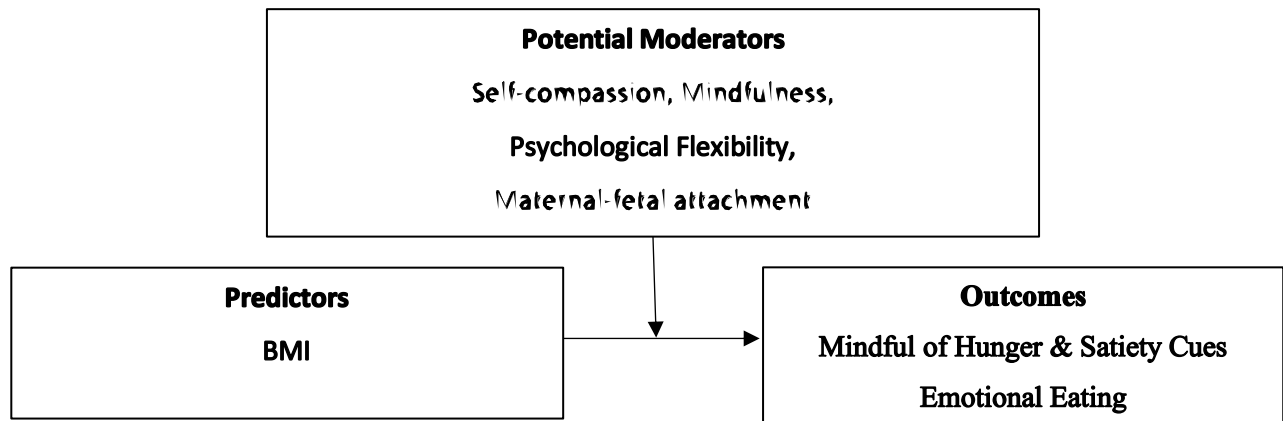
Further findings relating to gestation, parity and medical conditions found more relationships of interest. Despite the correlations between gestation and both grazing and emotional eating, no significant differences in the mean scores of any of the variables were found between the three trimester groups. In terms of parity, an independent t-test showed there were no significant differences in mean scores between primiparous and multiparous women. However, multiparous women had significant negative relationships between BMI and focused eating (MED1) [$r(81) = -.236, p = .034$], and between BMI and eating with awareness (MED3) [$r(82) = -.441, p < .001$]. These relationships were not observed in primiparous women. In relation to the presence of any medical conditions, an independent t-test showed there were no significant differences in mean scores between those living with a medical condition and those who were not. However, BMI had a very significant, positive relationship with emotional eating [$r(23) = .552, p = .006$] and a significant, negative relationship with eating with awareness (MED3) [$r(23) = -.430, p = .041$], amongst the group living with a medical condition.

Finally, the relationship between maternal-fetal attachment and the two domains of mindful eating, domain one (MED1, Focused Eating), and domain two (MED2, awareness of hunger and satiety cues) were significant in positive linear directions, although the associations were weak. The current study also showed a significant positive relationship between maternal-fetal attachment and gestation. These findings mean that as pregnancy progresses women become more mindful of their eating, are more aware of their hunger and satiety cues and the attachment they feel towards their unborn baby increases also. This study also found significant relationships between maternal-fetal attachment and the variables self-compassion, mindfulness and psychological flexibility.

Moderation Analyses

Preliminary analyses and visual inspections of scatterplots and graphs ensured that the necessary assumptions of normality, linearity, multicollinearity and homoscedasticity for this analysis were met. In addition, other conditions were met wherein the moderator variables (self-compassion, mindfulness, psychological flexibility) and the independent variable (BMI) are not related and are not highly correlated. Moderation analysis was conducted to explore whether any independent variables acted as moderators between the relationships observed. Moderation is of interest in this study to identify whether the independent variables (mindfulness, self-compassion, psychological flexibility, mindful eating or maternal-fetal attachment) have any effect whether reducing or increasing the strength of relationships between BMI and eating behaviours. Variables that show moderating effects may be helpful in eating behaviour change interventions. Moderation analysis tested mindfulness, self-compassion, maternal-fetal attachment and psychological flexibility as potential moderators of observed relationships between BMI and emotional eating, and BMI and being mindful of hunger and satiety cues (MED2) (see Figure 4.1).

Figure 4.1. Moderating model of BMI predicting eating behaviours with self-compassion and mindfulness as moderator (study 2)



Self-Compassion as Moderator

Self-compassion was a significant potential moderator of the relationship between BMI and emotional eating and passed at the highest order unconditional interaction and the conditional effects were significant at the average and low levels only (see Table 4.7; Figure 4.2). Results indicate that the positive relationship between BMI and emotional eating becomes insignificant as self-compassion scores increase. Self-compassion was also a significant potential moderator of the relationship between BMI and being mindful of hunger and satiety cues (MED2) at the low level only and failed at the highest order unconditional interaction (see Table 4.7; Figure 4.2). Results indicate that the positive relationship between BMI and being mindful of hunger and satiety cues (MED2) becomes insignificant as self-compassion scores increase.

Figure 4.2. Moderation graph of self-compassion moderating BMI and both emotional eating and MED2 (study 2)

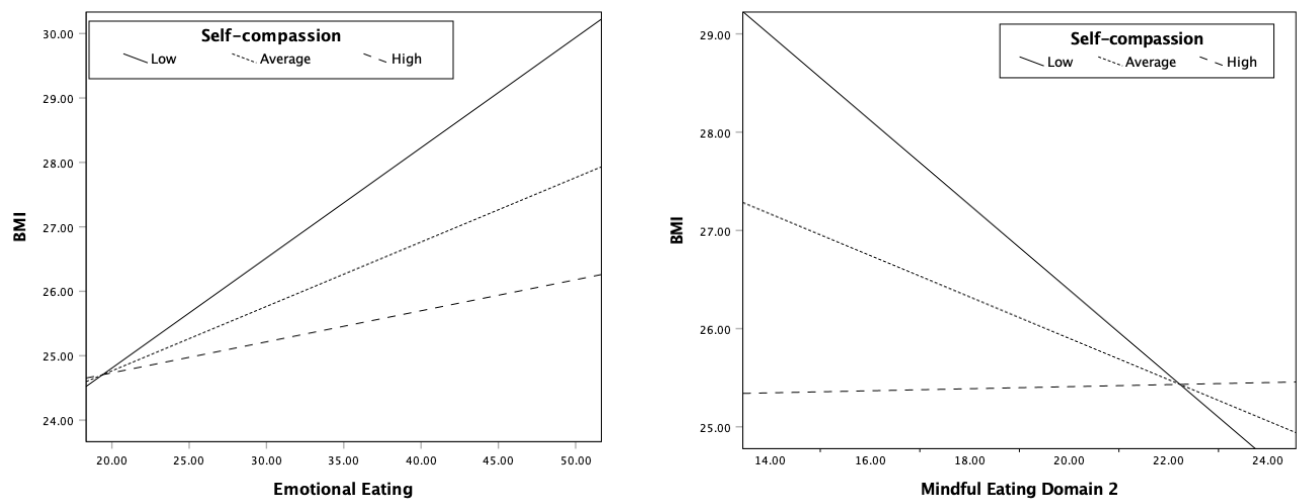
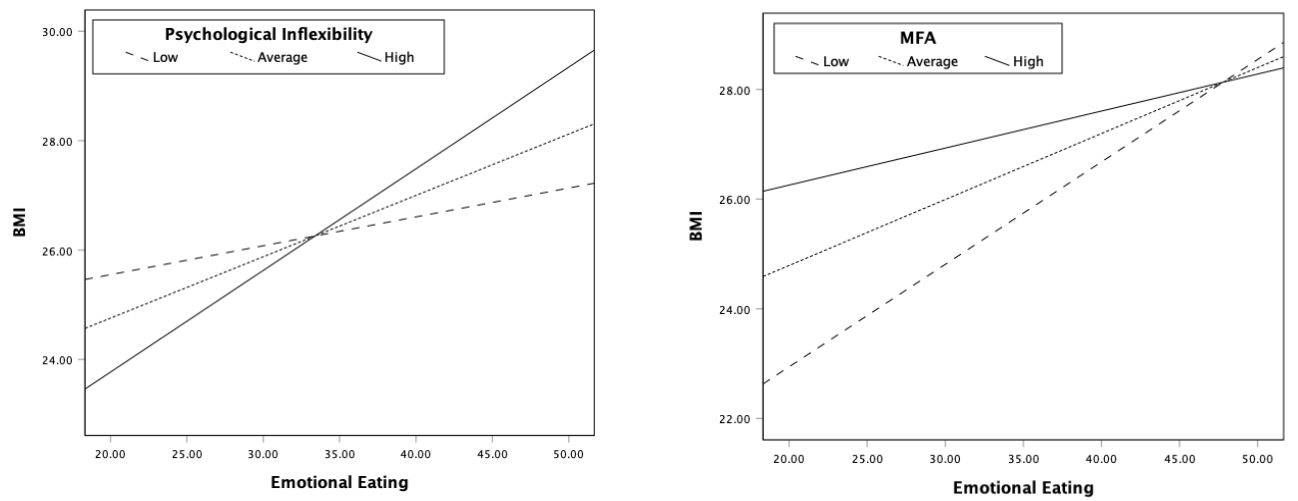


Figure 4.3. Moderation graphs of psychological inflexibility and MFA moderating emotional eating (study 2)



Note: the AAQ scale measures psychological *in*flexibility. MFA = maternal-fetal attachment.

Table 4.7. Moderation analyses using BMI to predict emotional eating (study 2)

	Model statistics				Predictor statistics				
	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>p</i>		<i>b</i>	<i>p</i>	95% CI	
SOCS-S	.34	.12	5.25	.0174	- 1 SD	.24	.0004	.11	.36
					MEAN	.13	.0034	.04	.21
					+ 1 SD	.01	.8194	-.11	.13
	Model statistics				Predictor statistics				
	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>p</i>		<i>b</i>	<i>p</i>	95% CI	
AAQ	.30	.09	3.77	.1105	- 1 SD	.05	.4035	-.07	.18
					MEAN	.11	.0127	.02	.20
					+ 1 SD	.19	.0015	.07	.30
	Model statistics				Predictor statistics				
	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>p</i>		<i>b</i>	<i>p</i>	95% CI	
MFA	.31	.10	4.06	.1527	- 1 SD	.19	.0018	.07	.30
					MEAN	.12	.0055	.04	.20
					+ 1 SD	.07	.2605	-.05	.19
Moderation analyses using BMI to predict MED2									
	Model statistics				Predictor statistics				
	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>p</i>		<i>b</i>	<i>p</i>	95% CI	
SOCS-S	.23	.05	2.27	.0980	- 1 SD	-.43	.0306	-.82	-.04
					MEAN	-.2108	.1447	-.50	.07
					+ 1 SD	.0105	.9570	-.37	.39

Note: SOCS-S = self-compassion; AAQ = psychological inflexibility; MFA = maternal-fetal attachment; MED2 = hunger and satiety cues

Psychological Flexibility (AAQ) as Moderator

Psychological flexibility (AAQ) was also a significant potential moderator of the relationship between BMI and emotional eating but failed at the highest order unconditional interaction and the conditional effects were significant at the high levels only (see Table 4.7; Figure 4.3). Results indicate that the positive relationship between BMI and emotional eating becomes insignificant as AAQ scores decrease. (Note the AAQ scale measures psychological *inflexibility*).

Maternal-Fetal Attachment as Moderator

Maternal-fetal attachment (MFA) was also a significant potential moderator of the relationship between BMI and emotional eating but failed at the highest order unconditional interaction and the conditional effects were significant at the average and low levels only (see Table 4.7; Figure 4.3). Results indicate that the positive relationship between BMI and emotional eating becomes insignificant as MFA scores increase.

In summary, the results show that BMI is associated negatively with an aspect of mindful eating (eating with awareness) and positively with both emotional eating and grazing. The mindfulness-based constructs, including mindful eating, examined here showed significant negative associations with emotional eating and/or grazing. Additionally self-compassion, psychological flexibility and maternal-fetal attachment play moderating roles in the relationship between BMI and emotional eating in this study.

4.5. Discussion

This exploratory study aimed to investigate the associations between mindfulness-based concepts and eating behaviours during pregnancy. Findings revealed that as self-compassion, mindfulness and mindful eating increase, emotional eating decreases. The findings add to the previous research on emotional eating within the general population. O'Reilly et al. (2014) also found that mindfulness-based interventions were effective in reducing emotional eating. Additionally, Warren et al. (2017) concluded that mindfulness and mindful eating have the potential to address problematic eating behaviours.

Regarding fat and sugar consumption, this study concurs with previous research that concepts based in mindfulness are associated with this style of eating. In the current study the correlation was observed with psychological flexibility. In Mantzios and colleagues (2018) the strong correlation they observed was with mindfulness. Given both constructs are rooted in mindfulness theory, this study confirms the role that mindfulness-based concepts may play in reducing fat and sugar consumption and adds further evidence to these concepts as being potentially helpful in intervention development to modify problematic eating behaviours that can contribute to weight gain.

This study also builds on the research relating to grazing, which has not been examined in pregnancy prior to this study. In this study, grazing increased as pregnancy progressed, suggesting that this type of eating behaviour may be a pregnancy-related style of eating. However, given this study did not look at personality types the results cannot add further insight into prior research in this regard (Mantzios et al., 2018). Grazing was also strongly linked with BMI in this study, which mirrors the research from the general population (Mantzios et al., 2018). However, this study found no moderating effects of the relationship between BMI and grazing for any of the independent variables. Other research has observed the mediating role of mindful eating on grazing (Mantzios et al., 2018). This

might suggest that whilst grazing may be linked with BMI in pregnancy, it may also be a typical eating pattern during pregnancy, especially as pregnancy progresses, that cannot be modified with mindful eating. It may be unsurprising that grazing behaviours (eating little and often) become more likely throughout pregnancy because as pregnancy progresses the digestive organs become compressed by the growing fetus (Fan et al., 2020) making the consumption of large meals difficult. Therefore, consuming smaller amounts of food more frequently may be more typical in the later stages of pregnancy. Consumption of sugar and fat was also strongly associated with gestation in this study. In other words, as pregnancy progresses grazing and consumption of fat and sugary foods increases. Given eating fat and sugary foods was not associated with BMI in this study, it may be that this type of eating behaviour, may increase during pregnancy irrespective of BMI. This might suggest that both grazing and consumption of fat and sugar later in pregnancy are typical eating behaviours independent of BMI. Since Van der Wijden (2014) found that a better focus on being healthy towards the end of pregnancy led to lower GWG, it is especially noteworthy that both these types of eating behaviours increased during pregnancy, and therefore may be key contributors to GWG later in pregnancy. An intervention that aims to address the increased grazing of foods high in fat and sugar in pregnancy could be beneficial.

Similar to self-compassion and mindfulness, psychological flexibility also appears to correlate with emotional eating. Consequently, an intervention targeting these types of problematic eating behaviours through improving psychological flexibility, potentially through the use of Acceptance and Commitment therapy, could be helpful.

In the current study there were links between both emotional eating and mindful eating with BMI. Pregnant women with a higher BMI had lower mindful eating scores and higher emotional eating scores, which reflects the research from non-pregnant populations in terms of the link between BMI and these types of eating behaviours (Donofry et al., 2021).

Women with a higher BMI also had stronger links between self-compassion and with both emotional eating, grazing and mindful eating. Considering the increase in this type of eating behaviour during pregnancy, the inclusion of questions relating to emotional eating, grazing and mindful eating on an antenatal questionnaire could be a helpful intervention to identify those who may benefit from additional support.

Furthermore, the study revealed some interesting findings in relation to parity, which makes some meaningful contributions to the pregnancy literature regarding the targeting of intervention programmes. For multiparous women in this study, there were stronger associations between BMI and focused eating and between BMI and the awareness of hunger and satiety cues. Since this was not observed in primiparous women, this might suggest that for those who already have caring responsibilities for other children, they may find it harder to focus on or to be aware of their hunger/satiety. This interpretation is offered with some caution as there may be other reasons why BMI was more strongly associated with lower levels of mindful eating for multiparous women. Psychosocial factors can affect primiparous and multiparous women differently. For example, research shows that multiparous women are more likely to experience psychological distress during pregnancy than primiparous women (Hartley et al., 2016). Therefore, this conclusion may be over-reaching given there are many reasons why women on a subsequent pregnancy could find this more challenging. However, this does at the very least suggest that parity calls for further examination.

One further contribution this study makes to the existing literature is in relation to pregnant women who are living with a medical condition. In this study, medical conditions covered both mental and physical conditions. There were stronger links between BMI and both emotional eating and mindful eating for those with a medical condition. This may suggest that pregnant women who have other issues to manage are more likely to engage in emotional eating to reduce negative emotions and be less mindful when eating. Although it is

difficult to directly compare this result with previous literature due to variations in how medical conditions are defined and studied, the literature does explore the impact of mindfulness-based interventions on some medical conditions in the non-pregnant population such as endometriosis pain for women (Moreira et al., 2024), migraine pain (Hunt et al., 2023) and fibromyalgia (Haugmark et al., 2019) where mindfulness has been shown to change the relationship with pain or the impact of the condition on people's lives. Therefore, the finding in the current study shows promise that mindfulness could improve the experience of living with a medical condition during pregnancy and may reduce the likelihood of using eating as a coping mechanism for some women, especially if they already have a raised BMI.

The moderating effects of these constructs on the eating behaviours examined in this study provide some promise in terms of providing protection against problematic eating behaviours. In relation to emotional eating, these constructs may be useful for those who are at risk of overeating in response to psychological distress. Concerning restrained eating, these constructs may help those women with a tendency to restrict their diet during pregnancy, which can have negative consequences in pregnancy by reducing necessary nutrient intake (Yeh et al., 2024). This can especially affect underweight women or those with a history of an eating disorder (Mumford et al., 2008). Finally, regarding the consumption of fat and sugar, these constructs could be especially helpful for women with a diagnosis of gestational diabetes who may be encouraged to control their sugar intake (Casas et al., 2020).

In this study, self-compassion, psychological flexibility and maternal-fetal attachment all had moderating effects on the relationship between BMI and emotional eating. However, of all the constructs, self-compassion may be the most effective target for an intervention to provide a protective buffer against emotional eating for three reasons. First, targeting self-compassion will also target mindfulness, which is known to improve both well-being (Matvienko-Sikar et al., 2016b) and maternal-fetal attachment (Shreffler et al., 2019).

Enhancing emotional well-being and reducing psychological distress, can prevent emotional eating. Second, self-compassion has been found to play a more pre-emptive role in eating behaviours and weight management than mindfulness by itself (Mantzios et al., 2014). Third, self-compassion has also been linked with better physical health (Phillips & Hine, 2021) and health-promoting behaviours (Sirois et al., 2015). Given pregnancy impacts physical and psychological health, cultivating self-compassion may play a holistic role in promoting overall health and well-being, as well as helping to encourage healthy eating behaviours.

Contributions to the Existing Research

The current study explored concepts and eating behaviours that have attracted very little attention in the pregnancy literature to date, such as psychological flexibility and grazing. The findings from this study contribute to the growing research around psychological constructs that may play a role in addressing emotional eating during pregnancy. Grazing may be a typical eating pattern during pregnancy, especially as pregnancy progresses, although given its link with weight gain, this type of eating behaviour during pregnancy requires additional exploration. The study also contributes further in relation to parity and those who have medical conditions in pregnancy. These considerations provide further criteria to help identify those who may benefit most from lifestyle interventions. This study also included women from different cultural backgrounds, including women from racially-minoritised groups. It is especially important to include these women in pregnancy research because these women are more likely to have adverse birth outcomes and face more health inequality compared to their White counterparts (Killeen et al., 2022). Women from ethnic minority backgrounds are also under-represented in maternity-related research and there are challenges reaching this population (Lovell et al., 2023). Even with the use of community workers in highly specified areas of deprivation, the researcher experienced challenges recruiting women from racially-minoritised groups for this research.

Therefore, any research designed to contribute to improving health practices must continue to develop strategies to ensure these groups are included.

Limitations

Despite the exploratory nature of the study, some limitations should be noted. First, the exclusion criteria may have resulted in recruiting participants with existing good levels of well-being, who are less impacted by factors that contribute to problematic eating behaviours, and this may have affected the findings. Second, the criteria to exclude those with an eating disorder may have excluded those who had resolved any eating disorder but continue to experience problematic eating behaviours, meaning this sample may have contained fewer problematic eaters than a general sample. Third, the higher BMI group used in this study for comparative analysis had BMI above 25. For most pregnancy lifestyle interventions, BMI is set at 30 and above so the findings from the study should be interpreted carefully. Whilst this might be considered a limitation, it may also suggest that interventions could be more widely applicable to women with a BMI below 30. Further research could consider expanding the demographic and eligibility of participants to include women with different eating histories. Given the findings in relation to gestation, grazing and consumption of fat and sugar, it may also be worthwhile to conduct a longitudinal study to follow women's eating behaviours as they move through the different stages of their pregnancy and postnatally. This would also help identify the most effective time to deliver any intervention.

Practical Implications

This exploratory study found that mindfulness-based constructs and mindful eating were associated with consumption of fat and sugar, grazing, emotional and restrained eating in a sample of pregnant women. In particular, focused eating was very strongly positively associated with self-compassion and mindfulness, whilst grazing, restrained eating, and fat and sugar consumption were strongly negatively associated with psychological flexibility.

The strong link between BMI and both focused eating and eating with awareness for multiparous women in the current study, and the previous findings in the literature that multiparous women are at greater risk of psychological distress (Hartley et al., 2016), suggest that mindfulness-based interventions may be especially helpful for these women. For women living with a medical condition, there were also strong associations between BMI and both emotional eating and eating with awareness. This suggests that mindfulness-based constructs may be especially applicable for women with physical as well as psychological health conditions. During pregnancy, these conditions might include severe pelvic girdle pain and fatigue that can impact on physical activity. For these women interventions may reduce the reliance on eating as a way of reducing any psychological responses to physical distress or pain. An intervention targeting self-compassion could offer a simple and cost-effective approach to target not only eating behaviours but also to improve general health and well-being. Providing further evidence and building a case for future intervention development may have clear implications for optimal care in the field.

CHAPTER 5/STUDY 3: A CROSS-SECTIONAL STUDY EXAMINING THE RELATIONSHIPS BETWEEN MINDFULNESS-BASED CONCEPTS AND BODY IMAGE DURING PREGNANCY

5.1. Abstract

Background: Women's bodies change considerably and rapidly during pregnancy, diverging away from normal body weight, size and shape. This can lead to negative feelings about body image, which is associated with poorer psychological well-being and problematic eating behaviours. Pregnancy is a unique experience in relation to body image and can be damaging to body image for some women whilst protective against body image disturbance for others. The current study investigated mindfulness-based concepts and maternal-fetal attachment in relation to body image in pregnancy. **Method:** One hundred and eleven pregnant women between 4- and 41-weeks' gestation completed an online questionnaire to measure their levels of self-compassion, mindfulness, psychological flexibility, maternal-fetal attachment, body image flexibility and weigh/body-related shame and guilt. The study also examined the interrelationships between these factors. **Results:** The study found that BMI had significant correlations with body image flexibility and weight/body-related shame. Additionally, self-compassion, mindfulness and psychological flexibility had very strong negative correlations with body image flexibility and with both weight/body-related shame and guilt. Self-compassion, and the separate elements *feeling for the person suffering*, *tolerating uncomfortable feelings* and *acting to alleviate suffering* also moderated the relationship between BMI and weigh/body-related shame reducing the effect of BMI in these relationships. **Conclusions:** A pregnant woman's thoughts and feelings about her body and weight, and her ability to adjust to her changing body in pregnancy are worthy of assessment antenatally to identify women who could be at risk of poorer psychological well-being or of engaging in problematic eating behaviours. Self-compassion may be a useful target for

intervention to improve body image flexibility during pregnancy, especially for younger women, multiparous women, women living with a medical condition, and especially if those women also have a raised BMI. Assessing the need for additional help on factors such as parity, age and medical conditions in addition to BMI alone, may help identify those pregnant women who may benefit most from intervention or additional support.

5.2. Background

Pregnancy can be a complex stage for women in relation to body image because it is often the first time in their lives when weight gain might be expected and acceptable (Hodgkinson et al., 2014). Women's bodies change considerably over a comparatively short period of time (Duncombe et al., 2008) and diverge away from normal body weight, size and shape (Clark et al., 2009). Many of these changes are normal to adapt to the growing fetus (Watson et al., 2015) and most women adjust to physical changes to their bodies in a positive way (Clark et al., 2009). Some pregnant women can even be more satisfied with their bodies than before pregnancy (Duncombe et al., 2009), suggesting that pregnancy can provide a protective buffer against body image issues (Hodgkinson et al., 2014). Pregnancy can provide some women with a welcome relief from the normal pre-pregnancy societal expectations to be a particular size and weight and offer an acceptable reason to gain weight (Clark et al., 2009). Women feel they have a genuine excuse from complying with the cultural norms of shape and size (Hodgkinson et al., 2014). Women also enjoy pregnancy because it allows them to discontinue strict pre-pregnancy dieting regimes and they also accept that their body growing means they have a healthy baby (Shloim et al., 2015b). However, not all women are able to accept the changes to their body in the same positive way (Clarke et al., 2009) and they can experience body dissatisfaction and even feelings of shame. Body dissatisfaction refers to a person's negative view of their body or parts of their body and is associated with psychological distress (Chan et al., 2020). Since pregnancy is a complex time for body image

and for eating behaviours (Killeen et al., 2022) a qualitative study is especially useful for investigating these subjects and provides the opportunity to explore deeper participants' pregnancy experiences in relation to eating, weight and body image.

Women with a predisposition for gaining weight pre-pregnancy are more likely to experience body dissatisfaction or body image disturbances in pregnancy (Clarke et al., 2009). Body image as a concept refers to the internal representation of external appearance and includes thoughts and feelings about body shape, weight and size (Cash et al., 2004). When the internal perception is not aligned with the desirable body weight, shape or size, it can lead to a negative body image or as described in the literature 'body image disturbance' (Cash et al., 2004). It is imperative to better understand the impact of these changes because research has shown that body image disturbance during pregnancy has been linked with anxiety, depression, low mood and low self-esteem (Duncombe et al., 2008; Roomruangwong et al., 2017). Body image disturbances are also associated with a woman's tendency to engage in problematic behaviours (Collings et al., 2018) including types of problematic eating such as restrained eating, which is also linked to overeating and weight gain (Shloim et al., 2015). Restrained eating can, in some circumstances, lead to extreme weight loss, or to a more serious condition referred to as 'pregorexia', which involves reducing calorie intake and increasing physical activity in order to counter changes in weight and body shape that occur in pregnancy (Tarchi et al., 2023). Consequently, restrained eating can have a significant negative impact on the well-being of both the mother-to-be and her unborn baby (Winter, 2016). Body image disturbance has been shown to affect self-confidence for some women during pregnancy (Uçar et al., 2018), as well as overall quality of life (Fard et al., 2022) revealing the extensive effect of body image disturbance on some women's lives.

As outlined above there appears to be two prominent theories relating to body image in pregnancy (Crossland et al., 2023), which posit that pregnancy has two pathways of effect on body image - one that is damaging and one that is protective. The reality may simply reflect that women experience pregnancy differently and for those who do experience difficulties with their body image, the impacts can be considerable, impacting on a woman's self-confidence and overall quality of life (Winter, 2016). Given the extent to which body image can impact on women's psychological health and well-being, researchers have dedicated many years examining potential concepts for use in interventions to help reduce these effects, including examining mindfulness-based practices, including self-compassion.

Research in the general population has found that mindfulness-based concepts can offer protection against the consequences of body image disturbances, such as problematic eating behaviours (Albertson et al., 2015; Stutts & Blomquist, 2018), poor psychological well-being (Woekel & Ebbeck, 2013) and body and weight related shame (Albertson et al.; 2015). Whilst the research in the general population has found relationships between mindfulness, self-compassion and body image across different groups, such as clinical populations (Gopan et al., 2024), non-pregnant women (Pidgeon & Appleby, 2014) and new mothers in the postnatal period (Carbonneau et al., 2021; Tavares et al., 2023), there has been limited research on the role of self-compassion and mindfulness on body image during pregnancy. A self-compassion meditation intervention (Papini et al., 2022) demonstrated promising results in improving body image for most participating women. The three-week intervention included a daily 20-minute guided meditation exercise with text messaging prompts. Despite an indicative positive effect on body shame and enhanced body image, the researchers noted that women with higher body dissatisfaction were less likely to complete the programme, though no explanation for this was offered. The researchers have called for further qualitative research to examine women's perspectives on self-compassion

interventions and to inform future replications of their study (see Chapter 6 for further discussion). Considering the potential impact of other mindfulness-based concepts on body image, such as psychological flexibility could also build on this existing research.

Research investigating the association between psychological flexibility and body image disturbance and its potential for use in interventions is beginning to emerge within the general population (Mancuso, 2016; Webb, 2015). Through Acceptance and Commitment therapy (ACT), an increase in psychological flexibility could reduce body image disturbance because individuals with higher psychological flexibility are more likely to accept present-moment experiences without judgement (Rogers et al., 2018), which in the context of pregnancy could include accepting a body that is changing rapidly over a short period of time. More research is needed to examine the complex relationship between psychological flexibility and body image in general (Griffiths, et al., 2018) and there has been no research to date investigating the relationship between psychological flexibility and body image during pregnancy, therefore this is a novel area of research.

During pregnancy, a woman's connection with her unborn baby, known in the literature as maternal-fetal attachment (MFA) (Cranley, 1981) is influenced by bodily sensations, such as feeling baby's kicks and movements (Tambelli et al., 2022). The research around the impact of body image on MFA paints an inconclusive picture. Haedt and Keel (2007) found that a strong maternal bond with the fetus was linked to a positive body image. Conversely, Malus et al. (2014) found that a woman's ability to bond with her unborn baby was not affected by her ability to adapt to her changing body. In fact, the opposite was true as they found that focusing on building the bond with baby may have provided a coping mechanism for women to manage feelings about their changing body. Given it is unclear whether a good connection with baby is needed to also have a positive body image in

pregnancy, the current study included MFA to examine this relationship to further add to the knowledge in this area.

Regarding the impact of body image in pregnancy and psychological well-being, some women find pregnancy can provide them with a reprieve from the pressures of being an ideal body shape and weight, while other women's psychological health is affected by the changes to their body and they can develop body image disturbance (Wu et al., 2024). As a result, it has been proposed that HCPs should identify women who may be experiencing body image disturbance (Roomruangwong et al., 2017) and that antenatal education should cover information about pregnancy weight and body changes to help reduce body image disturbance (Wu et al., 2024). Some research has found that psychological well-being and body image issues are not strongly linked, which also supports the second theory, that pregnancy can play a significant role in protecting against body image disturbance. It is also known that body image disturbance can become more pronounced for some women during the postnatal period, again supporting this theory that pregnancy can be protective (Clarke et al., 2009; Hodgkinson et al., 2014). Investigating concepts that can help understand and identify which women may be most affected by body image disturbance is the main rationale for this study.

The current study aimed to answer two research questions. First, what role do mindfulness-based constructs and maternal-fetal attachment play in body image acceptance and weight-related negative emotions during pregnancy? Second, what are the associations between mindfulness-based constructs, maternal-fetal attachment, body image, and weight-related negative emotions during pregnancy? The research findings were used to inform the design of the qualitative phase of the PhD project (see Chapter 6).

5.3. Method

Study Design

A cross-sectional design was used to collect data on multiple variables from participants at a single point in time (see Chapter 2, p.42 for more details). The aim of the study was to investigate the relationships between the predictor variables: self-compassion, mindfulness, maternal-fetal attachment, psychological flexibility and the outcome variables (body image in pregnancy, body image action and acceptance, weight- and body-related shame and guilt). A link to the Qualtrics survey was shared on social media and on the platform Prolific, which was also used for this study. A strict inclusion and exclusion criterion ensured all participants were aged eighteen or over, did not have a current or past serious mental illness diagnosis, any previous experience of a stillbirth or neonatal loss or a current or previous diagnosis of an eating disorder.

Participants

A total of 125 participants were recruited for the study via WhatsApp groups, professional contacts and social media (Facebook, Twitter, Instagram) and the platform Prolific. Fourteen participants were excluded due to not fitting the inclusion criteria: not pregnant ($n = 2$), and others for having missing data ($n = 12$). A power analysis determined that, with alpha set at .05 and power set at .08, 102 participants were required to detect a medium effect size (Cohen, 1992). Therefore, the data included in the study was obtained from a total of one-hundred and eleven female participants ($n = 111$). Participants' ages ranged between 19 and 45 years ($M = 31.77$; $SD = 4.6$; $Range = 26$). Participants provided demographic information (see Table 5.1) including their height and pre-pregnancy weight (so BMI could be calculated), which ranged from 14.68 to 46.29 ($M = 27.09$, $SD = 6.4$). Nine participants recorded living with a medical condition (see Table 5.1). A full demographics table can be found in Appendix B3.

Table 5.1. Participant demographic information (study 3)

FACTOR	n	%
Gestation (by trimester)		
1st trimester (0-12 weeks)	10	9
2nd trimester (13-27 weeks)	45	41
3rd trimester (28+ weeks)	56	50
PARITY		
1st pregnancy	42	38
NOT 1st pregnancy	69	62
Health conditions		
Yes	9	8
No	101	91
Prefer not to say	1	1
Ethnicity (summary)		
White	93	84
Asian, Black and Mixed backgrounds	18	16
Medical conditions (most frequently reported)		
Anxiety/depression	4	
Arthritis	1	
Endometriosis	1	
Gestational diabetes	1	
Short cervix	1	

Materials

A demographics questionnaire was also included to collect data relating to age, gender, parity, gestation, due date, height and weight (to calculate BMI), ethnicity, previous and existing medical conditions, relationship status and employment status, highest level of education attained. Refer to Chapter 2 (p.43-50) for further details of the following measures.

Sussex-Oxford Compassion for the Self Scale - (SOCS-S; Gu & Strauss, 2020): The SOCS-S consists of 20 items to measure compassion towards oneself using a 5-point Likert scale ranging from 1 (definitely yes) to 5 (definitely no). The present study produced a

Cronbach's alpha of .93 for the full SOCS-S scale demonstrating excellent internal consistency and reliability for this sample, with scores of .81 for SOCS-SRS, .84 for SOCS-SUS, .86 for SOCS-SFS, .8 for SOCS-STF and .87 for SOCS-SAS. SOCS-S.

Maternal-Fetal Attachment Scale - (MFAS; Cranley, 1981): The MFAS consists of 24 items and measures a mother's thoughts and feelings towards her unborn baby using a 5-point Likert scale ranging from 1 (not at all true) to 5 (always true). MFAS is the most widely used scale for measuring the mother-fetus relationship (McNamara et al., 2019). The present study produced a Cronbach's alpha of .84 demonstrating good internal consistency, reliability and validity.

Five Facet Mindfulness Questionnaire – Short Form (FFMQ-SF; Bohlmeijer et al., 2011): The FFMQ-SF consists of 24 items to measure mindfulness using a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The present study produced a Cronbach's alpha of .82 demonstrating good internal consistency, reliability and validity with sub scale scores of .61 for *observing*, .77 for *describing*, .77 for *acting with awareness*, .85 for *non-judging* and .74 for *non-reacting*.

Acceptance and Action Questionnaire – (AAQ-II; Bond et al., 2011): The AAQ-II consists of 7 items to measure psychological inflexibility using a 7-point Likert scale ranging from 1 (never true) to 7 (always true). The present study produced a Cronbach's alpha of .93 demonstrating excellent internal consistency, reliability and validity.

Body Image in Pregnancy Scale - (BIPS; Watson et al., 2017): The BIPS consists of 36 items to measure body image during pregnancy using a Likert scale with different reference points for each of the seven subscales: F1 preoccupation with physical appearance, F2 dissatisfaction with strength-related aspects of one's body, F3 dissatisfaction with complexion, F4 sexual attractiveness, F5 prioritisation of appearance over function, F6 appearance related to behavioural avoidance and F7 dissatisfaction with body. The present

study produced a Cronbach's alpha of .92 for the full scale demonstrating excellent internal consistency, reliability and validity. The Cronbach's alpha for each subscale was as follows: F1 = .89, F2 = .89, F3 = .85, F4 = .83, F5 = .9, F6 = .68 and F7 = .84. The scale has been specifically developed for use in pregnant populations and is therefore an appropriate instrument for measuring body image in pregnancy.

Body Image-Acceptance and Action Questionnaire-5 - (BI-AAQ-5; Basarkod et al., 2018): The BI-AAQ-5 consists of 5 items to measure body image flexibility using a 7-point Likert scale ranging from 1 (never true) to 7 (always true). The present study produced Cronbach's alpha of .95, which demonstrated excellent internal consistency, reliability and validity. The scale has been used in non-pregnant female populations but has not to date been used across a pregnant population, offering a novel aspect to this study.

Weight- and Body-Related Shame and Guilt Scale - (WEB-SG; Conradt et al., 2007): The WEB-SG consists of 12 items to measure shame and guilt in relation to weight and body using a 5-point Likert scale from 0 (never) to 4 (always). The present study produced Cronbach's alpha of .95 for the shame subscale and .93 for the guilt subscale which demonstrated excellent internal consistency, reliability and validity. The scale had not previously been used across a pregnant population offering a novel aspect to this study.

Procedure

Recruitment occurred between May and December 2022. Potential participants accessed the survey via a link that also included the participant information form, consent form and the demographic questionnaire. All participants completed the survey online. At the end of the survey all participants were directed to debrief information, which provided details about the aim and purpose of the study and resources for additional support. Funding was obtained from the University doctoral college to recruit participants using the platform Prolific. Ethical approval was granted by the Ethical Committee based within the University (reference: Parsons /#10388 /sub2 /R(C) /2022 /Apr /BLSS FAEC) and complied with the

British Psychological Society Code of Ethics and Conduct (2021). Ethical approval letter can be found in Appendix C3.

Statistical Analysis

All statistical analyses were conducted using IBM SPSS v28. Pearson correlation analyses were conducted to explore the interrelationships between all scales and subscales. Participants were grouped into one of three trimester groups (Trimester one: 0-12 weeks; Trimester two: 13-27 weeks; Trimester three: 28+ weeks). An ANOVA test was used to compare the mean scores of participants across three trimester groups. An independent t-test was used to compare the mean scores of participants who were expecting their first baby (primiparous women) with those who were on a subsequent pregnancy (multiparous women), and to compare those who were living with a medical condition to those who were not. Correlation analyses was also conducted for each of these groups. Moderation analyses was also conducted with all full scales as potential moderators of the relationship between the BMI and emotional eating, and BMI and mindful eating (domain 3) (see Figure 5.1).

5.4. Results

Descriptive statistical analysis was conducted including the calculation of mean scores and standard deviations for all full scales (see Table 5.2) and for the self-compassion and mindfulness subscales (see Table 5.3). Further inferential statistical testing was carried out including correlation and moderation analyses.

Correlational Analysis

Pearson correlation tests were conducted to investigate the relationships between the independent variables (BMI, maternal-fetal attachment, self-compassion, mindfulness, psychological flexibility and subscales) and the dependent variables (body image in pregnancy, body image flexibility, and both weight/body-related shame and guilt). Relationships were found between the full scales (see Table 5.4) and subscales (see Tables 5.5 & 5.6) as discussed below.

Body image related variables with significant correlations with the independent variables

In this study, BMI correlated positively with body image flexibility and weight/body-related shame (see Table 5.2). There were no other correlations observed with BMI. Additionally, body image in pregnancy, body image flexibility and weight/body-related shame and guilt showed very significant negative correlations with self-compassion, mindfulness and psychological flexibility and in the case of mindfulness, these correlations were moderate to strong (See Table 5.2). (Note the AAQ scale measures psychological *inflexibility*. However, the results section describes this variable as psychological flexibility throughout the chapter for clarity and consistency).

Maternal-fetal attachment had only a significant correlation with gestation and was not associated with any of the dependent variables (See Table 5.2). Gestation also had a significant, negative relationship with the self-compassion subscale acting to alleviate suffering (see Table 5.5). No significant differences were observed between the mean scores of the trimester groups.

Based on the very significant correlations between self-compassion and mindfulness with all four of the body image related variables, it is unsurprising that there are many correlations found between the subscales and dependent variables (See Tables 5.3 & 5.4). Body image in pregnancy had significant negative relationships with *feeling for person suffering, tolerating uncomfortable feelings, acting to alleviate suffering* and *describing, acting with awareness* and *non-judging*. Body image flexibility had significant negative relationships with *understanding the universality of suffering, feeling for person suffering, tolerating uncomfortable feelings, acting to alleviate suffering* and *describing, acting with awareness, non-judging* and *non-reacting*. The weight/body related shame had significant negative relationships with all the self-compassion subscales and with the mindfulness subscales *describing, acting with awareness, non-judging* and *non-reacting*. The weight/body-related guilt subscale had significant negative relationships with *understanding*

the universality of suffering, feeling for person suffering, tolerating uncomfortable feelings, acting to alleviate suffering and with describing, acting with awareness, non-judging and non-reacting.

Further findings relating to parity and medical conditions found additional relationships of note. Regarding parity, there were no significant differences in mean scores between primiparous and multiparous women. However, a correlational analysis did show a negative relationship between gestation and self-compassion [$r(69) = -.27, p = .024$] for multiparous women, though the relationship was weak. This group also had significant relationships between BMI and the variables body image flexibility [$r(68) = .27, p = .029$] and weight/body-related shame [$r(68) = .25, p = .038$], but again these relationships were weak. This group also had relationships between self-compassion and body image flexibility [$r(69) = -.42, p < .001$], and both weight/body-related shame [$r(69) = -.435, p < .001$], and guilt [$r(69) = -.42, p < .001$], which were not observed in primiparous women. In relation to the presence of any medical conditions, there were no significant differences in mean scores between the two groups. Although both groups showed significance between self-compassion and mindfulness and all four dependent variables, for those living with a medical condition these relationships were very strong compared to the group without medical conditions (see Table 5.7). Regarding the age of participants, the current study found a significant positive correlation with psychological flexibility only $r(111) = -.230, p = .015$., which means that as participants aged psychological flexibility improves. Age did not correlate with any other variable. (Note: AAQ scale measures psychological inflexibility, so the result presents as a negative figure. However, the results section describes this variable as psychological flexibility throughout the chapter for clarity and consistency).

Table 5.2. Means and standard deviations of variables and bivariate correlations to BMI
(study 3)

Variables	<i>M</i>	<i>SD</i>	Correlation to BMI	
			<i>r</i>	<i>p</i>
Gestation	26.06	9.4	.06	.55
Mindfulness	47.28	7.81	-.18	.07
Self-compassion	72.46	11.33	-.09	.35
Psychological inflexibility	21.75	8.86	.11	.26
MFA	91.31	11.88	-.12	.23
BIPS	98.94	22.04	.09	.34
BIAAQ	15.94	8.11	.21*	.03
WEBSG-shame	9.86	7.14	.22*	.02
WEBSG-guilt	10.93	6.58	.18	.07

* Correlation is significant at the 0.05 level (2-tailed).

Note: MFA = Maternal-fetal attachment; BIPS = Body image in pregnancy; weight/body-related; WEBSG = weight/body-related

Table 5.3. Means and standard deviations for subscales of self-compassion and mindfulness (study 3)

Variables	<i>M</i>	<i>SD</i>
1. SOCS-SRS	15.30	2.37
2. SOCS-SUS	17.41	2.29
3. SOCS-SFS	13.01	3.16
4. SOCS-STF	12.83	3.05
5. SOCS-SAS	13.92	3.14
6. Observing	9.42	2.15
7. Describing	9.52	2.46
8. Acting with awareness	8.93	2.40
9. Non-judging	10.36	2.75
10. Non-reacting	9.05	2.26

Note: Items 1 to 5 are self-compassion subscales: SOCS-SRS = recognising suffering, SOCS-SUS = understanding universality of suffering, SOCS-SFS = feeling for the person suffering, SOCS-STF = tolerating suffering, SOCS-SAS = acting to alleviate suffering items 6-10 are mindfulness subscales

Table 5.4. Bivariate correlations between the variables (study 3)

Questionnaire Score	1	2	3	4	5	6	7	8	9
(1) Gestation									
(2) BMI	.06								
(3) FFMQ	-.05	-.18							
(4) Self-compassion	-.22*	-.09	.54**						
(5) Psychological inflexibility	-.04	.11	-.65**	-.52**					
(6) MFA	.19*	-.12	.12	.14	-.07				
(7) BIPS	.07	.09	-.44**	-.29**	.43**	-.05			
(8) BIAAQ	-.07	.21*	-.55**	-.34**	.61**	.03	.69**		
(9) WEBSG-shame	-.11	.22*	-.53**	-.33**	.52**	-.03	.70**	.85**	
(10) WEBSG-guilt	-.02	.17	-.51**	-.29**	.44**	.08	.67**	.86**	.88**

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Note: SOCS-S = self-compassion scale; FFMQ = mindfulness scale; AAQ = psychological inflexibility scale; MFA = maternal-fetal attachment scale; BIPS = body image in pregnancy; BIAAQ = body image action & acceptance; WEBSG = weight/body-related.

Table 5.5. Bivariate correlations for self-compassion subscales (study 3)

Questionnaire Scores	1	2	3	4	5	6	7	8	9	10
(1) Gestation										
(2) BMI	.06									
(3) SOCS-SRS	-.18	-.07								
(4) SOCS-SUS	-.16	-.04	.54**							
(5) SOCS-SFS	-.17	-.1	.49**	.39**						
(6) SOCS-STF	-.15	-.1	.47**	.32**	.83**					
(7) SOCS-SAS	-.22*	-.04	.44**	.37**	.80**	.76**				
(8) BIPS	.07	.09	-.18	-.16	-.26**	-.30**	-.24*			
(9) BIAAQ	-.07	.21*	-.16	-.23*	-.31**	-.35**	-.30**	.69**		
(10) Shame	-.11	.22*	-.14	-.23*	-.29**	-.35**	-.29**	.70**	.85**	
(11) Guilt	-.02	.17	-.12	-.16	-.26**	-.33**	-.25**	.67**	.86**	.88**

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Note: Items 3 to 7 are self-compassion subscales: SOCS-SRS = recognising suffering, SOCS-SUS = understanding universality of suffering, SOCS-SFS = feeling for the person suffering, SOCS-STF = tolerating suffering, SOCS-SAS = acting to alleviate suffering
BIPS = body image in pregnancy; BIAAQ = body image action & acceptance

Table 5.6. Bivariate correlations for mindfulness subscales (study 3)

Questionnaire Scores	1	2	3	4	5	6	7	8	9	10
(1) Gestation										
(2) BMI	.06									
(3) Observing	-.08	-.1								
(4) Describing	-.06	-.12	.24**							
(5) Acting with awareness	-.09	-.16	.23*	.43**						
(6) Non-judging	.09	-.09	0.06	.45**	.56**					
(7) Non-reacting	-.05	-.11	.32**	.31**	0	.08				
(8) BIPS	.07	.09	-.08	-.42**	-.37**	-.38**	-.14			
(9) BIAAQ	-.07	.21*	-.03	-.44**	-.47**	-.58**	-.19*	.69**		
(10) Shame	-.11	.22*	-.08	-.43**	-.44**	-.49**	-.22*	.70**	.85**	
(11) Guilt	-.02	.17	-.03	-.40**	-.39**	-.51**	-.25**	.67**	.86**	.88**

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Note: Items 3 to 7 are mindfulness subscales; BIPS = body image in pregnancy; BIAAQ = body image action & acceptance

Table 5.7. Correlations in groups with and without medical conditions (study 3)

	Medical condition		No medical condition	
	Correlation to AAQ		Correlation to AAQ	
	r	p	r	p
BIPS	.749	.020	.426	<.001
BIAAQ	.784	.012	.627	<.001
Shame	.781	.13	.512	<.001
Guilt	.808	.008	.451	<.001

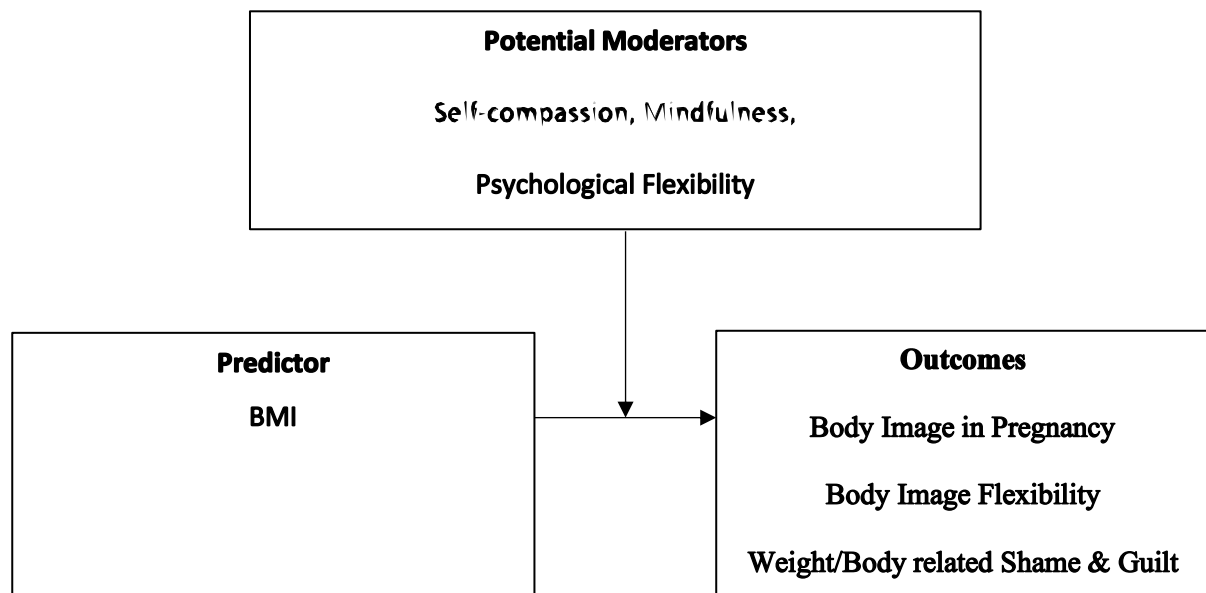
Note: AAQ = psychological inflexibility scale

Moderation Analyses

Preliminary analyses and visual inspections of scatterplots and graphs ensured that the necessary assumptions of normality, linearity, multicollinearity and homoscedasticity for this analysis were met. In addition, other conditions were met wherein the moderator variables (self-compassion, mindfulness, maternal-fetal attachment) and the independent variable (BMI) are not related and are not highly correlated. Moderation analyses were conducted to explore whether any independent variables acted as moderators between the relationships observed (see Figure 5.1). Moderation is of interest in this study to identify whether the independent variables (mindfulness, self-compassion, psychological flexibility, mindful eating or maternal-fetal attachment) have any effect whether reducing or increasing the strength of relationships between BMI and the four body image variables. Variables that show moderating effects may be helpful in reducing the negative emotional effects of body image disturbances. Further analysis was conducted to explore whether any independent variables acted as moderators between BMI and the dependent variables. The results found that self-compassion and its subscales *recognising suffering*, *tolerating uncomfortable feelings* and *acting to alleviate suffering* moderated the relationship between BMI and

weight/body-related shame (see Table 5.8 & Figure 5.2). No other moderating factors between variables were observed.

Figure 5.1 Moderating model of BMI predicting body image related factors with self-compassion, mindfulness and psychological inflexibility as moderators (study 3)



Self-Compassion and its Subscales as Moderators

Self-compassion and three of its subscales *recognising suffering*, *tolerating uncomfortable feelings* and *acting to alleviate suffering* were significant moderators of the relationship between BMI and weight/body-related shame. Only the subscale *recognising suffering* passed at the highest order unconditional interaction. The conditional effects were significant at the low and medium levels only (see Table 5.8 & Figure 5.2). The subscale *acting to alleviate suffering* failed at the highest order unconditional interaction, but the conditional effects were significant at the low and medium levels only (see Table 8 & Figure 5.2). Self-compassion (see Table 5.8 & Figure 5.2) and the subscale *tolerating uncomfortable feelings* both failed at the highest order unconditional interaction, but the conditional effects were significant at the low level only (See Table 5.8 & Figure 5.2). Results indicate that the

positive relationship between BMI and weight/body-related shame becomes insignificant as self-compassion and the three subscale scores increase.

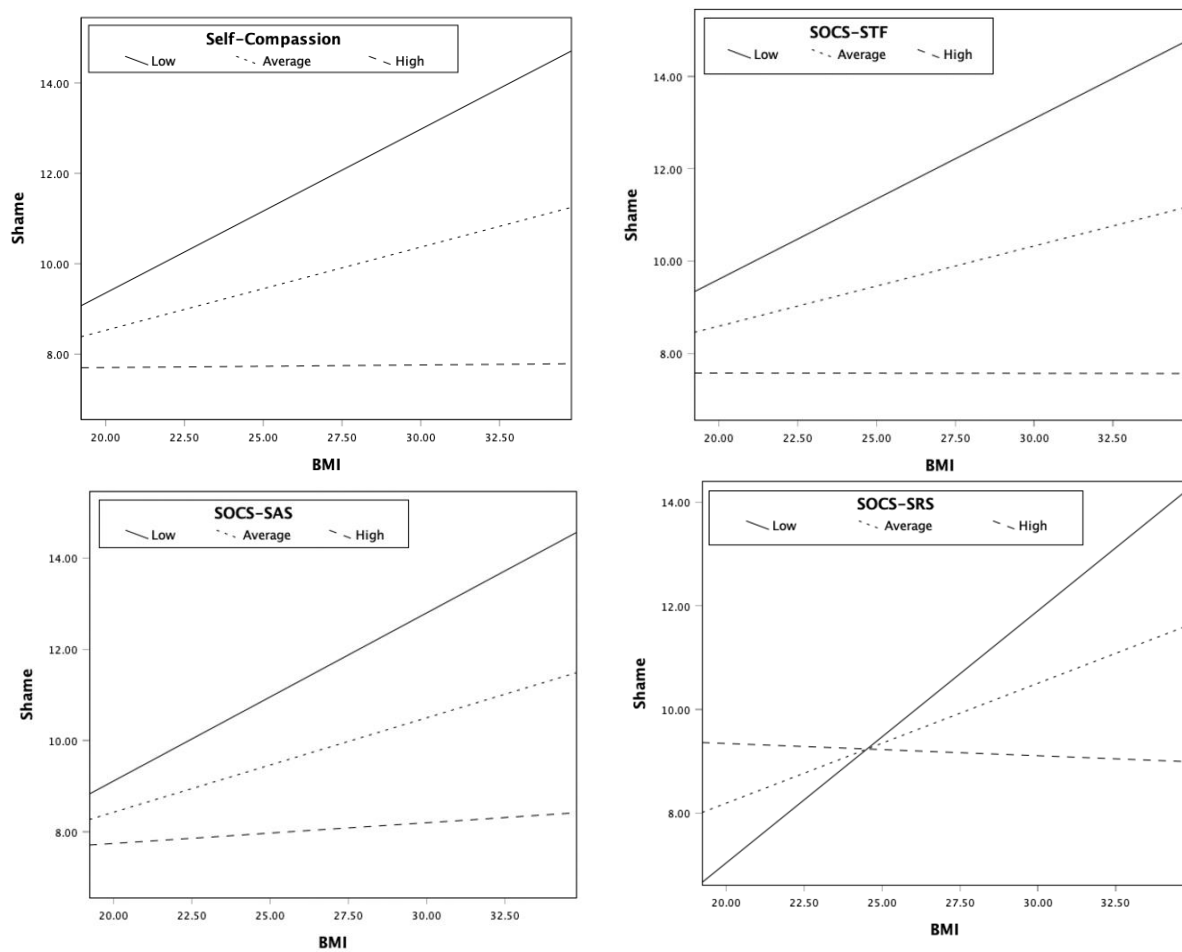
In summary, the results show that self-compassion, mindfulness and psychological flexibility have significant associations with body image in pregnancy whereas maternal-fetal attachment does not. Additionally, self-compassion moderates the relationship between BMI and weight/body-related shame in this study.

Table 5.8. Moderation analyses using BMI to predict weight/body-related shame (study 3)

Moderator	Model statistics				Predictor statistics				
	R	R ²	F	p		b	p	95% CI	
SOCS-S	.41	.17	7.34	<.001	- 1 SD	.36	.004	.11	.61
					MEAN	.18	.068	-.01	.38
					+ 1 SD	.01	.968	-.28	.29
Moderator	Model statistics				Predictor statistics				
	R	R ²	F	p		b	p	95% CI	
SOCS-SRS	.36	.13	5.09	.003	- 1 SD	.49	< .001	.21	.76
					MEAN	.23	.024	.03	.43
					+ 1 SD	-.02	.865	-.30	.25
Moderator	Model statistics				Predictor statistics				
	R	R ²	F	p		b	p	95% CI	
SOCS-STF	.42	.18	7.73	<.001	- 1 SD	.35	.007	.10	.60
					MEAN	.17	.085	-.02	.37
					+ 1 SD	-.00	.996	-.29	.29
Moderator	Model statistics				Predictor statistics				
	R	R ²	F	p		b	p	95% CI	
SOCS-SAS	.38	.15	6.02	<.001	- 1 SD	.37	.005	.12	.62
					MEAN	.21	.043	.01	.41
					+ 1 SD	.05	.755	.24	.33

Note: SOCS-S = self-compassion; SOCS-SRS = recognising suffering, SOCS-SUS = understanding universality of suffering, SOCS-SFS = feeling for the person suffering, SOCS-STF = tolerating suffering, SOCS-SAS = acting to alleviate suffering

Figure 5.2 Moderators of the relationship between BMI and weight/body-related shame (study 3)



Note: SOCS-STF = tolerating suffering, SOCS-SAS = acting to alleviate suffering, SOCS-SRS = recognising suffering

5.5. Discussion

The research to date regarding body image flexibility has been limited to non-pregnant populations. Therefore, the main aim of this study was to explore the topic amongst a pregnant population. This exploratory study also investigated the associations between mindfulness-based concepts, maternal-fetal attachment (MFA) and body image in pregnancy. The results are consistent with previous research on BMI, parity, self-compassion, mindfulness and MFA. The study contributes new knowledge about self-compassion and

psychological flexibility concerning gestation and age. Additionally, the study examined the five elements of Gu et al.'s (2020) self-compassion instrument.

Consistent with previous research with non-pregnant women (M. L. Hill et al., 2013), the current study found a significant relationship between body image flexibility and BMI amongst the participants. This reflects previous research in non-pregnant women, which indicated a link between BMI and body image flexibility (M. L. Hill et al., 2013). In their study, they found that women with a low BMI had greater flexibility and less disordered eating. The current study also found differences across parity groups, with this relationship being stronger for multiparous women than primiparous women. For multiparous women the relationships between BMI and both body image flexibility and weight/body-related shame were stronger than in the primiparous group. Self-compassion also had stronger links with body image flexibility, and both weight/body-related shame and guilt for multiparous women. Previous research has also observed differences based on parity (Watson et al., 2015), where multiparous women expressed having more acceptance of their body image because they had experienced pregnancy before, and had more realistic expectations about the changes to their bodies.

Earlier research has shown that self-compassion, mindfulness and psychological flexibility have a significant impact on reducing body image disturbances during pregnancy (Griffiths et al., 2018; Papini et al., 2022; Tavares et al., 2023). The current study confirms these findings and establishes very strong, negative relationships with body image during pregnancy, body image flexibility and feelings of guilt and shame related to weight and body concerns. These insights are valuable for developing interventions to address body image issues during pregnancy. Furthermore, the study delved into the various aspects of mindfulness and self-compassion, providing a more nuanced understanding of these concepts.

The current study reflects previous research findings that show a correlation between elements such as being present, acting with awareness and non-judging with body image (Tavares et al. 2023). However, direct comparison of the two studies is not possible as different body image assessment tools were used. Tavares et al. (2023) used the Maternal Adjustment and Maternal Attitudes Questionnaire (MAMA; Kumar et al., 1984), which encompasses more than just body image. Nevertheless, the current study extends the work of Tavares and colleagues by examining which aspects of mindfulness may have the greatest impact on enhancing body image.

The current study found no relationships between MFA and any of the variables in this study. This means there was no connection between body image and bonding with the fetus. These findings are consistent with a study by Malus et al., (2014), which also found no link between the bonding with the fetus and body dissatisfaction. It suggests that MFA may not play a significant role in improving body image during pregnancy and, therefore, may not be the most effective target for intervention.

Pertaining to gestation and body image, this study differs from previous research. It did not find any connections between body image factors and gestation, nor did it identify any differences in scores between trimester groups. This indicates that, in this study, the stage of pregnancy did not seem to have an impact on body image. This contrasts with a systematic review conducted by Watson et al., (2015), which found variations in body image experiences during different stages of pregnancy. Some studies indicated that body dissatisfaction increased as pregnancy progressed, while others found body image disturbance was more prominent in early pregnancy or after giving birth. It is important to note that comparing this study to Watson's systematic review needs to be done carefully due to differences in data type and collection method. However, these differences are interesting as they may reflect the complexity of exploring body image during pregnancy, a time when

the body undergoes rapid changes. Since there is a lack of quantitative studies that include gestation (Crossland et al., 2023), this research was the only comparison available.

In the current study, new insights were gained regarding self-compassion during pregnancy. First, the study revealed a negative relationship between self-compassion and gestation, indicating that individuals in later stages of pregnancy displayed lower levels of self-compassion. This suggests that as pregnancy progresses, self-compassion tends to decrease. This finding has not been observed in previous studies (see Chapters 3-4), and has not been explicitly mentioned in the literature, so should be interpreted cautiously. However, considering the strong association between self-compassion and psychological well-being in pregnancy (Felder et al., 2016), it may be inferred that declining self-compassion reflects diminishing psychological well-being as pregnancy advances. Second, the current study demonstrated significant connections between different aspects of self-compassion - such as *feeling for the person suffering, tolerating uncomfortable feelings* and *acting to alleviate suffering* - and body image in pregnancy. Furthermore, these aspects moderated the relationship between BMI and feelings of shame related to weight and body. Previous research has also found comparable relationships between feelings of shame and BMI. Conradt et al. (2007) found that feelings of shame about weight or body size mediated the link between BMI and psychological well-being. While Palpini et al. (2022) also explored self-compassion and body image in pregnancy, they did not conduct detailed analysis of the individual aspects, which makes direct comparisons with their findings difficult. Notably, *acting to alleviate suffering* exhibited a very significant association with body image, as well as with feelings of shame and guilt in the current study and played a moderating role in the relationships between BMI and feelings of shame. This is of considerable note when considering interventions to improve health behaviours because research has shown that body image disturbance and problematic eating behaviours are linked to BMI (Malus et al., 2014).

Negative body image, particularly feelings of shame about body weight/size, is closely tied to negative emotions and can affect psychological well-being (Raspovic et al., 2023). Shame relating to body weight/size also forms part of weight stigma, which has been found to impact the relationship between midwives and pregnant women during antenatal care (Christenson et al., 2018). Identifying a way to protect against weight/body-related shame could have far-reaching implications for women and the care they receive during pregnancy.

The aspect of self-compassion aimed at reducing suffering in the instrument developed by Gu and colleagues' (2020) has been recognised as focusing on emotional and behavioural compassion (Halamová & Kanovský, 2021). Because of its potential behavioural component, one interpretation could be that this aspect may target an individual's motivation to act. However, further research is needed to understand the specific action or behaviour being addressed. This discovery in the current study provides valuable new evidence regarding which specific elements of self-compassion may be most effective in improving body image and any related weight or body issues during pregnancy.

This study also discovered very significant connections between psychological flexibility and body image in pregnancy. This deepens previous research in the general population, which has examined the use of ACT to enhance body image, supporting its application in interventions targeting body image disturbances in non-pregnant individuals (Griffiths et al., 2018). The results from this study suggest that ACT may have a similar positive impact in body image during pregnancy. Furthermore, this study contributes to the existing research on age and pregnancy. While it did not find any links between age and body image, it did find that older women tend to have higher levels of psychological flexibility compared to younger women. This finding may help explain previous research (Dryer et al., 2020), which indicated that younger women struggle more to adjust to their changing bodies

during pregnancy. It suggests that lower psychological flexibility in younger women might contribute to the differences observed by Dryer and colleagues.

Limitations

The current study provided new evidence on the relationships between mindfulness-based concepts and body image in pregnancy. However, it is important to note a key limitation when interpreting the findings. The study primarily focused on women from White backgrounds, which may limit its generalisability to women from other cultural backgrounds. Different cultural norms related to body size and shape, as well as dietary norms may impact women from diverse cultures differently (Abdoli et al., 2024).

Implications for Future Research and Intervention Development

The current study and prior research (Watson et al., 2015) do not provide a clear understanding of how body image affects women at different stages of pregnancy. More studies, including longitudinal studies, are necessary to identify which pregnancy stages pose the highest risk to women. Additionally, the literature suggests that younger women may be more affected by body image disturbances during pregnancy (Dryer et al., 2020). Therefore, more research with a larger sample, including younger women, could improve our understanding of how body image impacts women of different ages. Finally, it is important to examine psychological flexibility and body image flexibility with pregnant women to validate the findings from this study and consider constructs as potential targets for intervention development.

CHAPTER 6/STUDY 4: A QUALITATIVE INTERVIEW STUDY EXPLORING WOMEN'S EXPERIENCES OF THE IMPACT OF PREGNANCY ON EATING BEHAVIOURS AND BODY IMAGE

6.1. Abstract

Background: Pregnancy may be an opportune time to eat more healthily because women may be more motivated to change their health behaviour and they have more contact than usual with healthcare professionals who have the chance to deliver health behaviours messages around healthy lifestyle. However, factors unique to pregnancy make sustaining healthy eating difficult. Problematic eating behaviours are associated with excessive gestational weight gain, which is related to poorer birth outcomes and longer-term weight problems. At a time when the body is undergoing rapid change, body image can become distorted and can contribute to problematic eating behaviours. The study aimed to investigate women's eating behaviours and body image during pregnancy and early motherhood.

Methods: Twenty-four semi-structured interviews were conducted with women who had given birth within the previous twelve months. Data were analysed using Thematic Analysis.

Findings: Five themes were generated from the data. Three themes capture experiences relating to eating behaviours during pregnancy: (1) the sudden yet impermanent nature of behaviour change in pregnancy, (2) eating behaviour is driven by an expectation to eat more and gain weight, and (3) self-care aligns with baby care. Theme four, (4) you're allowed to be bigger when you're pregnant encapsulates experiences relating to body image during pregnancy. The final theme, (5) no time to think about eating, captures women's experiences of eating behaviours postnatally. **Discussion:** Pregnant women, irrespective of their BMI, may experience difficulties with their eating behaviours and body image during pregnancy. Therefore, an opportunity may be missed for sufficiently discussing healthy eating behaviours during antenatal care, especially if BMI is the main criteria used to determine

further discussion or for signposting to additional lifestyle services. Targeted interventions and support for eating behaviours and body image issues during pregnancy may provide valuable support for women with positive effects for future health and subsequent pregnancies.

6.2. Background

Excessive gestational weight gain (GWG) during pregnancy is an increasing issue in the UK (Mohd-Shukri et al., 2015; Vanstone et al., 2020) and the impacts on health and birth outcomes are well-researched (Dodd et al., 2014). Excessive GWG is linked with maternal health complications such as pre-eclampsia, gestational diabetes, post birth weight retention and an increased risk of a caesarean birth with associated complications (Ruifrok et al., 2015). The NICE guidelines relating to the recommended levels of GWG for pregnant women are not explicit or tailored to individuals in the UK (Nascimento et al., 2011; Peacock et al., 2020). For instance, there are no specific NICE guidelines relating to GWG except that women should exercise and eat a healthy diet (Heery et al., 2016) and ‘dieting’ is not advised (NICE, 2022). More specific guidance around weight gain is important because research has shown that women want more information about GWG from their midwives to offer reassurance during pregnancy and prevent postnatal weight retention (Allen-Walker et al., 2017). Unlike the advice for smoking and drinking alcohol, which states clearly and conclusively that both should be avoided altogether, pregnant women cannot avoid eating. Therefore, the lack of specific guidance leaves women to manage their weight and eating habits with little support or guidance, unless they are eligible for additional interventions, which are not universally provided (Atkinson et al., 2017). To assist pregnant women in managing their weight gain during pregnancy interventions have been developed over several decades (Walker et al., 2018), although these have focused on diet and nutrition, rather than on the psychological nature of eating.

Unsurprisingly, BMI is a key focus in the discussion regarding GWG because BMI features frequently in the general literature around obesity and health, and is widely used as a risk factor in the development of health issues (Nuttall, 2015). However, BMI can be problematic when its use goes beyond a measure of simple ‘body size’ and becomes a proxy for ‘health’ and used as an indicator for an individual’s health behaviour (Gutin, 2018). Given BMI’s prevalence in the pregnancy literature around GWG (Fair & Soltani, 2020; Yeo et al., 2016), BMI may be considered synonymous with health with BMI determining what is considered healthy (or unhealthy) in pregnancy. The literature combines the potential risks of BMI and GWG (Flannery et al., 2020), possibly because both are associated with similar risks (Kominiarek et al., 2017). Both BMI and GWG have been extensively studied in the literature and are found to be related to poorer pregnancy and birth outcomes for both the mother and infant (McDowell et al., 2019). They are also associated with long-term obesity for both the mother and infant (Melzer & Schutz, 2010), by contributing to higher birth weight (Sen et al., 2012), which is linked to childhood obesity (Łoniewska et al., 2022). Even though BMI and GWG often appear together in pregnancy literature, they are separate but interconnected issues. Women, irrespective of their BMI, can still experience excessive GWG, and women with a higher BMI may lose weight during pregnancy (Meyer et al., 2023). BMI is commonly used as the main criteria for identifying women for healthy lifestyle interventions to manage their GWG, and referrals to interventions are usually only offered to women with a higher BMI (Atkinson et al., 2017). As a result, some pregnant women may not be considered at risk at the start of pregnancy but could be at the time of birth. Interventions targeting excessive GWG that only include women with a higher BMI may not thoroughly explore any other issues that could contribute to excessive GWG or postnatal weight retention.

Weight gain is an expectation during pregnancy (Bianchi et al., 2016), however, the reasons for it are more complicated than a simple increase in energy intake or an acceptance of the traditional notion of ‘eating for two’, which are well documented in the literature (Shloim et al., 2019). The average GWG has been steadily increasing in recent years and this is irrespective of pre-pregnancy BMI (Meyer et al., 2023). Whilst some research has found that women with higher BMIs gained more weight during pregnancy than women with a normal BMI (Fair & Soltani, 2021), others have found that BMI may not be the predictor of excessive GWG as previously thought (Meyer et al., 2023). Schenk et al. (2024) found that women with a higher pre-pregnancy BMI gained the least weight during pregnancy compared to women in other BMI groups, although the former may gain more in the postnatal period. Kouba et al. (2024) also found a strong link between excessive GWG and normal BMI, but not with the lower or higher BMI ranges. Therefore, excessive GWG does not appear to be exclusively associated with a higher pre-pregnancy BMI (Schenk et al., 2024). Therefore, it is necessary to consider other factors, beyond BMI, such as eating behaviours, body image and psychological well-being, that may also contribute to excessive GWG and postnatal weight retention.

Another factor associated with both pre-pregnancy BMI and excessive GWG is post birth weight retention (Christenson et al., 2018; Zhang et al., 2023), which is associated with longer-term weight retention for women (Meyer et al., 2024). This may not be a prioritised issue in obstetric care as infant health is no longer directly dependent on maternal health in the postnatal period. After giving birth, women tend to focus less on their own health compared to during pregnancy, when their attention shifts to the baby's well-being (Maher & Lowe, 2015). Women feel that during pregnancy midwives’ attention is on their health, but after giving birth the focus shifts to being "all about the baby" (Daly et al., 2022, p.4). This reflects the idea of the female body as a 'vessel' for the growing fetus during pregnancy

(Newman, 1996), and once the baby is born the ‘vessel’ is no longer required for baby’s well-being, subsequently both mother and HCP’s focus shifts away from the mother’s health.

The pressure to lose weight gained during pregnancy, sometimes referred to as ‘baby weight’ (Incollingo Rodriguez et al., 2019), has also been associated with poor body image and problematic eating behaviours in the postnatal period (Carbonneau et al., 2021). Poor body image can arise from enduring changes to a woman’s body such as weight gain, stretch marks or scars from caesarean birth, and can lead to problematic eating behaviours in the postnatal period, particularly in cultures where there is increased pressure to regain their pre-pregnancy body weight and shape. Despite investigations into the effects of BMI and GWG, it remains unclear what are the relative impacts of these factors on postnatal weight retention, which demonstrates the complex nature of the interrelationship between BMI and GWG (Melzer & Schutz, 2010). Meyer et al. (2024) found a link between pregnancy weight gain and longer-term weight gain, irrespective of pre-pregnancy BMI. Pre-pregnancy BMI is, therefore, not the only factor that impacts on both GWG and longer-term weight retention (Meyer et al., 2024). This strongly suggests that it is relevant to consider women’s weight history prior to pregnancy, and whether there is a pattern of weight fluctuations with apparent difficulties with managing weight in the past. As Shieh and Ofner (2024) concluded, weight cycling (also referred to interchangeably as weight variability in the literature) prior to pregnancy may also be associated with greater weight gain during pregnancy. Weight cycling is described by Shieh et al., (p.104, 2024) as “a history of repeated weight fluctuations by volitional weight loss and weight regain over time” but the area remains largely under-researched in relation to GWG. Nagpal et al. (2020) found differences in the levels of GWG based on whether women lost weight in the year prior to pregnancy as well as how often they tried to lose weight, and on the amount of weight lost. They found that women who gained the most weight in pregnancy are more likely to have attempted weight loss in the year prior

to pregnancy. Strikingly, those who had lost the most weight were subsequently more likely to gain the most weight during their pregnancy. Heslehurst et al. (2014) recognised that women's past experiences relating to their weight carried on into their pregnancy and that HCPs may need to understand women's past history and its impact on their current pregnancy. The inclusion of factoring in a woman's history of weight variability and weight loss prior to pregnancy might help identify pregnant women at greater risk of excessive GWG, irrespective of their BMI.

Despite the recommendations to follow a healthy eating regime during pregnancy, there are many reasons why women find it difficult to do this (Grenier et al., 2021). Since pregnancy is both a physically and psychologically challenging time for women, eating behaviours can be affected (Zilcha-Mano, 2017). Eating behaviours are closely linked with emotional well-being and during pregnancy women may engage in certain types of eating behaviours to cope with the many challenges pregnancy presents (Christenson et al., 2016). Most interventions designed to address excessive GWG have focused on diet and food rather than on the psychology of eating behaviours (Malta et al., 2021). Problematic eating behaviours such as emotional, restrained and external eating are associated with an increase in weight gain in the general population (T. Wu et al., 2024) with noted gender differences (Hsu & Chiang, 2020). Emotional eating in particular has been considered a particularly female health issue (Carbonneau et al., 2021). Research into the associations between eating behaviours in pregnancy and weight gain is a growing area of inquiry, although early findings are inconclusive (Tang et al., 2020). Problematic eating behaviours that have been examined in pregnancy, such as restrained and unrestrained eating, have been linked with excessive GWG, but the associations were not significant when controlling for other psychosocial factors such as BMI and sociodemographic characteristics (i.e., age, race, marital status and education) (Tang et al., 2020). Given the psychological components of eating behaviours, and

the associated stigma and shame linked to weight gain, body image is also worthy of consideration.

Body image is especially complex during pregnancy due to rapid changes to the body in a relatively short space of time (Watson et al., 2015) and is a particularly risky time for developing *body dissatisfaction* for some women (Nagl et al., 2019). Images in the media put pressure on women regarding what normal pregnant bodies should look like (Winter, 2016). This can lead to women becoming dissatisfied with their own bodies (Nagl et al., 2019). Body image dissatisfaction has been found to have strong correlations with problematic eating behaviours in the general population (Jackson et al., 2022). Though the research is relatively limited compared to in the general population, body dissatisfaction is strongly associated with problematic eating behaviours in pregnancy, such as restrictive eating, which can impact on the growing fetus and the newborn infant (Winter, 2016). Body dissatisfaction is also associated with excessive GWG (Roomruangwong et al., 2017) and BMI (Shloim et al., 2015), both of which are strongly linked with problematic eating behaviours (Winter, 2016). Some findings suggest an improved body image in pregnancy signifying that some women relax their body image ideals during pregnancy (Nagl et al., 2019). The inconsistency in findings may be explained by the complex nature of a woman's relationship with her changing body, her unborn baby and with her pre-pregnancy self (Malus et al., 2014), and therefore body image in relation to eating behaviour in pregnancy is worthy of further investigation.

Pregnancy has been suggested as an ideal time for behaviour change and a 'teachable moment' (Phelan, 2010). However, pregnancy can be stressful time for some women (Harrison et al., 2023) due to rapid changes to their physical body and the need to make the immediate changes to health behaviours (i.e. stopping smoking, avoiding alcohol, improving eating habits, starting prenatal vitamins) (Atkinson et al., 2016), as well as hormonal changes

that can affect mood and sleep (Harja et al., 2023). Studies that have considered pregnancy as a challenging time for behaviour change have found that women show a readiness for change at the beginning of pregnancy (Bianchi et al., 2016; Lavender & Smith, 2016), motivated by their baby's health (Bagherzadeh et al., 2021) but find it is an unsuitable time to change behaviours due to physical factors such as fatigue and food cravings (Sui et al., 2013), or difficult to enact meaningful and long-lasting changes (Olander et al., 2018). Padmanabhan et al. (2015) found that pregnancy for some women is simultaneously the time to eat healthily but also a time to be less strict in terms of diet and exercise. They described "the paradoxical nature of beliefs" (Padmanabhan et al., 2015, p12) where women believe that weight gain can be controlled whilst rules to help control weight gain can be relaxed during pregnancy. The literature concludes that whilst most women are motivated by wanting a healthy baby, they experience many barriers to health behaviour change, including physical factors such as pregnancy-related complications, fatigue, and mood changes; as well as psychosocial factors such as a lack of support, help or information (Sui et al., 2013).

Considering the rising number of women entering pregnancy with a raised BMI and given that BMI is the main criteria for signposting to healthy lifestyle interventions, (Atkinson et al., 2017) NHS maternity resources will become increasingly stretched (Furness et al., 2022). Women, irrespective of their BMI, should be provided with lifestyle advice (i-WIP, 2017) and all women want and expect healthy lifestyle information to be provided by their midwives (Allen-Walker et al., 2017). The literature also suggests that a discussion of a pregnant woman's history of pre-pregnancy weight variability, an assessment of her eating behaviours and body image could be useful when determining whether or not a referral to an intervention is warranted (Shieh & Ofner, 2024; Tang et al., 2020; Winter, 2016). A study to investigate the extent to which such discussions are taking place between pregnant women and their midwife is timely and could add to the research in the area. In conclusion, an

exploration of women's experiences of pregnancy considering factors beyond BMI that can contribute to weight gain during pregnancy and postnatally such as eating behaviours, body image and well-being, which includes women with a range of BMI levels, is timely and worthwhile to add to the research. The research surrounding GWG has focused mainly on White women (Rogozinksa et al., 2017). Moreover, the IOM guidelines have been based on research from White and Black women from the US (Goldstein et al., 2018), and therefore any implications from the research may be less applicable to women outside the US including women from racially-minoritised backgrounds in the UK, due in part to differences in healthcare approaches (Ayorinde et al., 2023; Kerby, 2012). Therefore, a study that includes women from different ethnic groups will add considerably to the research in this field.

The present research set out to explore three questions. First, what are the main motivators and challenges to eating healthily during pregnancy and early motherhood? Second, is pregnancy a good time to change behaviour? Third, how do women adapt to their changing body in pregnancy and how does it affect their eating behaviours?

6.3. Method

Study Design

A qualitative approach was selected to explore women's experiences of their pregnancy in relation to their weight, body image and eating behaviours. A qualitative methodology has been widely used by other studies that have explored eating behaviours (Rockcliffe et al., 2022), body image (Hodgkinson et al., 2014) and weight (Furness et al., 2023; Furber & McGowan, 2011; Flannery et al., 2020) during pregnancy (see Chapter 2, p.42 for more details). Twenty-four in-depth semi-structured interviews were conducted. The semi-structured style was used because it encourages a conversational style in the interview, which is especially effective for covering sensitive topics as it helps participants feel more relaxed and comfortable, which can elicit more open responses (Adams, 2015). As a data collection

technique, semi-structured interviews are used in other studies investigating eating behaviours (Bianchi et al, 2016) GWG (Padmanabhan et al., 2015) and body image (Atkinson et al., 2017) during pregnancy. A strict inclusion and exclusion criterion ensured all participants were aged eighteen or over, did not have a current or past serious mental illness diagnosis, any previous experience of a stillbirth or neonatal loss or a current or previous diagnosis of an eating disorder.

Participants

A purposive sampling method (Braun & Clarke, 2013) was used to recruit women with a mean age of 33.04 years (SD = 4.3, Range = 26-42). All participants had given birth to a live infant within 12 months of the interview. The mean number of weeks after birth was 18.6 (SD = 10.38; Range = 4-41). The time frame was chosen to ensure recall of their pregnancy experiences and is in line with other research in the field that collected data retrospectively from women who have recently given birth (Lavender et al., 2014). The number of births (*parity*) was: one birth ($n = 15$), two births ($n = 7$), three births ($n = 1$), six births ($n = 1$). Ethnicity was also collected: white ($n = 13$), Black, Asian and/or Mixed ($n = 11$). Height and pre-pregnancy weight were also recorded for some participants ($n = 21$) (see Table 1), so the researcher was able to calculate pre-pregnancy BMI (mean BMI = 28.19, Range = 25.61, SD = 34.72). Thirteen participants reported living with a medical condition during their pregnancy (see Table 1).

Materials

The participant information sheet, consent form and brief demographic questionnaire were created on Microsoft Forms. A debrief sheet was emailed to participants after the interview took place. In order to address the research questions, the interview schedule (see Appendix D1) was informed by the findings from the researcher's previous quantitative research studies exploring well-being, eating behaviours and body image acceptance. As a

result of this approach, the interview schedule was written with appropriate and relevant language for discussing women's experiences relating to weight, eating and body image during pregnancy. For example, in study one (chapter 3) well-being was associated with how connected participants felt to their baby, which lead to a question about how much they thought about their baby. In study two (chapter 4) emotional eating, maternal-fetal attachment and mindful eating were positively linked, which meant a better connection with baby was linked with eating that was more mindful, which lead to questions both about their motivations for their health behaviours and how attentive they were to their eating. Finally, in study three (chapter 5), self-compassion reduced as pregnancy progressed, which lead to questions about how they managed their stress, did they use food (emotional eating) or other behaviours to be kind to themselves and how much they felt their experiences were similar to other women's. Example questions in the interview schedule covered topics such as pregnancy as a good time to change health behaviours ("How important was being healthy during your pregnancy to you? What were your main motivations for being healthy during your pregnancy?") and "Did you feel that you had to make changes because you were pregnant?", thinking about coping with stress and low mood ("What did you do to help you cope with these emotions?") and "Would you ever use food or exercise to help you cope with stress or low mood?"), thinking about eating during pregnancy ("Talk to me about your eating when you were pregnant" and "were your eating habits different during pregnancy?"), and considering body and weight changes ("Did you ever think about the fact that your body and weight were going to change during pregnancy?" and "How did you feel about that?"). A university digital recording device was used to audio-record all interviews in person and Microsoft Teams recorded all interviews conducted online.

Table 6.1. Participant demographic information (study 4)

Participant Pseudonym	Ethnicity	Age	Weeks postnatal	Parity group	BMI group	History group	Medical condition
Ayisha	Indian	41	41	1	C	2	coeliac disease, anxiety, IVF
Cara	Black	38	30	1	C	1	
Dana	Black	28	12	1	A	2	Sickness
Evelyn	White	34	12	2	B	1	
Gill	White	27	28	1	B	2	
Hannah	White	28	11	1	A	2	GD
Hazel	White	42	-12*	2	A	2	GD
Heidi	White	34	4	1	A	2	
Jane	White	38	17	1	C	1	Nausea, IVF
Joanne	Black	33	24	1	C	2	Sickness
Kayra	Indian	33	21	2	C	2	
Leona	White	42	14	1	B	2	Nausea, PGP
Lisa	White	33	8	2	B	2	GD
Lotti	White	32	15	1	A	2	
Maala	Indian	32	12	1	C	2	Sickness, anxiety
Maya	Pakistani	31	10	1	C	1	PGP
Rachel	White	33	28	2	C	2	Nausea
Ruby	Black	28	15	1	C	1	
Sally	White	30	17	1	B	2	
Sanaya	Black	38	15	2	C	1	HG
Sarah	White	35	7	2	B	1	
Seleste	Black	35	41	2	B	2	
Tricia	White	32	33	2	A	2	
Yusaria	Bangladeshi	26	13	2	B	1	

Notes: Parity group: 1 = first baby, 2 = subsequent pregnancy; **BMI group:** A = 30+, B = 25-29, C = <25; **History group:** (prior issues with eating, weight or weight/body disturbance) 1 = no issues, 2 = issues; **Medical conditions:** PGP = pelvic girdle pain; HG = Hyperemesis Gravidarum; GD = gestational diabetes

*Hazel was 28 weeks pregnant at time of interview

Procedure

A recruitment poster was shared on Facebook, Twitter (now known as 'X') and Instagram to invite women to register their interest by emailing the researcher. Women were emailed the link to read the PIS and complete the consent form and demographic questionnaire. In addition to recruiting participants via social media and personal contacts, the researcher also collaborated with Barnardo's to recruit women from mother and baby groups at Children's Centres. Once participants agreed to take part, an interview date and time was scheduled. For those recruited outside of Barnardo's, interviews took place on Microsoft Teams. Twenty-four semi-structured interviews were conducted; 19 via Microsoft Teams and six in person at Barnardo's Children's Centres between 16 January and 11 July 2023. Interviews took place between 4- and 41- weeks post birth (mean = 18.6, SD = 10.38). One participant was 28 weeks pregnant at the time of interview and was included because she also had a recent previous pregnancy. Interview duration ranged from 22 to 67 minutes (total minutes = 985, mean = 42.82, SD = 13.67). Before the interview started, participants were asked for their consent to record the interview and were reminded of their right to withdraw. On conclusion of the interview, debrief information was emailed to each participant, which included signposting for further support. Audio files were transcribed from the raw transcriptions captured by Microsoft Teams and edited to remove irrelevant markers added by the Teams programme. The final transcript reported the discussion verbatim and using the application *Audacity* for those recordings captured by Dictaphone. An orthographic approach (Howitt, 2016) was used for transcription. Pseudonyms were assigned to each participant to ensure confidentiality and anonymity. Audio files were transferred to a university password-protected OneDrive and deleted from the recording device and videos recordings deleted from Teams. All data were stored on a university password-protected OneDrive. The study complied with the British Psychological Society Code of Ethics and Conduct (2021) and was

approved by the University's Ethics Committee (reference: Parsons /#11241 /sub1 /Am /2023 /Jul /BLSS FAEC). The ethics approval letters can be found in Appendices C4 to C5.

Data Analysis

Reflexive Thematic Analysis (RTA) was used with an inductive approach applying an interpretivist perspective and subjectivist orientation to analysing and interpreting the data (Braun & Clarke, 2006). This philosophical framework was used to capture the participants' meanings within the context of their pregnancy experiences. Braun and Clarke's updated six phases (previously named 'steps' in an earlier version) were used to interpret the data and generate themes to answer the research questions. Semantic and latent themes were developed to retain the surface meaning of participants' words as well as offering a deeper understanding of participants' experiences (Braun et al., 2006). Maintaining the original meanings of participant's words meant the researcher could discover themes inductively from the data prior to any interpretation taking place. The systematic yet flexible approach of RTA (Braun & Clarke, 2019) provided an applicable framework to analyse the data, create codes and generate themes. Retaining the original meanings from the data is crucial prior to analysis and interpretation with careful consideration of the role of the researcher in this process. RTA acknowledges the active role of the researcher in theme development. The researcher recognised that the interpretations were inevitably shaped by their own positionality, experiences, and assumptions as a doula and antenatal teacher. The researcher's positionality in the qualitative phase of the PhD is discussed in the methodology chapter (see section 2.9). RTA has been used in studies with similar data collection methods (Furness et al., 2011; Olander et al., 2011). The orthographic method of transcription was used to transcribe the audio recordings capturing participants' words verbatim (Howitt, 2016) to safeguard all original meanings (Campion & Glover, 2016). Initially, with the research questions in mind, the researcher read through the transcripts twice to become familiar with the data, making initial notes of possible areas of interest. The researcher used NVivo

(version 12) to conduct the initial coding of the data. Codes were then reviewed to assist in the creation of themes. Codes were reviewed, grouped and regrouped a number of times during this process. Using NVivo the researcher reviewed the transcripts line-by-line, highlighting words and phrases of particular interest. The researcher repeated this step whilst noting words or phrases that related to the research questions. In NVivo, initial codes were assigned to these highlighted words and phrases, including ideas that were either a repeated pattern within a single transcript or ideas that appeared across the dataset. Once the codes were refined and grouped together, five themes were generated. Finally, theme labels were discussed with the supervisory team and ascribed titles that best captures the extracts and codes included within that theme (see Table 6.2).

Table 6.2. Themes and codes (study 4)

Theme	Codes
1. The sudden yet impermanent nature of behaviour change in pregnancy	<p>Immediate improvements to eating behaviours can be activated at outset of pregnancy</p> <p>Setting intentions or planning to make changes can be initiated at outset of pregnancy</p> <p>Eating behaviour change at the start of pregnancy may not always be healthier or positive</p> <p>Sustaining behaviour change during a nine-month pregnancy is challenging</p> <p>Eating behaviours fluctuate between healthy and unhealthy during pregnancy</p> <p>Behaviour change from healthy to unhealthy happens gradually</p>
2. Eating behaviour is driven by an expectation to eat more and gain weight	<p>Little point in losing weight before pregnancy</p> <p>Inevitability of gaining weight during pregnancy</p> <p>A relief from the dieting</p> <p>Rationalising ‘I can eat whatever I want’</p> <p>Permission to indulge</p>
3. Self-care aligns with baby care	<p>Pregnancy is a good time for changing eating behaviours and baby is the main reason to do it</p> <p>Carrying a baby means there’s someone else more important than you</p> <p>Baby is the main focus for women whose pregnancy was especially longed-for</p> <p>Fear of harm to baby creates guilt and stress that drives behaviour and seeks to be healthy</p> <p>Healthy eating is important but not at the expense of mental health</p>
4. You’re allowed to be bigger when you’re pregnant	<p>Body confidence can improve in pregnancy</p> <p>Pregnancy leads to a heightened focus on bodily changes and body self-consciousness</p> <p>Self-consciousness is amplified and impacts on everyday life</p> <p>Body image may not change for everyone</p>
5. No time to think about eating	<p>Eating habits are worse than before, with old habits returning</p> <p>Missing meals or using snacks of convenience to replaces complete meals</p> <p>Being in survival mode</p> <p>Food for fuel, no time for enjoyment</p> <p>Hurried eating is a common pattern</p> <p>Quick to prepare, quick to consume</p>

6.4. Analysis

The five themes generated from the inductive reflexive TA explore the experiences of women in relation to their eating behaviour, body and weight before, during and after pregnancy. Key patterns were noted in the data, text highlighted and grouped into codes. The five themes are (1) the sudden yet impermanent nature of behaviour change in pregnancy, (2) eating behaviour is driven by an expectation to eat more and gain weight, (3) self-care aligns with baby care, (4) you're allowed to be bigger when you're pregnant and, (5) no time to think about eating.

Theme One: The Sudden Yet Impermanent Nature of Behaviour Change in Pregnancy

The first theme concerns the initial and often immediate changes women make at the outset of pregnancy, as well as the sustainability of such changes throughout pregnancy. Pregnancy can trigger sudden and immediate changes to improve eating behaviours and to be healthier. However, maintaining new healthy eating habits can prove challenging. There are some barriers to sustaining healthy eating behaviours including nausea, fatigue, food cravings, emotional and hormonal changes. These factors can prevent healthy change for some early in pregnancy, as well as hinder the continuity of healthy practices.

Women changed their behaviour to be more healthy or more conscious of their eating and health as soon as they learned they were pregnant. This was universally the case and others made changes that they considered less healthy than prior to pregnancy or what they would normally do, such as restricting their diet. For some women, their behaviour changed immediately in response to discovering they are pregnant. Some women, like Lotti, described how she made immediate changes to her lifestyle behaviours:

I actually, when I found out I was pregnant, I kind of snapped into gear...when I found out I was pregnant with him, I did my best from that point. (Lotti)

In the interview Lotti talks about not having had a good relationship with food in the past and that she has dieted on and off prior to pregnancy. She stresses how the moment she found out she was pregnant was significant for her and represented a turning point in relation to healthy behaviours. Her response to her pregnancy in terms of changing her behaviour was sudden, “snapped into gear”, indicating a clear change in her mindset and intention to change her behaviour. Lotti implied some commitment to changing her behaviour “I did my best from that point” and reveals a sense of determination to do better. It reveals the impact pregnancy had on her and how it informed her decision to change her behaviours.

For some women pregnancy may not instigate immediate actual change, but it sets an immediate intention to change and to set a plan to behave in a healthier way. Seleste declared that she was not happy with her weight after a previous pregnancy and indicates here an immediate shift in her focus and her concerns following the news of her second pregnancy:

as soon as I got pregnant, I did start to think I definitely started thinking about how I'm gonna eat. I had a plan. (Seleste)

It highlights the importance of planning and preparation as part of that change in behaviour. The use of the term “I had a plan” suggests a proactive approach to changing behaviour and indicates a commitment to adapt to the needs of her pregnancy. Like Lotti, Seleste reveals a sense of urgency in her need to change. Whilst both Lotti and Seleste have an immediate response to their pregnancy, Seleste’s commitment is demonstrated through planning and preparation for change. Sometimes there are immediate changes to eating behaviours in response to pregnancy that are not always changes to be healthier. Seleste talks about her behaviour during her first pregnancy, which was quite different from her most recent:

I just didn't think about it because I thought I was gonna get bigger anyway with the belly. I thought, well, it's gonna look...I'm putting on weight because people are just

gonna see it as 'she's pregnant' so I never really thought about it with my son. I just, I got carried away. (Seleste)

Seleste describes her acceptance of gaining weight in her pregnancy, which leads to being less mindful of her eating habits or any attempts to manage her weight. Seleste also shows how she relied on societal norms about pregnancy weight gain, "people are just gonna see as 'she's pregnant'". She suggests that people are more understanding of weight gain during pregnancy that does not apply outside of pregnancy. This also implies how pregnancy can offer a level of protection against stigma for women living in a larger body. Seleste infers that she did not consider her weight being an issue because she accepted that gaining weight was a normal part of pregnancy. Seleste reveals her reflection on her behaviour in her last pregnancy "I just, I got carried away" suggesting a perceived lack of control over her eating during her first pregnancy or perhaps a sense of enjoyment - allowing herself some indulgences because she was going to put on weight regardless. This also suggests that this influenced how she responded to the news of her next pregnancy and her subsequent behaviours. Her previous experience motivated her to have a plan for her second pregnancy because she has not been happy with her weight gain in her first pregnancy. Some women find that maintaining their new healthy behaviours can be challenging for the duration of a nine-month pregnancy, despite a positive start in the early months. Lotti spoke earlier about engaging in healthy behaviour immediately when she knew she was pregnant:

So four to six, up to about six months. I was probably quite healthy and then it all went downhill from there. (Lotti)

Lotti reveals how she managed quite healthy eating habits for the first few months, signifying that she was able to maintain healthy eating for a period of time, but she was not able to sustain it. The use of "probably" also reveals an element of uncertainty or lack of confidence in that early behaviour. This also reveals Lotti's reluctance to say that she was not healthy,

which might also be reflected in the vagueness of the timeline she talks about. This reluctance to disclose potential unhealthy behaviours also suggests a fear of judgement of not being healthy during pregnancy, especially in early pregnancy. It is not clear whether the doubt shown may refer to the length of time “four to six months” that she maintained the healthy eating or the degree to which she was healthy during that time. Lotti talks about the point when “it all went downhill”, which is distinctive from her earlier comments about making a good start. The use of ‘downhill’ has particularly negative connotations hinting at Lotti’s disappointment in herself at that point. It also suggests a sense of inevitability or lack of control over the situation. The vagueness of the language here lacks detail and prompted a follow up to establish what caused the change. Lotti explained:

nothing really... just, just getting heavier I think, and just lazier and just feeling, I felt like I was allowed to eat the chocolate and I was allowed to eat other stuff because, because there's yeah, just not being able to get out and stuff. (Lotti)

Lotti expresses a sense of permissiveness in consuming unhealthy foods. The use of “just” suggests Lotti felt resigned to gaining weight at this stage of pregnancy. Lotti appears to accept this outcome, which may reveal a feeling of helplessness at this point. Lotti rationalises consuming chocolate because she was unable to enjoy physical exercise, and so uses chocolate as a form of comfort in response to her difficulties. This underscores a potential struggle with motivation and reflects Lotti’s state of resignation in relation to her eating and weight gain at this stage in her pregnancy. One of the reasons for this shift in being healthy may be because pregnancy can feel protracted and the necessity to maintain healthy eating habits for this long can feel impossible. Heidi talks about having always struggled with her weight and that being pregnant meant for the first time not having to start the new year with a plan to lose weight:

I feel like it all kind of happening in a bit of a whirlwind to be honest, and nine months is quite a long time...I did try. (Heidi)

The use of “whirlwind” provokes a sense of confusion and overwhelm for Heidi with events happening at speed. For Heidi nine months feels like a long time for her to maintain healthy behaviours. This is also reflected in her use of the emphatic “I did try”. Heidi wants to assert that she did put in the effort to be healthy, even if the outcomes were not successful. Heidi reveals a duality of emotions here with both a sense of resignation and some pride in her efforts. This theme also concerns the notion that healthier eating habits were interjected with intermittent periods of less healthy behaviour, and that women can move back and forth between these habits during pregnancy. Gill describes having issues with her eating and weight in the past but had reached a weight she was happy with before pregnancy:

this feels like a really long time...I find that I have these periods where I'm really dedicated and I've got into that routine. And then I kind of, fall off the bandwagon. (Gill).

Gill reveals how her motivation fluctuates and the challenge it was for her to maintain her healthy eating habits for the duration of her pregnancy. Her use of “a really long time” suggests a sense of time dragging on and shows feelings of impatience and struggle to maintain healthy habits. This also suggests there are cycles of motivation resulting in alternation between healthy and unhealthy habits. The phrase “fall off the band wagon” is a common phrase suggesting lapses in behaviour change, meaning that to maintain new habits requires consistent effort, which is especially challenging in pregnancy. The decline in healthy behaviours can be demonstrated by a gradual change back to unhealthy behaviours because of the length of pregnancy to sustain that change in behaviour. Seleste also talked about her initial effort and intent to follow healthy eating habits and indicates a strong understanding of the importance of eating well throughout pregnancy:

during pregnancy and I mean you do try to speak to you know, the whole, try eating, nutrition and trying, you know, drinking water because you're pregnant. But at first, I was doing all of that and then it just slowly, you know it goes away because you can't keep it up forever like you, 'cause it's nine months of carrying. I couldn't keep it up for too long. (Seleste)

She also reveals her struggle with maintaining these habits over time and that the challenges became increasingly difficult, as opposed to a sudden change to unhealthy habits “it just slowly, you know it goes away”. Seleste reflects on the length of pregnancy and how pregnancy duration is itself a barrier to behaviour change and maintenance of new behaviours. She presents this as one reason for any lapses in her healthier behaviours “you can’t keep it up forever”. Her repetition of the word ‘try’ suggests both intention and the repeated effort Seleste devoted to sustaining the changes, which suggests that change is not a single action but repeated actions over time. This also suggests that Seleste may feel the need to defend herself, to show that she was adhering to acceptable pregnancy health behaviours and behaving like a ‘good’ pregnant women. Seleste may feel some guilt or shame, not as a direct result of the behaviour, but from how she believes the behaviour may be perceived by others.

In summary, theme one highlights that the initial news of pregnancy can trigger a change in behaviour, or initiate planning and preparations to change behaviour. Although behaviours can begin positively, maintaining new healthy behaviours is a challenge. For some the onset of pregnancy brings relief from a life-long pressure of dieting and *slimness*, and eating behaviours may change to be less restrictive or restrained than before. Eating may even, from a psychological perspective, be healthier than in the past. Furthermore, health behaviours fluctuate between healthy and unhealthy. Sustaining healthy behaviours can lead to ‘relapses’ just as in other stages of life. Theme two is concerned with understanding the

underlying factors influencing women and driving their eating behaviours, habits and choices.

Theme Two: Eating Behaviour is Driven by an Expectation to Eat More and Gain Weight

Theme two explores the experiences of women where they generally expect to eat more and gain weight during pregnancy. This general principle can drive eating behaviours because weight gain can be seen as a normal aspect of pregnancy. Eating more and gaining weight as a typical feature of pregnancy can provide women with the justification and rationalisation of eating more than they might need or eating unhealthy foods because weight gain is expected anyway. This theme reveals a sense of inevitability about weight gain and that women may feel a sense of helplessness and a lack of control over this facet of their pregnancy. Some women discuss becoming less conscious of their eating or worrying less about eating well or preventing weight gain due to the belief that they will be gaining weight regardless. Lotti expresses her desire for a high level of fitness at the start of pregnancy:

I always wanted to be at my fittest when I got pregnant and because I knew I'd then put more weight on while I was pregnant and it would only spiral out of control. (Lotti).

Lotti may be equating fitness with slimness here because she links this with an awareness that she will gain weight once pregnant. This suggests that Lotti was proactively intending to be a healthy weight when she was pregnant and shows an understanding of the importance of being healthy and “fit” (or potentially slim) entering pregnancy. The use of the phrase “spiral out of control” may reflect Lotti’s history of a poor relationship with food and weight fluctuation. Losing control may reflect a previous pattern of behaviour related to her weight that she has experienced in the past, suggesting a fear that once weight gain begins it is hard to stop. This extract also reveals an anticipation and acceptance of gaining weight as well as some fear that she may lose control over her own weight gain, which she previously expressed was

important to her. This also shows an element that Lotti was trying to be proactive before pregnancy to be a healthy weight. This shows that weight gain is seen as an inevitability in pregnancy. Hannah was not happy with her weight pre-pregnancy and stated that she had a history of emotional eating and using treats after “a bad day”:

But I thought because I'm getting pregnant, I'm not gonna go on a really big diet because I'm gonna get fat anyway. (Hannah).

Hannah rationalised her decision “not to go on a really big diet” before pregnancy because getting “fat” would be an expected outcome for her when she becomes pregnant. The use of the word “fat” has negative undertones, which provides some insight into Hannah’s view of overweight. Hannah’s dismissal of extreme dieting, “a really big diet”, is potentially positive as it reveals her rejection of restrictive eating. However, this may also reveal a misunderstanding of what constitutes healthy eating in pregnancy. This extract also suggests that Hannah made a calculation regarding the effort required prior to pregnancy to reach a particular weight in relation to the possible outcome “I’m gonna get fat anyway”. For some women, there was less attention paid to weight during pregnancy. Seleste talks about a lack of awareness of her weight gain during her first pregnancy. She explains that she expected to gain weight “anyway” and therefore she made an active decision not to consider her weight:

I don't think I notice my weight. While I was pregnant with my son. It's only going on the scale or really looking at yourself in the mirror that I could see. But but no, I didn't take any note. I didn't. I just didn't think about it because I thought I had. I I was get I was gonna get bigger anyway with the belly. I thought, well, it's gonna look. It's not really a big deal though. (Seleste)

Seleste also shows an acceptance of the natural changes to her body especially of her belly. The use of the word “anyway” reveals the inevitability of changes to the body and weight gain “I’m gonna get bigger anyway”. Seleste’s acceptance of the unavoidability of weight

gain in pregnancy may reveal that weight gain is, in fact, seen as part of a healthy pregnancy. The inevitable aspect of weight gain during pregnancy may contribute to a justification for being less conscious of eating behaviours. Heidi expressed how she had always struggled with her weight:

it was nice being pregnant because it was that bit of I wasn't consciously, obviously I wasn't dieting. (Heidi).

She recalled a conversation with a family member at New Year where she stated that this was the first year where she did not set a resolution to lose weight because she knew this was not advised during pregnancy. Heidi explicitly states her relief and a sense of freedom at not being on a diet during pregnancy. For Heidi, pregnancy provided her with a legitimate reason for not being on a diet. Heidi expresses that this aspect of pregnancy made it an especially positive experience for her and a release from the usual pressures of being conscious of her diet. The use of the word “obviously” reveals Heidi’s awareness that it is a commonly known fact that dieting is not a part of normal pregnancy. Pregnancy can provide a reprieve for some women from the arduous demands of societal expectations to be slim. The idea that women gain weight regardless of what they may do or not do in pregnancy may also be used to rationalise eating whatever they want. Tricia has experienced many weight fluctuations prior to pregnancy and had followed weight loss programmes in the past:

I was in this mindset “oh well...” and I think a lot of people think “oh I’m going to get fat anyway so I might as well just eat what I want. (Tricia),

She was following a weight management programme and using a calorie-counting APP at the time of the interview. Tricia reflects what she thinks is a common understanding about pregnancy weight gain. She also reveals that this known fact may lead to unrestricted eating in terms of eating more or eating whatever foods they want. Pregnancy may remove any burden on a woman to be conscious of her eating. Tricia also shows a resignation that weight

gain is inevitable and therefore there is little motivation to do anything other than “eat what I want”. This comment shows the rationale for eating what she chooses because she thinks the outcome, gaining weight, will happen whatever she does. The “might as well” attitude that Tricia adopts here alleviates any expectations to adhere to particular eating behaviours. Some women expressed how they had permission to eat more during pregnancy or be more relaxed about their eating habits because they are pregnant and cannot be on a ‘diet’, and that this gives them permission to indulge in high calorific foods or consume more calories. Lotti expresses feelings of permissiveness that allows her to engage in what she may consider indulgent eating behaviours:

I felt like I was allowed to eat the chocolate and I was allowed to eat other stuff because, because there's yeah, just not being able to get out and stuff. (Lotti).

The repetition of “allowed” suggests that Lotti thinks there are permissible and non-permissible behaviours in relation to eating. For Lotti pregnancy seems to provide permission to eat certain foods, which does not apply for her at other times. There may even be some underlying guilt associated with eating chocolate. She suggests that there is some restriction on her freedoms when she describes “not being able to get out and stuff”, which may relate to socialising. For context, the restrictions on her being able to get out and about related to her “getting heavier” and “baby jiggling around in my tummy”. This restriction on her choices of activity provides the rationale for eating chocolate, which may also be related to boredom, because she is not going out as much as earlier in the pregnancy.

Permissiveness to indulge in foods that were perceived as off limits prior to pregnancy are also explained due to the restrictions on other parts of diet in pregnancy, such as abstaining from consuming alcohol. Food may become a more important source of pleasure during pregnancy when other behaviours may be considered unacceptable during

pregnancy. Rachel was using a weight loss system because she had gained more weight during and after pregnancy than expected:

I do remember having a thought like it's the only thing I can enjoy right now because obviously you can't drink alcohol or stuff. (Rachel)

She said she wanted to lose weight before getting pregnant but decided against it because she knew she would gain weight in pregnancy. Rachel expresses how she has sought out food to replace the void alcohol has left. This appears to justify her choices and the restriction of alcohol gives her permission to use eating as alternative form of indulgence. There is a sense of frustration “it’s the only thing I can enjoy” and deprivation expressed here. The use of “obviously” here also assumes a shared knowledge about this. In this way she includes others in her thinking, which may also provide her with the permission to indulge, knowing that others probably feel the same way. Whilst Rachel does not state this explicitly, it is important to consider that “indulgence” in relation to unhealthy eating can include both the consumption of certain high fat or sugary foods as well the consumption of more food than necessary, both which would be considered “unhealthy”.

In summary, theme two reveals that for some women pregnancy provides a reprieve from dieting based on an awareness that weight gain in pregnancy is inevitable and that they may avoid the judgement from others that weight gain usually brings. Managing their weight through careful eating, therefore, is futile and out of their control. Women might use this knowledge as justification and rationalisation to indulge in problematic eating practices. Women might also use food for pleasure or to provide comfort when other sources of enjoyment such as alcohol consumption are not acceptable from a societal perspective. This theme links well into theme three, which concerns the priorities that may drive a change in behaviour and the factors that may contribute to maintaining this change. This theme shows

how women focus on different priorities and evaluate the needs of their own physical and mental well-being against the health of their baby.

Theme Three: Self-Care Aligns with Baby Care

The third theme describes women's priorities and main focus during pregnancy and how this may affect their eating behaviours. The women in this study almost entirely prioritise their baby's health and well-being with this being their main stated motivator for eating more healthily. Women are also aware that their own well-being is important too. This theme covers how women strive to balance behaviours that support baby's health, whilst also looking after their own health and well-being, especially their mental health. Even when women consider their own mental well-being in their choices and decisions, this involves directly or indirectly caring for their unborn baby. Some women have other caring responsibilities and commitments to juggle, in addition to considering their unborn baby and their own well-being. Women with health conditions may also find it more challenging to prioritise their unborn baby over their own well-being, when their entire attention has to be on being well themselves, such as managing severe pain or debilitating sickness.

There was a common pattern of prioritising baby's well-being above their own in the way women spoke about their main motivations for being healthy during their pregnancy. Being pregnant meant having to think of someone other than themselves. Ayisha had IVF to conceive, had struggled with her weight and used weight loss programmes in the past:

I think if you're a conscious and want to actually make changes or be aware of what you're eating, it's a good time to sort of, a good reason you've got someone else to think of then. (Ayisha)

Ayisha talks about pregnancy as a good time to make changes in relation to eating and alludes to the main reason being because of her unborn baby. Ayisha also suggests that change is dependent on a desire to change "if you're conscious and want to actually make

changes”. Ayisha may be suggesting that change may be within a woman’s own control. The use of “actually” here might imply that Ayisha thinks some women might say they want to change their behaviours, but they do not ‘actually’ want to. Alternatively, some women do not see need to make changes. Even for those who had not experienced weight issues in the past, pregnancy provided a motivation to improve healthy eating behaviours. Maala explained how she had never had any weight issues in the past and had always been thin. However, she did describe eating patterns in the past that could be labelled as binge eating and she realised that this behaviour was unhealthy. This eating style had not affected her weight so had never sought to change it or seek help to address it:

I think so yes [pregnancy is a good time for making changes in how you take care of your health], because you have additional motivation because you're not doing it yourself, for just yourself, you're doing it for the baby as well, so. I for me at least, it was that was the biggest motivation for me to turn into healthy living and healthy diet. Yes. (Maala).

Maala repeats the word “motivation” putting a particular emphasis on this. She conveys how for her, her baby was her main priority and focus. She seems to acknowledge that she also needed to change her behaviour “turn into healthy living” so she may indeed understand that her pattern of eating in the past also had to change. This is interesting because Maala did not have a raised BMI, would not have triggered any additional help with eating but had a history of problematic eating that could have been harmful to her and her baby’s health. However, for Maala she recognised this behaviour and that it was something she chose to change. Joanna did not have any previous weight issues but she did describe a history of problematic eating behaviours including restrained eating and skipping meals prior to pregnancy, which had returned to some extent after the birth:

well it's about [baby]'s well-being like. It's not really about me. Because my body's kind of, everything's going to him so I don't want to be giving him rubbish. (Joanna).

Joanna's intent is to prioritise her baby's well-being over her own and this shows a strong sense of her responsibility to her baby, which influences her choice of food. Joanna also has an awareness that what she puts into her body will go directly to her baby and that impacts on her decision to not eat "rubbish" (unhealthy food). This term demonstrates that Joanna has been influenced to see unhealthy food in this way. Balancing physical well-being, happiness and psychological well-being was implicitly either equally or sometimes more important than only thinking about what was good for the baby. To be clear, women who on occasion prioritised their own mental well-being were not engaging in any behaviours that were detrimental to their baby. In other words, these behaviours may be perceived by themselves or others to be more in their own interests than those of the baby. For some women pregnancy meant something greater than just themselves. Heidi shows her relief at not having to diet:

it was quite nice that I didn't feel like I almost had to like. I dunno sometimes dieting feels like you're punishing yourself, doesn't it? So in fact, like I, I couldn't do that this time around because I was doing something bigger and more important. (Heidi)

This is explained further when she reveals her association of dieting with punishment. It is not clear what eating looks like when Heidi is not 'dieting' although it could be inferred that 'not dieting' might mean eating that is not especially healthy or that she is simply eating more food. Women can feel the burden from constantly being mindful of their baby's well-being and place it above their own, at all times. Dana had a history of using weight loss programmes and expressed that she had also experienced some difficulties with her weight in the past:

Obviously, yeah, it's so important that what you're eating, the baby's eating. So you have, it feels like you have to. I don't know if that's like just society or what. But there's this kind of like pressure which obviously understand it 'cause you are carrying a human. But yeah, that whatever you have the baby's having. (Dana)

Similar to Joanna, Dana reveals a belief that what she eats goes directly to baby. Dana also expresses a clear sense of the pressure she feels of maintaining healthy eating throughout the pregnancy. There is also a hint at the pressure coming from societal norms and expectations, as well as the pressure she may place on herself. The pressure and expectation of constantly doing what is best for baby can become feelings of guilt when women engage in behaviours that they believe are potentially harmful to their baby. Sally describes herself as an emotional eater and says she has had a history of a poor relationship with food:

I didn't feel like I could live with the guilt if there was something wrong with [Baby],

I would immediately attribute that to me and what I have eaten. (Sally)

Sally also confides that she has experienced pregnancy loss in the past. Sally conveys feelings of guilt if what she eats could cause harm to her baby. This guilt drives her behaviour to eat healthily and her decisions are mainly driven by safety and risk concerns for her baby. This suggests that for Sally safety in relation to her eating is her main priority, and that fear and guilt are the main emotions contributing to her actions. This reveals a deep sense of responsibility towards her baby's health, but with underlying feelings of self-blame. Feelings of guilt or the fear of what poor eating can do to baby's health was a key factor driving behaviours particularly for those whose baby was especially longed-for including those who had gone through assisted conception or previous pregnancy loss. Jane expressed never having any weight issues in the past although she does describe herself as a "clean eater" and has previously been focused on very healthy eating and managing her weight:

she was my sole, my sole motivation. Giving her everything that she absolutely needed and everything that I possibly could do. Umm to give her a calm and calm and healthy and nutrient-rich start. (Jane).

Jane is emphatic about the main motivations for her behaviours during pregnancy by repeating the word 'sole'. She is stressing that the baby was her primary concern and the key driver for her motivation. Jane reveals a deep sense of responsibility for her baby's well-being. Moreover, Jane is already thinking about after baby is born and vocalising the importance of a positive start to life for her baby.

Whilst eating healthy for some was a result of the pressure of pregnancy, others articulated an awareness of deliberately not putting themselves under too much pressure because of the impact that had on their mental health and emotional well-being. Yusaria described herself as an emotional eater and described consuming large amounts of foods, often snack foods such as crisps and chocolate often close to mealtime, meaning she was then not hungry for a scheduled, complete meal:

I think a lot of women put a bit too much pressure on themselves which I try not to. Because if I think like that, then I'm gonna be. I'm gonna always feel down. I do think people shouldn't put too much pressure on themselves, but at the same time you should look after yourself. You should because you're looking after your body. Then you're looking after your mind as well. (Yusaria).

Yusaria says how this behaviour was noticed by her family and they would comment on it. However, she did not have a history of weight issues. Yusaria reveals a shared understanding of pregnancy for women more widely. She presents these expectations through the repeated use of "should look after yourself. You should" and hints that these pressures may be coming from society more broadly. She links her negative emotions with this pressure to be healthy. As a result, she attempts to avoid putting herself under too much stress to be healthy and

instead prioritises her own emotional well-being. Yusaria does intimate the difficulty of balancing a healthy mind with a healthy body during pregnancy. Some participants also described how their own well-being, especially their mental health, was a key motivator to being healthy during pregnancy. Whilst they did prioritise their baby, they also recognised that their well-being mattered too. For Maala, being pregnant and “building a life” acted as a driver for her to seek help for her own mental health:

because I was pregnant and I knew I had to do something, I couldn't live in that stress, I did join the healthy minds and went for CBT during pregnancy. I think, yeah, it was just building a life motivates you to even work on your mental health, so that should help. (Maala)

She recognised that pregnancy was an important time and created a sense of urgency for her to address her stress because she was pregnant. This reveals how Maala is prioritising her own mental and physical well-being, not for herself but for the health of her baby. This attitude to their own mental health was shared with others. Dana conveys the importance of managing stress through relaxation and rest:

Being healthy is kind of making sure that you're not stressing yourself out. Therefore, your baby, you're trying to be as relaxed as possible, resting as much as possible. Also, still eating like eating well. I'm not saying eating like properly 'cause fully healthy but eating well enough that you're getting through so. (Dana).

Notable here is the juxtaposition of Dana trying to do everything to eat healthily as well as stay relaxed. Dana reveals the paradox of these two behaviours for many women. She also suggests that eating healthy is important, but that the level of eating “well enough” needs to be balanced with managing to ‘get through’ the day. Dana is suggesting that eating must consider her health in a holistic way, and the emphasis on being as rested and relaxed “as much as possible” suggests that there must also be a limit to the extent of healthy eating.

Dana implies that healthy eating cannot be at the expense of her own well-being. If healthy eating is set to a level that is affecting a woman's emotional well-being this may trigger a re-evaluation of that limit and to what extent healthy eating can be adhered to. Hazel was pregnant at the time of her interview but had experienced being pregnant before with a raised BMI:

if you had too strict of a picture of like "I have to start eating better, I have to start exercising more. I have to start La, la, La La", you might find that actually your body doesn't want you to do some of that stuff or that you become so flipping miserable doing that stuff that actually now your emotional health is suffering for the picture of physical health. (Hazel)

Hazel spoke about having a poor relationship with food for a long time. For Hazel prioritising healthy eating equated to prioritising physical health over her mental health. Hazel suggests that strict eating habits could negatively impact her emotional well-being. This is an especially interesting insight into the difficulties Hazel has experienced with eating and weight in the past. Only one participant did not mention baby at all in response to what was the main motivation for being healthy in pregnancy. This may be explained because this participant was managing a serious medical condition during her pregnancy and may explain why her experience is quite different from the others and shows a different side to this theme. Sanaya had no history of any issues with her weight or eating prior to pregnancy. However, Sanaya experienced a medical condition during her recent and previous pregnancies that required hospital treatment:

Just to have some energy to be fair to be able to keep some food down so I could have some energy so I wouldn't have to take the anti-emetics that make me drowsy and sleepy. Just to have a good day where I can leave the house without having anxiety. (Sanaya)

For Sanaya the anxiety associated with her condition meant her entire focus during her pregnancy was on coping strategies. This suggests that when one's own health is severely compromised during pregnancy women may only be able to focus on their own well-being and their attention is entirely on being well enough to be able to leave the house.

In summary, theme three highlights the deep responsibility women feel towards the health of their baby and for positive pregnancy outcomes. This drives health behaviours albeit in different ways. For some the fear and guilt that they may be responsible for a poor outcome, particularly for longed-for pregnancies or those following pregnancy loss drives the behaviour. What motivates others is the idea that what they eat themselves directly goes to their baby and can affect their baby's health or development. Most women prioritise baby's health over their own but there is also a real sense that their own well-being, especially their mental health is important too. There is a general awareness that pregnancy may be an especially good time to address mental health too. Body image disturbances are also important considerations in terms of how pregnancy can impact on psychological well-being and eating behaviours during pregnancy.

Theme Four: You're Allowed to be Bigger When You're Pregnant

The fourth theme relates to how women talked about how they adjusted their mindset to their changing body during pregnancy. Weight gain in pregnancy is considered inevitable and there is a general acceptance of the change to the body's size and shape. There is an overall understanding and expectation that the body is supposed to change during pregnancy, and some body parts in particular are anticipated to change especially the stomach developing into a 'bump'. Women had different responses to those changes and adapted to those changes in different ways. Hannah said she was not happy with her weight pre-pregnancy although she had never been motivated to change it:

I'd say during pregnancy I've never felt more confident in my whole entire life. I loved it. I literally, I loved every moment of being pregnant and I see why people have so many kids [laughing]. (Hannah)

Hannah felt a level of confidence during pregnancy that she had not experienced before. It may be linked to a reprieve from *slimness* and the knowledge that she was going to gain weight anyway that led to her feeling relaxed about her body changing in a way she could not feel before. Dana expressed that she had difficulties with how she looked growing up and was always self-conscious about her body:

And I think seeing the stretch marks happening was like "ohh yeah", that made me feel very self-conscious as well. I think new stretch marks was a thing. (Dana)

For Dana this did not seem to improve during pregnancy. This extract suggests how Dana was keenly aware of the changes to her body such as stretchmarks, especially noticing the appearance of new ones. In another part of the interview, she also talked about noticing her belly button and being quite aware of that being different. For some women their changing body affects activities especially their ability to engage in physical exercise. Heidi talks about a history of being overweight, which she suggests is why she was not concerned about weight gain during pregnancy:

I think because I've always been overweight, it didn't worry me the fact that I was gonna put on weight... I chickened out [of going swimming] because I was just too conscious of erm like my changing body and whatever else. (Heidi)

A previous experience of gaining weight meant she was accustomed to concerns of weight gain so these were not new worries for Heidi. She also talks about how she avoided an activity (swimming) because of feeling self-conscious about her changing body. This suggests that although prior experience of weight issues protected against concerns around weight gain, it did not prevent feelings of self-consciousness about her body during her

pregnancy. Her use of 'chicken out' implies a feeling of fear and embarrassment, which may be a feeling she has experienced in the past related to her body and weight, which affected her decision not to go swimming. This might also suggest that she did have a desire to go swimming, and had an intention to do so, or at least considered it, but did not feel able to go through with it because of fear of judgement from others. The inconsistency here may infer some conflict in Heidi in relation to how she truly felt about her body changing and others' reactions to her body. Pregnancy may also lead to being more conscious of your body that can impact on work, which may be particularly influenced by the work environment. Gill works in a predominately male environment, which is hinted at when she refers to a general avoidance of being "overly feminine":

But I think if you've all of a sudden gone up a couple of sizes in a bra and your uniform feels a little bit snug and you're in an area where actually you don't want your body to be overly feminine... I felt more conscious of that...And it started to make me feel a bit uncomfortable... I was surprised that I felt like that, but all of a sudden, I did feel like, I felt a bit like covering up and wearing a cardigan and things like that.
(Gill).

Gill reveals some discomfort in being more conscious of her body with a desire to conceal the most feminine parts of her pregnant body, her breasts, by 'wearing a cardigan'. There are hints that Gill is usually confident in her body at her workplace and that being self-conscious was entirely related to her pregnant body. For some women, being unhappy with their body was not a new experience in pregnancy as they may have had a history of body dissatisfaction. For some women with a prior history of body image issues, pregnancy may provide an opportunity to accept their body again. Lotti stated that she had never been happy with her body prior to pregnancy:

Oh I'm too big or are people gonna be judging me? I didn't think, think anything like that. I was actually quite pleased about my body...But I generally feel, yeah, I am just growing out the front. I'm not putting weight on everywhere else. I was quite, quite pleased at the start. (Lotti)

However, this extract shows a distinct shift from worrying about her body to feelings of satisfaction with her body during her pregnancy. Lotti expresses some common insecurities about weight during pregnancy “I’m too big” but quickly says that she did not worry about what people thought. This reveals that this may have been a concern in the past about being judged by others for being overweight. The extract reflects Lotti’s journey from insecurities about her body to some level of acceptance and even some pride at only putting weight on ‘out the front’. Women who are expecting a longed-for baby, irrespective of issues with body image or weight pre-pregnancy were especially accepting of their changing body, which they embraced as their longed-for changing body. Leona talks about her weight fluctuating prior to pregnancy and how she always considered herself to be “curvy”:

because it was such a struggle. I wanted a baby for such a long time and for whatever reason, there is no reason why for some reason I just couldn't conceive. That all I wanted was a baby. I wasn't concerned about how it was going to change my body. I knew it was going to change my body, but it was just, thought, well, you know, you just, again, take each day as it comes and, and it is what it is. (Leona)

Leona expresses her struggle to conceive and she links this directly with her lack of concern over the physical changes to her body in pregnancy. Leona’s desire to have a baby eclipsed any concerns she had about her pregnant body. She shows how she casually accepted the changes as they happened “take each day as it comes” and takes a somewhat pragmatic and resigned approach to the changes. The most important factor for Lotti was her baby, and any changes to her body were accepted as part of the journey to that ultimate goal. It might be

expected that this attitude would be similar for those who had undergone assisted conception, but the two participants who stated they had undergone IVF had different responses to their changing body. Jane who was extremely body positive before pregnancy, with a clear focus on healthy weight, healthy eating and exercise completely embraced her changing pregnant body:

I've spent the best part of well, the last 20 years working in elite and professional high-performance sport, which is very, very much focused around fitness and health and food, nutrition, movement as well. So yeah, really conscious of that. And that very much changed when I got pregnant, I think. It's almost like. I I lost all of that. I loved absolutely loved being pregnant. I loved it. I loved my bump. Ah, I loved sort of walking around, being part of the club, being being part of the club of I'm a pregnant, I'm a pregnant lady and I've got my bump and I was really, really proud of it, really loved it. (Jane).

Jane expresses a significant shift in her life's priorities at conception. She conveys a sense of complete joy and pride in her pregnant body, despite a significant departure from her pre-pregnancy priorities. Jane shows a strong emotional response to her pregnancy and has a sense of belonging to a new pregnancy club, that she was visibly a member of with her developing bump. The repeated emphasis of loving her bump underlines the positive response she had to her pregnancy and her changing body. Ayisha, who also underwent IVF, responded differently to her pregnant body than Jane. This highlights that a woman's journey to pregnancy is unique and the impact of those routes to pregnancy and their experiences in the past can be distinct. Ayisha clearly states her fear of weight gain as well as a concern about her husband's perception if she gains weight:

You know, I think I did say to [partner], are you still gonna love me if I become fat? I think I was scared about how much weight I would put on in pregnancy. (Ayisha)

There is an undertone of vulnerability and anxiety about her changing body. Ayisha conveys her worries about how her weight gain may impact on her intimate relationship with her husband. Despite undergoing IVF and therefore having a pregnancy that was planned and actively sought, does not reduce the potential impact that a woman's changing body can have on her emotional responses. For some who have a long history of body dissatisfaction pregnancy may not improve their feelings about their body. Hazel acknowledges a long-standing struggle with her body image:

I've never had the body confidence, so I think again, it isn't something that I've lost.

It's just something I never had. (Hazel).

She highlights the deep-rooted nature of her relationship with her body when she says "I never had it", 'it' being body confidence. There is a sense of resignation and acceptance of the situation with no expectation that would ever change. It may be for those with long established body image difficulties, pregnancy makes very little difference, neither improving nor worsening the situation. There may be an alternate interpretation in what Hazel is revealing here. There may be an underlying aspect to Hazel's stated position of not being body confident. Hazel's attitude to her body may be a way of avoiding the constant pressures of aspiring to meet unattainable social expectations of the right size and body shape for women. Consequently, although Hazel may see this as lacking in body confidence, it may in fact be the ultimate acceptance of her body and being confident to live in her body however it looks in that moment.

In summary, theme four highlights that body acceptance through pregnancy varies and is not dependent on any particular factor. Women, no matter their weight, or previous histories of weight, body or eating issues can experience body image disturbances, struggle to accept their changing body and be anxious about how their body might impact on their intimate relationships. For a small number, pregnancy can enhance body image and can allow

women a welcome respite from the social norms of what women's bodies ought to look like. The changes to body weight, size and shape that take place during pregnancy do not immediately reverse after birth. Most women have additional weight which they may wish to lose. A desire to lose weight influenced by the social expectations to get back to their pre-pregnancy weight quickly and lose the so-called 'baby weight', may have an impact on their eating behaviours in the early weeks and months of motherhood.

Theme Five: No Time to Think About Eating

The fifth theme is regarding women's eating behaviour once baby is born and in the early weeks and months of motherhood. This period can be more challenging than during pregnancy because of time or more accurately, a lack of time. In early motherhood, eating becomes an activity carried out 'at speed'. Food choices, decision-making, meal preparation and the act of eating itself are all determined by what takes the least amount of time. Time is impacted by the need to multi-task eating whilst taking care of a newborn baby, and the need to slot the act of meal preparation and eating in between baby's needs. As a result, women find that issues with their eating behaviours continue beyond pregnancy due to time constraints, a focus on baby, and being distracted and less mindful of eating. There was an overwhelming sense that eating healthily became more challenging during this period. This is interesting because even those who described less than healthy eating in pregnancy, there was often the expression of good intentions or effort to try and be healthy even if they were not always successful. There is a distinct change in the way women talk about eating in early motherhood. There is generally less use of "trying", but rather candid descriptions of less-than-ideal eating behaviours. Joanna compares her current postnatal eating to what it was like during pregnancy and there is a recognition that her current postnatal eating is not as good as it was for her during pregnancy:

But yeah it's better than before but it's not great. And it's nothing like, it's not as good as I was eating during pregnancy. (Joanna)

Joanna, who had poor eating habits prior to pregnancy, explains that her eating after baby was better than it had been in the past, but was worse than pregnancy. Pregnancy for Joanna appeared to improve her eating, but the improvement was short-lived with patterns of previous behaviours creeping back in postnatally. Snacks and convenience type foods seems to be a significant part of the postnatal diet due to a lack of time to consider complete meals. Kayra described herself as always being “curvy” and that she had some unhealthy habits prior to pregnancy which she describes as her “sweet tooth”:

I find it a little bit difficult sometimes because now I find it harder because I have her now. Erm so again gonna, figure out which foods to make as well in the morning, again just to have a quick cereal or a cereal bar or a tea or you know, sometimes it's not as nutritional [laughs] as it should but yeah. (Kayra).

Kayra stresses the challenges of eating healthily and signals the main reason is having the baby. She relies on snacks, which she admits are not especially nutritious. There is a sense of time pressure expressed here. Kayra also has a toddler so she also has to get him ready every day, which explains the focus on the morning time as a particularly peak pressure point in the day for her. Others also express a problem with missing meals as a result of having less time and focussing on baby. Maya talks about having had a small appetite throughout her life and has never experienced any weight issues:

I think it's hard to kind of fit in eating sometimes if I've missed a meal or you know, if I'm just busy with him or sorting him out. (Maya).

Maya suggests that she has difficulty finding the time to eat and will skip meals because she is focused on attending to her baby and not necessarily aware that she needs to eat. Given her small appetite before pregnancy, this highlights how any potential issues with eating prior to

pregnancy could also be made worse postnatally confounded by a lack of time. Skipping regular meals seems to be a common problem in this stage after pregnancy. Joanna had a history of not eating and missing meals prior to pregnancy:

and I'll have like one meal a day which isn't, but like I'm starting to eat breakfast but like I forget to drink as well. So I'm having to, like, as I'm so focused on [baby].

(Joanna)

This behaviour appears to have returned postnatally. Joanna implies that it has got worse and that she is even forgetting to drink sometimes now too. This extract does, however, reveal how Joanna is trying to address this by starting the day with a meal. She recognises that all of her attention is on her baby, which is making it even harder to attend to her own needs. For others, there is an element of treating food and eating for purposes of sustenance only in this early postnatal period. Hazel, who had GDM and lost weight in a previous pregnancy, says that after a previous pregnancy she gained back all the weight she had lost during pregnancy:

And so I gained back everything I had lost in that pregnant very easily because, because I, you know, I just don't, I don't have that focus. And I think if he'd have been there, and if he'd been managing meals, maybe it would have been a little bit different. But I was just in survival mode. (Hazel)

She emphasises the ease at which the weight returned and highlighted that it was due to a lack of focus on eating. Hazel talks about simply needing to survive at this point and that eating planned meals was therefore not a priority for her. The other perspective of food being just for sustenance is the lack of enjoyment or pleasure gained from food during this period.

Heidi expresses the idea of food as sustenance rather succinctly as “food for fuel”:

especially now that I'm trying to do things in a timely manner, it's more sort of food for fuel rather than food for enjoyment, I'd say. (Heidi)

Food no longer provides any enjoyment for Heidi. Due to being busy with other activities, she suggests that she is not able to take her time over her food now, and so she garners no pleasure from it. Eating is undertaken mindlessly rather than mindfully at this stage. There is no focus on the food itself and eating is undertaken fast with use of euphemisms to describe eating very quickly. Eating is no longer an enjoyable activity for others too. Leona has experienced difficulties with her weight in the past, which has fluctuated. Leona also described herself as “curvy”:

I probably don't enjoy my food as much as I used to because I'm...just wolfing it down as quick as I can. (Leona)

There is some nostalgia in the way Leona is reflecting back to a time when she did enjoy her food. She expresses that she can no longer enjoy her food now because she is eating so fast. This suggests that eating slowly is associated with more enjoyment for Leona. She uses the phrase “wolfing it down” to illustrate hurried eating. There is a sense that Leona feels regretful and disappointed at the loss of enjoyment in her food. The lack of time postnatally can also impact on decision-making and making healthy food choices. Gill had lost four stone in weight in the past using a weight management programme and said she had reached a weight she was happy with prior to pregnancy:

but I think my decision is probably, how quick I can make it and how quick I can eat it. (Gill).

For Seleste, again, there is an element of surviving on meal ‘substitutes’ by “living off cornflakes” due to their simplicity and potential to be filling. There is a strong element of convenience in selecting this type of food:

I was living off cornflakes because it's just quick simple thing to eat that can actually fill you. (Seleste)

For Seleste and Gill a lack of time resulted in eating snacks or eating foods that were especially quick to prepare and consume. Gill also conveys that expediency is important in relation to preparation and consumption and this overwhelmingly influences her decision-making. There is a sense of efficiency and practicality that underpins her decision-making at this time. Other participants use language that reflects time pressures resulting in eating that is more mindless than mindful. Yusaria, who describes herself as an emotional eater, with binge-eating tendencies, conveys that she is now eating quickly and without mindfulness, comparing her eating to a “race against time”:

I gobble it down really fast. Really. I'm like, I just eat it mindlessly like I I'm just like trying to. It's like a race against time. (Yusaria).

There is a sense of urgency in the words she uses suggesting she feels immense pressure to eat within a given time, presumably before baby needs her again. The way Yusaria describes her eating indicates a stressful eating experience caused by time constraints, which is reflected in other extracts.

In summary, theme five highlights that for many women eating behaviours become worse during the postnatal period when eating becomes hurried due to time constraints. Decisions regarding food choices are dependent on convenience and efficiency of both preparation and consumption. Eating becomes more mindless than mindful, and women can feel stressed as if they are merely surviving through this period and food is merely sustenance with no pleasure gained from it. The difficulties women experience with eating in the postnatal period is of particular interest because this time is often associated with being a time to lose the ‘baby weight’, the extra weight gained through pregnancy. This might suggest that the pressure to lose weight begins at a time when it is especially difficult to put into action.

These five themes reveal that pregnancy can have a profound impact on eating behaviours and changes to health behaviours can happen immediately. However, sustaining these changes, as in other stages of life, can be extremely difficult. Pregnancy presents some unique challenges to staying healthy in pregnancy. Changes to body weight and size are expected during pregnancy to a certain extent. This makes managing weight harder than outside pregnancy because there is an element of loss of control. In addition, dieting is not recommended during pregnancy and with little in the way of official guidance or advice about eating or weight gain, women are left to their own devices to manage their weight gain on their own. Pregnancy can be a welcome relief from the pressure of the body ideals placed on women by society, but this is not universal. It is not clear who is likely to find protection from pregnancy for their body image and who is not. The postnatal period seems to be a universally challenging period for women in terms of healthy eating, perhaps unsurprisingly. However, it is worthwhile considering that the postnatal period is the time when pressure to lose the 'baby weight' begins again with gusto. It seems especially cruel for women to feel this pressure at a time when it is particularly difficult to put weight loss into action. The challenges pregnancy presents to eating behaviours, managing weight gain and accepting changes to body size and shape can be potentially harmful to the psychological well-being of women, which can have implications for mother and baby's health. Therefore, these factors must be carefully balanced and a holistic approach to eating should be considered. The themes developed here suggest there may be some way to help identify those women who may be more likely to become distressed in pregnancy and struggle to eat healthily, manage their weight gain and happily accept their changing body. Women could be encouraged to be more compassionate to themselves in the postnatal period, when adjusting back to their 'non-pregnant' bodies and lives can be especially hard.

6.5. Discussion

The present study used in-depth qualitative methods to explore the experiences of women who had given birth recently in relation to their eating behaviours, weight and body image before, during and after pregnancy. Five themes were developed from the elicited responses. The results revealed motivations and challenges they experienced both during pregnancy and in the early days of motherhood. The women in the present study, regardless of BMI, discussed experiencing issues with their weight or body image or eating behaviours prior to pregnancy. Previous research on weight and eating behaviours experienced prior to pregnancy found that these issues often continued into pregnancy (Heslehurst et al., 2014) in line with the findings from this study. Women in this study had mixed views about whether pregnancy was a good time to change behaviours. The mixed findings in this study in relation to whether pregnancy offers an opportune time to improve healthy behaviours reflects previous research (Olander et al., 2018; Sui et al., 2013).

Women in the current study showed an eagerness and readiness to change their behaviour at the onset of pregnancy, reflecting other research (Bianchi et al., 2016; Lavender & Smith, 2016). Women cited their baby's health as the main motivator for aiming to be healthier in line with previous research (Bagherzadeh et al., 2021). The main motivator for being healthy was overwhelmingly focused on baby's well-being, which echoes other research (Bagherzadeh et al., 2021). The exception to this was where a medical condition had a considerable impact on their functioning day to day, which lead to a complete concentration on managing their own health and well-being. This demonstrates what has been found in the quantitative studies in this PhD (see Chapters 3-5), which is that focus on eating can be impaired when coping with a medical condition. Some women in the current study also expressed relief at not restricting their eating because of the awareness that dieting was not recommended during pregnancy, similar to previous research (Padmanabhan et al., 2015).

The results are consistent with previous findings in relation to the contradiction that women simultaneously try to eat more healthily whilst also being less health conscious (Padmanabhan et al., 2015). In line with other research many women in this study found eating healthy hard to sustain despite starting well or setting early intentions to be healthier (Grenier et al., 2021). Women in the current study also discussed how eating healthily became especially difficult during early motherhood, which mirrors previous research (Christenson et al., 2016; Leahy et al., 2017). The results from this research also concur with other studies that weight issues only became apparent after the birth for some women (Carbonneau et al., 2021; Christenson et al., 2016).

Where this study contributes to the literature is in relation to the use of BMI for determining the use of lifestyle antenatal interventions for women, especially relating to the discussion about using BMI as the main or only criteria for inclusion. Participants in the current study, irrespective of their pre-pregnancy BMI, discussed having previous issues with their weight, body image or eating behaviours, which included emotional eating, restrained eating and binge-eating. These women would be missed in a traditional referral pathway based on a BMI of 30. If the limit was set at 35 or 40 even more women would be missed. Some women in the study also reported losing weight prior to conception, which reflects the findings from previous research (Li et al., 2013). Moreover, women's history of eating also influences their current eating behaviours and not just aligned to weight gain. This raises the problem of only using BMI set at a higher level as the only factor for referral.

What this study also adds to the existing research surrounds women's own well-being and how they used eating as a means of self-kindness. Whilst the concern for their unborn baby was a primary influence on eating behaviours, women also described engaging in problematic eating as a means of being kind to themselves, which provides a different perspective to the motivational factors as to why women may relax some of the healthy

eating ‘rules’ observed in other studies (Padmanabhan et al., 2015). The connection between self-kindness and indulging oneself through problematic eating behaviours found in the current study has also been observed in non-pregnant populations (Egan & Mantzios, 2018) and contributes further to the research of eating behaviours during pregnancy.

Theoretical Foundations

The findings in this study should also be considered in the context of some theoretical underpinnings in relation to both behaviour change and eating behaviour. McBride et al.’s teachable moment model (2003) has provided a conceptual and theoretical framework for the research conducted in this study and throughout this PhD project. According to this theory pregnancy provides the potential opportunity and motivation for health behaviour changes that may not be considered so readily at other times of life. In addition to the teachable moment model, other theoretical frameworks are also relevant in understanding health behaviour during pregnancy. The theory of planned behaviour (TPB) (Ajzen, 1991), which takes account of an individual’s intention to change behaviour and their actual control over that behaviour is relevant here. In this study, women discussed their intentions to eat more healthily at the onset of pregnancy and they also described a lack of control over not only over their eating behaviours, but also over the outcomes of those behaviours, or the outcomes irrespective of their behaviours. Grounded in Self-Determination Theory (SDT) (Verstuyf et al., 2012) the concept of self-regulation (Carver & Scheier, 2001) can be applied in the context of eating behaviours and managing weight gain (Pauley et al., 2018). Self-regulation is an individual’s ability to work towards a goal through the monitoring and managing of their thoughts, emotions, and behaviours. In this study, women describe how they used food to regulate their emotions and manage anxiety or low mood. They also described how they used food as the only pleasure they had in pregnancy when other indulgences, such as consuming alcohol, were avoided. They also expressed how regulating their eating became

more difficult due to cravings and nausea or because they expected they needed to eat more and would gain weight anyway, resulting in reduced self-regulation. Finally, the theory of the teachable moment (Phelan, 2010) posits that pregnancy is a good time to make behaviour changes. In this study, although women expressed intentions and a desire to eat more healthily, many women described pregnancy as an especially difficult time to not only make health behaviour changes but also to sustain them.

Strengths and Limitations

The diverse sample was a major strength to this study and with the exception of the study by Lavender et al. (2016) does address an inherent racial bias in much of the research in this area. Suitable representation and involvement of participants from racially-minoritised groups in research is increasingly important, especially where findings may influence health service or policy development (Onwumere et al., 2024). The study also included women from all BMI groups, which does differ from most of the qualitative research in this area. With the exception of Padmanabhan et al. (2015), most studies are carried out with women in raised BMI groups only. This allowed the researcher to develop themes that affected women irrespective of their weight and include women in discussions about services which they may not ordinarily be asked about. The current study explored both eating, weight and body image. Examining all these factors in one study provided insight into how all these factors impact on women's pregnancy experiences and to better understand women's motivations and challenges around a range of factors that can contribute to being healthy during their pregnancy – eating, weight and body image. Two further strengths of the study relate to the method of data collection. Interviews were conducted away from clinical settings, in children's centres or online with women in their own homes. The interviewer was also not a clinician but was experienced working with this population. This helped to provide a supportive environment to engender an open and non-judgemental discussion whilst avoiding

any potential for weight stigmatisation (Ryan et al., 2022). The retrospective nature of this study is both a strength and a limitation. Some studies examining eating and weight in pregnancy conduct the research contemporaneously during pregnancy (Bianchi et al., 2016; Heslehurst et al., 2014; Padmanabhan et al., 2015), which may lead to bias as women may be compelled to disclose only what they should be doing out of concern for their baby's health and fear of judgement by the researcher (Bianchi et al., 2016). By conducting the research retrospectively, women already knew they had a healthy baby and could be more honest about what they actually did during their pregnancy, rather than what they were supposed to do. On the other hand, retrospective studies can lead to recall problems. However other research has shown that recall relating to pregnancy is reliable (Lavender et al., 2016). Given this study was also about women's experiences, their perception of their pregnancy even retrospectively is still relevant. This is because the experience may impact on any subsequent pregnancy, where research has found that women are often more worried about postnatal weight retention (Bianchi et al., 2016), which was also observed in this study. The timing of the interview in the postnatal period may also have a positive impact on the participants as this is the period when most women wish to make positive changes to their eating behaviours (Lavender et al., 2016), and the discussion may have prompted behaviour change.

Implications for Future Research and Intervention Development

BMI is the main criteria used to determine further discussion or the trigger for signposting to additional services such as gestational diabetes testing or lifestyle interventions. Targeted interventions and support for eating behaviours and body image disturbances during pregnancy may provide valuable support for women with positive effects for future health and subsequent pregnancies. BMI, a history of weight issues or problematic eating should be considered essential components of any future referral pathways. In line with the recommendations from Jakkola et al. (2013) the use of some form of measure or tool

to assess eating behaviour and body image of all women at booking could be beneficial in identifying women who may be at greater risk of gaining excessive GWG. Given the growing need to address long term weight issues in the population, pregnancy and the postnatal period may provide an opportune time to intervene with a holistic approach to weight, eating, body image and wider well-being support. Future research should further explore the elements highlighted in the current study relating to eating behaviours, body image and self-kindness during pregnancy. Moreover, any future pregnancy intervention should focus on measuring and improving eating behaviours and body image, which could impact on women not only during the current pregnancy but allow changes to be sustained into early motherhood and beyond.

CHAPTER 7/STUDY 5: A QUALITATIVE INTERVIEW STUDY EXPLORING THE EXPERIENCES OF MIDWIVES IN PROVIDING HEALTHY LIFESTYLE INFORMATION AND SUPPORT TO PREGNANT WOMEN

7.1. Abstract

Background: During pregnancy midwives are tasked with providing women with information about healthy lifestyles, including healthy eating. Despite pregnancy being considered an opportune time when women are more motivated to be healthy, midwives often experience challenges in providing this information. Women also report that the information they received from their midwives is not always of the highest quality or evidence-based. The current study explored the experiences of midwives to examine the barriers and enablers to providing healthy lifestyle information and support to pregnant women in their care.

Methods: Thirteen semi-structured interviews were conducted with NHS midwives who provide maternity services to pregnant women during the antenatal period. Data were analysed using Reflexive Thematic Analysis. **Findings:** Four themes were generated. (1) personal experiences shape midwives' advice, (2) the need for training to improve healthy eating discussions, (3) the complexity of women's weight issues, and (4) BMI drives pregnancy weight conversations and care. **Discussion:** Formal training, including practical skills, guidance and resources are needed to help midwives engage in discussions with women and to decouple their own experiences with providing evidence-based information. Prior research and the findings in this study have shown that BMI does not indicate whether an individual is more or less likely to engage in healthy behaviours. Therefore, all women, irrespective of their BMI, should be provided with information about how to be healthy in pregnancy to enhance their future health including in subsequent pregnancies.

7.2. Background

NHS midwives, who are the main maternity care providers to pregnant women in England, are tasked with discussions about healthy lifestyles and may refer pregnant women to specialised services including weight management services (Atkinson et al., 2017). These potential opportunities to provide pregnant women with healthy lifestyle information are important because pregnancy alone for some women is not sufficient to drive behaviour change (Fair & Soltani, 2021). Behaviour change in pregnancy is especially complex due to the quantity and involvedness of behaviour change required of pregnant women (Olander et al., 2018). Moreover, it is essential to identify what changes women may make without intervention, so that additional maternity services and support can be better targeted (Hillier & Olander, 2017). Many interventions are based around the premise that behaviour change is driven by a woman's desire to reduce risk to her unborn baby and consequently information provided to pregnant women is risk-based (Olander et al., 2018). This may not be enough to engender sufficient change because as women perceive the risk to their baby reducing so does their adherence to healthy behaviours (Ross, 2012). This suggests that health information and advice that focusses solely on the risk to baby may not be sufficient for behavioural change.

Whilst pregnancy may present an opportunity for HCPs to encourage change, it seems that advice from a midwife is not a significant factor in enabling healthy eating compared to family support (Sui et al., 2013). One reason could be the barriers midwives face in providing support, information and advice to pregnant women around pregnancy weight and healthy eating. Midwives are concerned about being seen as judgemental when interacting with women about healthy lifestyles, especially if women have a raised BMI (Hodgkinson et al., 2017). The UK study by Furness et al. (2014), which examined the introduction of a midwife-lead healthy lifestyle intervention, also identified a number of possible barriers including that midwives found the topic sensitive, they did not have adequate training or resources and they

believed that women were not motivated to change their behaviours in pregnancy. The study also found that midwives wanted more effective preparation for these discussions in terms of both knowledge and confidence.

A recent systematic review into midwives' experiences (Raju et al., 2023b) identified weight as a sensitive subject for midwives and midwives' own weight had an influence on their discussions with pregnant women. This notion of weight as a sensitive issue can lead to weight stigma (Christenson et al., 2018). Some midwives avoid discussions about weight or healthy lifestyles due to a fear of enacting weight stigma or creating feelings of shame or guilt, which can increase anxiety for pregnant women (Atkinson, 2018). This adds a further complexity to the development and delivery of any potential healthy eating support service or intervention. Studies conducted across the world found similar findings. Yin et al.'s study (2014) in New Zealand also found that midwives felt weight was a sensitive topic, and that it was also a wider societal problem that required a broader response from the healthcare system. Weight stigma is also related to healthcare settings where HCPs may display weight bias and discriminatory behaviour (Talumaa et al., 2022) through endorsing weight-related stereotypes (Hodgkinson et al., 2017), and as a result may enact weight stigma (Ryan et al., 2022). If women have experienced weight stigma in healthcare interactions prior to pregnancy, this may impact on their likelihood to engage with additional lifestyle interventions and support. Weight stigma is often highly visible to pregnant women in their interactions with HCPs. Lavender et al. (2016) noted that women observe their HCP's apparent discomfort at discussing weight with them. Padmanabhan et al. (2015) found that the information provided to pregnant women was more focused around what not to do, rather than what to do in relation to diet. The previous study (see Chapter 6) also revealed that women did not always find the information provided by their midwife helpful or supportive of behaviour change. Beyond the *do's and don'ts*, the advice women received was often

inconsistent and inadequate to support behaviour change. Heslehurst et al. (2014) found that women's negative experiences and the lack of effective and consistent advice could impact negatively on their ability to change their eating behaviours. A Swedish study by Wennberg et al., (2014) found that ineffective communication and conflicting information were identified as possible barriers to adherence with recommendations. A systematic review into gestational weight gain (GWG) interventions (Raju et al., 2023a) concluded that inconsistent information provided by HCPs was a barrier for women to better manage their GWG. Abayomi et al. (2020) also concluded that women are often dissatisfied with the inconsistent advice they receive.

Inconsistent information provided by midwives may be a direct result of a general lack of knowledge and expertise around weight and healthy eating. A UK study by McCann et al. (2018) found that midwives lacked both knowledge and resources about GWG and healthy eating, although midwives recognised the importance of providing this advice to pregnant women. Their study also found midwives normalised higher BMIs and, that workload and a lack of knowledge explained why providing healthy eating advice is not standard practice in midwifery care. McCann also acknowledged the lack of guidelines relating to GWG in the UK.

Despite 68% of European countries (member states of WHO Regional Office of Europe) providing guidelines relating to the recommended weight gain for pregnancy (World Health Organization, 2016), in the UK there is currently no such guidance (NICE, 2022). The available guideline, which was updated in 2017, states only that woman should maintain a healthy weight by following a balanced diet and undertaking physical exercise. Othman et al.'s (2020) study conducted in Australia 2020 identified that a lack of time and resources are common barriers to midwives gaining the knowledge needed to engage positively in conversations about healthy eating and weight. They found that irrespective of guidelines,

without adequate training, midwives may still have low levels of knowledge of GWG recommendations. The existence of GWG guidelines alone is therefore not sufficient to aid effective discussions with pregnant women; education of midwives is also necessary.

A lack of formal training may be the main reason why midwives avoid these discussions. Prior to the study by Furness et al. (2014), there was little known about the training and education of UK midwives in relation to healthy eating. In their study they found that HCPs had very little training, held negative beliefs about communicating weight-related and healthy eating information and their approach was reactive, providing limited information only when asked by women, but not providing information proactively. They also found that HCPs required more knowledge and resources to aid the discussion about healthy eating. Their research also found that midwives believed that women were not interested in this information and not motivated to change, which mirrored the work by Atkinson et al., (2017), who found that midwives perceived that women were not interested in weight management or lacked motivation to manage their weight. Research conducted internationally reveals an apparent lack of training or education for midwives on weight and healthy eating (Arrish et al., 2014). This lack of specific education for midwives may explain why midwives are reluctant to hold these conversations. However, some midwives do engage in these discussions and report feeling discomfort in doing so (Padmanabhan et al., 2015). Basu et al.'s study (2014) in Wales found that training did improve midwives' confidence and knowledge. In Australia, De Jersey et al. (2018) found mandatory training in this area improved midwives' knowledge and confidence to better support women have a healthy pregnancy. It is not clear yet whether additional midwife training will impact on women's actual GWG. Raju et al.'s review (2023b) of midwives' experiences of supporting gestational weight management found that overall training programmes did improve midwives' knowledge but there was no evidence of any impact on women's GWG. However, the review

did not look at any other factors that could be relevant such as eating behaviours, outcomes over the long-term or general well-being. Whilst much of the literature dates back a decade or more, recent research suggests that many barriers to holding effective discussions about healthy lifestyles still persist (Bahri Khomami et al., 2021) and midwives still require training and skills for interactions with women to be effectual (Bowden & Bassett, 2024).

Despite midwives' concerns about providing women with weight-related lifestyle advice and the barriers to providing it outlined thus far, previous research has shown that women want to be given information about healthy lifestyles to help them effect behaviour change and they seek this information from their midwife (Newson et al., 2022). The previous study (see Chapter 6) concurred with this finding, where most women welcomed receiving this information and expected it from their midwife, although the advice was considered by women as inadequate at times.

Long-term weight and healthy eating before and after pregnancy is also a key consideration in the literature and suggests that healthy lifestyle information and advice needs to be provided prior to conception and extend well beyond birth (Holton et al., 2017; Olander et al., 2019). A study conducted in Sweden in response to the introduction of new guidelines for weight in pregnancy concluded that support relating to weight and healthy eating needs to be extended to the postnatal period and consideration of the longer-term aspects of healthy eating is needed also (Olander et al., 2019). Holton et al.'s study (2017), conducted in Australia, agreed with the need for addressing the longer-term aspects of weight and healthy eating. They found that women would benefit from additional information and support about weight and healthy eating not only during pregnancy but prior to conception and postnatally.

One final issue that is important to consider in relation to providing advice to pregnant women is ethnicity. There is evidence that racial inequality exists in health care settings (Hobbs, 2018) and women from racially minoritized communities are less likely to access

medical services (Adamson et al., 2003). Black and Asian women are more likely to have adverse birth outcomes compared to White women (Mahase, 2021). A meta-analysis (i-WIP, 2017) found that the differences in GWG based on ethnicity were insignificant. As a result, the researchers concluded that midwives should avoid varying the advice they provide to women based on their ethnicity. However, they acknowledged that the studies included small numbers of 'non-White women' in their review. It can be inferred, therefore, that cultural differences may not have been significant in the studies they considered. However, this does not mean that cultural differences do not exist or would not be significant if more women from these backgrounds were included in the research.

Given a decade has passed since the research by Furness et al. (2014) was concluded, it is appropriate and timely to investigate how the situation may have changed and whether midwives are now receiving adequate training and resources for healthy eating in pregnancy. In Fair and Soltani's (2021) meta-analysis of lifestyle interventions for women with a raised BMI, they found that although lifestyle interventions did decrease GWG there was no clear evidence of improved pregnancy or birth outcomes. Moreover, they could not identify which interventions were the most effective. A better understanding of midwives' perspectives of discussing healthy lifestyle with all pregnant women in their care might offer a different viewpoint and may enlighten future approaches to the services offered to pregnant women. Additionally, a study that explores the perceptions and experiences of midwives in providing care to pregnant women from racially-minoritized groups will ensure that potential cultural differences are included in this research.

The literature reveals that further investigation is required to better understand the resources and training midwives need and want in relation to weight and healthy lifestyles during pregnancy to support any role they may play in helping women with their GWG goals (Olander et al., 2018). What also remains unknown is what knowledge midwives do use to

underpin these discussions in lieu of any knowledge gained through formal training and in place of any official guidance or resources. No research to date has examined what midwives are using in place of any formally acquired knowledge. The present research set out to explore three key questions. First, what perceptions do midwives who care for pregnant women hold in relation to weight gain and healthy eating during pregnancy to address the issues around weight stigma? Second, what role do midwives play in supporting women to eat more healthily during pregnancy? Third, what training, guidance or resources in relation to health eating do midwives receive or need?

7.3. Method

Study Design

A qualitative approach was used to address the research aim of this study, which was to explore the perceptions and experiences of midwives in providing healthy lifestyle information and support to pregnant women. Qualitative methods have been used by other studies that have explored weight-related interactions with HCPs during pregnancy (Atkinson et al., 2017) (see Chapter 2, p.42 for more details). Therefore, a qualitative research study using semi-structured interviews is a demonstrably robust, thorough and evidence-based form to approach knowledge-gathering in the field. The current study used thirteen semi-structured interviews. As an intensive method of data collection, the semi-structured style with the use of open questions elicits a conversational approach and encourages open dialogue with participants (Adams, 2010) and is supported by the literature on weight-related interactions with HCPs during pregnancy (Atkinson et al., 2017). A strict inclusion and exclusion criterion ensured all participants were aged eighteen or over, did not have a current or past serious mental illness diagnosis, any previous experience of a stillbirth or neonatal loss or with a diagnosis of an eating disorder within five years.

Participants

A convenience and purposive sampling method (Braun & Clarke, 2013) was used to recruit thirteen NHS midwives ($n = 13$) (see Table 1), from a volunteer sample who fit the criteria for this study. These sampling techniques are widely used in qualitative studies because they can identify eligible participants who can provide rich data in the area of inquiry (Palinkas et al., 2015). Twelve participants were fully qualified and one was a third-year midwifery student close to qualification and working in a community-based role with her own case load. Data saturation was reached when it became apparent that there were no new codes or themes in the data (Fusch & Ness, 2015) and that the data gathered was sufficient to answer the research questions (Naeem et al., 2024). The mean number of years' experience as a qualified and practising midwife was 15.7 (SD 8.6, Range 3 months to 31 years). Ethnicity was also collected White ($n = 12$), Black, Asian and/or Mixed ($n = 1$). It is worthwhile to note that whilst the majority of the midwives interviewed in this study were White British, a majority of midwives ($n = 8$) said that most of the women on their caseload were from racially-minoritised groups, providing some valuable insight into cultural differences.

Table 7.1. Participant demographic information (study 5)

Participant Pseudonym	Band	Years as a midwife	Work setting	Ethnicity
1. Lisa	6	16	Hospital	White
2. Barbara	6	9	GP/Children's Centre	White
3. Rachel	6	11	Community clinic/Children's centre	White
4. Sarah	6	13	Community clinic	White
5. Alice	6	31	Hospital/GP/Patient's Home	White
6. Harriet	7	26	Hospital/Children's centre	White
7. Sue	6	9	Community (Patient's Home)	White
8. Jade	5	3 months	Hospital	Mixed
9. Maria	6	20	Hospital	White
10. Lara	8a	21	Hospital	White
11. Sophia	6	16	Community clinic	White
12. Caitlin	6	27	Hospital	White
13. Amber	Student	3 rd year	Community	White

Materials

A recruitment poster was produced, which was posted on various social media platforms, circulated in WhatsApp groups and to personal and professional contacts of the researcher. The participant information sheet, consent form and brief demographic questionnaire was created in QuestionPro. A debrief sheet was emailed to participants after the interview took part. In order to address the research questions, the interview schedule was informed by the findings from the researcher's previous qualitative research study (see Chapter 6), 'exploring women's experiences of discussing lifestyle with their midwife'. For example, women expect to eat more and gain weight during pregnancy, and there is a balance to be managed between baby's health and mother-to-be's well-being. Additionally, to keep participants' attention on healthy eating rather than BMI, the term was not used by the researcher unless first introduced by the participant. Other previous research by other authors (Atkinson et al., 2017; Christenson et al., 2018) was also considered. As a result of this approach, the interview schedule was written with appropriate and relevant language for discussing the subject matter. For example, questions covered topics such as signposting and referrals ("What do you do if you are concerned about a woman's weight gain?" and "Are there any resources you have that you might use with a woman in relation to healthy lifestyles"), communication, training and guidance ("Do you have a specific way of opening a discussion about healthy lifestyle that you use?" and "What are some of the challenges in discussing a healthy lifestyle with women in your clinic?"), and their beliefs and perceptions about weight ("What do you think are the main reasons women gain too much weight during pregnancy?" and "To what extent do you think midwives own personal experiences, knowledge and beliefs about healthy living impacts on how they might deliver lifestyle information to the women they see?").

Procedure

A recruitment poster was shared on Facebook, Twitter (now known as 'X') and Instagram to invite midwives to register their interest by emailing the researcher. Participants were emailed the link to read the PIS, and to complete the consent form and demographic questionnaire. Once they agreed to take part, an interview date and time was scheduled. Thirteen semi-structured interviews were conducted via Microsoft Teams between 14 February and 18 April 2024. One participant was a third-year student midwife at the time of interview but was included due to her specific experience, which the researcher judged as valuable. A total of 532 minutes of data was collected during the interviews ($M = 40.92$, $SD = 12.13$, Range 26-66). Before the interview started, participants were asked for their consent to record the interview and were reminded of their right to withdraw. On conclusion of the interview, a debrief information sheet was emailed to each participant, which included signposting for further support. Microsoft Teams recorded all interviews conducted online and a transcript of the interview was generated from the recording. The researcher subsequently cleaned and checked the transcript for accuracy against the audio recording to reflect the discussion verbatim. An orthographic approach (Howitt, 2011) was applied to the transcription to safeguard all original meanings (Campion et al., 2016). Pseudonyms were assigned to each participant to ensure confidentiality and anonymity. Audio files were transferred to a university password-protected OneDrive and deleted from the recording device and video recordings deleted from Microsoft Teams. All data was stored on a university password-protected one drive. The study complied with the British Psychological Society Code of Ethics and Conduct (2021) and was approved by the University's Ethics Committee (reference: Parsons /#12094 /sub1 /Am /2024 /Mar /BLSS FAEC). The ethics approval letters can be found in Appendix D2.

Data Analysis

In order to answer the research question, the researcher employed Reflexive Thematic Analysis (RTA) with a deductive and inductive approach to the data applying an interpretivist perspective and subjectivist orientation to analysing and interpreting the data (Braun & Clarke, 2006). This philosophical framework was used to capture the participants' meanings within the context of their experiences working as a midwife. The semantic approach provided by thematic analysis allowed the surface meaning of participants' words to be retained throughout the analysis (Braun et al., 2006). Maintaining the original meanings of participant's words meant the researcher could identify themes inductively from the data prior to any interpretation taking place. The systematic approach of thematic analysis provided an applicable framework to analyse the data, create codes, identify themes and sub-themes (Braun & Clarke, 2014). Retaining the original meanings from the data is crucial prior to analysis and interpretation in order to control for any possible effect by the researcher. Acknowledging the researcher's role in interpreting the data, identifying patterns and shaping the themes is an essential part of reflexive thematic analysis (Braun et al., 2019). Further detail regarding the researcher's positionality in the research process is discussed in the methodology chapter (see section 2.9). Thematic analysis has also been used in studies with similar data collection methods (Furness et al., 2011; Olander et al., 2011). The researcher started with the findings from the previous study investigating women's experiences (see Chapter 6) and used the themes generated in the study to focus the initial analysis and generate some early areas of interest. An inductive approach was then used to further explore these areas in the data. Using NVivo the researcher created codes for the data, which were then used to assist in the creation of themes, which has been used in recent qualitative research (Goldstein et al., 2021). The transcripts were uploaded in NVivo for initial analysis and coding. Once the codes were refined, thematic analysis was used to generate themes (Braun et al., 2006). Initially, the researcher read through the transcripts twice to familiarise

themselves with the data making initial notes of possible areas of interest. Secondly, using NVivo the researcher reviewed the transcripts line-by-line, making more analytical notes and highlighting words and phrases of particular interest. The researcher repeated this step whilst noting words or phrases that related to research questions. Thirdly, still in NVivo, initial codes were assigned to these highlighted words and phrases, including ideas that were either a repeated pattern within a single transcript and ideas that appeared across more than one transcript. Finally, four themes were developed from the codes and these final four themes were subsequently reviewed by the researcher. Theme labels were discussed with the supervisory team and ascribed a title that best exemplified the extracts and codes within the theme (see Table 7.2). Reflexive thematic analysis (Braun & Clarke, 2019) was an appropriate analysis method in order to answer the study's research questions.

Table 7.2. Themes and codes (study 5)

Theme	Codes
1. Personal experiences shape midwives' advice	<ul style="list-style-type: none"> • Midwives with their own weight issues use their experiences to show empathy and understanding • Midwives are aware of the balance between their personal and professional lives • Midwives have concerns about being seen as judgemental or hypocritical • The midwife's role is not as a role model, but as information provider • Midwives' knowledge is focused on food and nutrition, with some knowledge of the psychology of eating behaviours
2. The need for training to improve healthy eating discussions	<ul style="list-style-type: none"> • Official NHS messaging is needed, similar to other areas of maternal health • Practical resources and skills training can tackle barriers and support midwives to hold effective conversations • Language should be part of training, and the language needs to reflect the voices of pregnant women • Content of education must be evidence-based information • Mentoring to share knowledge and experience could be a useful aid to learning and development
3. The complexity of women's weight issues	<ul style="list-style-type: none"> • 'Eating for two' is almost confined to the history books, but new advice is absent • The complex psychological factors of eating demand more skills from midwives • Midwives understand the broader implications of GWG, including considerations of behaviours before and beyond pregnancy • Healthy lifestyle interventions can enhance both women's pregnancy experiences and the relationship with their midwife; protecting this relationship is paramount
4. BMI drives pregnancy weight conversations and care	<ul style="list-style-type: none"> • BMI is the main factor to signpost to interventions • The existence of separate interventions creates specially-skilled midwives, but risks deskilling general midwives • BMI is not a measure of good health but it is the main factor used to make decisions about health in pregnancy • The BMI demographic eligible for intervention is growing, but resources are not

7.4. Analysis

The four themes generated from the inductive reflexive TA explore the perceptions and experiences of midwives in providing healthy lifestyle information and support to pregnant women. The four themes are (1) personal experiences shape midwives' advice, (2) the need for training to improve healthy eating discussions, (3) the complexity of women's weight issues and, (4) BMI drives pregnancy weight conversations and care.

Theme One: Personal Experiences Shape Midwives' Advice

Theme one explores midwives' own experiences, which offer them insights and a deeper understanding of what women were facing in relation to their weight. Midwives showed that they understood that whatever body they have, shapes a woman's perceptions of them personally, and the perceived quality and integrity of the advice given. Midwives were conscious that body size is a highly visible characteristic that is widely accepted to denote healthy behaviours such as healthy eating and diet, unlike smoking or drinking that are not visible in the professional midwife role. Some midwives suggested that their own personal experiences with weight difficulties enhanced their ability to be empathetic to women as there was a shared understanding of this experience. However, others felt that their own body shape and size was a barrier. For them, being in a visibly larger body led to concerns of being judged personally or considered hypocritical in giving healthy eating advice. Those who were not overweight worried that women might consider them to be judgmental or lacking in true understanding and empathy of what it was like to live in a larger body. Universally, midwives find this conversation sensitive and difficult irrespective of their own current weight or weight history. Midwives who have experienced being overweight, discussed how they used it to show empathy to women and a deeper understanding of the challenges they face. Alice is a community midwife with over thirty years' experience and the most experienced midwife interviewed:

I think it's got to. Your own personal experience. No matter how much you try to leave, to leave that at the door it's still got to impact on, on you and how you say things, yeah. I mean, I would do my level best not to. Like I said that one lady that was concerned about BMI and things like that, you know. I know I've been there. So I know it's hard. I know it's difficult. (Alice, Band 6)

Alice states that personal experiences can influence both the content and delivery of conversations. She also recognises that bringing personal aspects into the midwife-patient relationship may not be ideal, but she accepts that it is inevitable. She expresses how she would attempt to avoid doing that herself hinting that she thinks using her own experiences in this way might not be appropriate. Alice also shows some awareness of the possible blurring of lines between a midwife's professional and personal life. Recognising your own experience in someone else's struggle and wanting to use that to find common ground to build a relationship is a part of the human condition. Rachel talks about her own struggles with eating and it feels that she is passing judgment on others by giving advice that she herself is not following:

And I probably feel like, a little bit like I struggle with my, you know, eating, you know, habits and how healthy your life and stuff, and I probably feel a little bit like I shouldn't be judging what other people do with that and that, you know, we all bring that though, don't we? Like, that's just part of being human. (Rachel, Band 6)

Rachel is not comfortable giving advice that she herself is not following and this may lead to a reluctance to hold conversations about weight. She explains that judging others is a universal human condition "we all bring this, don't we?". Her awareness of the commonality in judging others provides her with some relief in the knowledge that it is not just her. By acknowledging her own judgment, however, Rachel may adopt a more empathetic and supportive approach. It could be, in fact, that Rachel is also concerned that women perceive

that she is judging them. Midwives also draw on knowledge gained through their own pregnancy experiences. Sue is a home birth community-based midwife. She highlights the variability and inconsistency of the information midwives provide and how they tend to rely on their own pregnancy and life experiences, as she does, in lieu of any formal framework:

I think that is the information most midwives are giving. It's, it's either they've had children of their own and erm they've, that maybe saying how they ate and looked after themselves in pregnancy. Erm I, I just don't think there's any routine kind of information that we, that's disseminated to us that we should, must say this, but I also don't believe every woman needs the same advice, but obviously every midwife's gonna disseminate that information differently. (Sue, Band 6)

She also points out the balance between the provision of universal care and information with a tailored approach to meet individual women's needs. Sue's experiences are indicative of the lack of clarity in guidance and provision of resources to help midwives provide consistent advice and information that is grounded in the evidence. Midwives do not only bring to bear their own pregnancy experiences, but they may be relying on having a special interest in the topic. Jade is a newly qualified midwife and had only been practising for 3 months at the time of interview:

I have a, one of my best friends is doing a nutrition masters at the moment and erm I I'm, I joke with her that I'm gonna use her as my resource because, especially nutrition we get zero information about that and it's really difficult because then it just means that midwives are giving advice about, that are just midwives who are interested in that, in their own lifestyle and then, so it's information that they know themselves. But we get zero information, and I'd say, even like, zero information to pass on to women practically. (Jade, Band 5)

She has recent experience working on community as a final year student so was able to draw from those experiences, although she was currently hospital-based. Jade conveys that midwives are obliged to refer to their own knowledge, which they may only have gained because of a special, personal interest in the topic. Jade connects this directly to the lack of formal information provided to midwives. Jade reveals that she thinks this is comical “I joke with her” as she had to rely on a friend who is highly knowledgeable in this topic to gain her knowledge. The use of “just” minimises the knowledge that midwives are gathering themselves and suggests that Jade does not think this is adequate.

Drawing upon their own experiences did not always provide a positive basis for discussions and could create barriers. Midwives who did not have any weight issues were concerned that women would think they could not understand their situation. Caitlin was a midwife who, in the past, had been involved in delivering a healthy lifestyle intervention for pregnant women with a raised BMI. Caitlin suggests that midwives who are not used to delivering specific interventions may feel discomfort:

they felt sometimes, they got weight issues themselves and they felt either if they were very slim, they felt hypocritical and the women were looking as if to say, ‘well, what do you know?’ And if they were overweight, would, they felt that women were looking as if to say, ‘well, why aren't you doing something about it?’ (Caitlin, Band 6).

Although Caitlin does allude to midwives feeling judged about their own weight because in women’s eyes they may not be “doing something about it”, Caitlin presents another slightly different perspective. Caitlin suggests midwives who may be overweight are also concerned that they may appear hypocritical, where they feel a disconnect between the words they use with pregnant women and their own actions. Feelings of hypocrisy can evoke discomfort and even guilt. Caitlin goes further and says that any discomfort in holding these conversations is

the same for midwives irrespective of whether they are slim or overweight. Again, this highlights how midwives consider any healthy eating advice will be received through the lens of their body shape and size, making it feel personal. This is interesting and may go some way to diminish any responsibility to be a particular size and weight in order to provide this information.

Although midwives' own experiences were their main source of reference for healthy eating, some midwives recognised that these discussions were not about them or their own experiences. Midwives acknowledge that the conversation can be difficult but that midwives must do it anyway. Lara was a very experienced midwife. She had spent many years working in the community and was currently hospital-based supporting women with complex pregnancies in the latter stages of their pregnancies. She also had a role supporting midwives so she offered a unique and knowledgeable insight into the topic:

I know what's right for you and your pregnancy and trying to like, either lose weight or maintain weight you know, is actually really important because I don't want you gaining excessive amounts, you know, and I'll be like, "oh, don't look at me, though. I'm not a fine example, but this is about you and your journey" and, and it is that confidence again. (Lara, Band 8a)

Lara suggests her confidence is borne out of the fact that she remembers this is about the woman's pregnancy and infers therefore that it is not about her. Lara recognises that her role as a midwife is not as a role model for healthy eating "don't look at me". Lara is able to explain to women that she is not there to set 'an example' for them. Her role is to support them through their pregnancy journey because she has the knowledge to help them with their weight. This stresses the point that being in a larger body does not compromise or diminish a midwives' professional knowledge or expertise, although midwives may fear that it is perceived as such. This nods to a larger issue of potential weight stigma and how it creates

prejudice. Lara also expressed an understanding about the psychology of eating and an awareness that eating has emotional elements to it. This was not a common understanding except amongst the midwives who have been involved in delivering interventions, such as Harriet and Caitlin. Caitlin talks about how they had recommended the introduction of psychological therapy (counselling) for women in their intervention as she knows that the underlying reason “why the weight is there” is psychological:

We've both had weight issues. We said counselling because there's a reason why the weight is there. It's not just, you know, very rarely is it because of lack of knowledge or anything. There's this, often reasons behind it. So, we managed to secure a counsellor for this eight weeks. (Caitlin, Band 6)

Despite the awareness by Harriet also, there was no use of any eating behaviours measures used in these interventions. The use of counselling, which was provided outside of the intervention itself, may suggest that midwives may see the psychology element of eating as separate from the service they were offering, and therefore beyond the scope of their role. Midwives recognise that training is the answer to separate the information that needs to be provided from a midwife's own personal viewpoint. Sophia is a very experienced community midwife. She reflects on how to overcome the challenges of mixing up personal experiences with the professional role of midwife:

How do we get past that, it's difficult, isn't it? Because everybody's going to have a personal relationship with food and with weight...And how do you get past that? ... My first thought will be, again, more training, more training. To help you divorce your feelings from, from what you need to deliver. (Sophia, Band 6)

Sophia highlights the personal and potentially emotional connection people have with food and subsequently with their weight. To overcome this challenge she recognises that more training is the answer to help reduce the impact of their own experiences on the discussions

they have with the women they care for, and reduce discomfort and separate their own feelings associated with food and weight from the advice they provide.

In summary, although some midwives use their own weight struggles as a means of empathising and connecting with women, others express how being overweight themselves made the discussion difficult. However, midwives with no weight issues also found it was difficult. Concerns about being seen as judgemental or hypocritical underpinned their discomfort. Given the general unease midwives felt having these discussions, irrespective of their own weight, means that personal weight cannot fully explain a general reluctance to hold these conversations. Therefore, there must be other reasons why midwives find this so challenging. Midwives reach for various places for their own knowledge including their own pregnancy, their friends, or having a particular interest in the topic and this leads to inconsistencies in their knowledgebase. Midwives had some understanding of the psychology of eating but the focus for many discussions was on food and nutrition. It is apparent that midwives are often forced to rely on their own experiences, learning and knowledge in the absence of anything more formal such as guidance or training. Midwives had a clear view of what they needed to address the gap in skills and knowledge.

Theme Two: The Need for Training to Improve Healthy Eating Discussions

Theme two explores the lack of formal education, training or guidance provided to midwives in England in relation to healthy eating. This was consistent for the midwives across England who took part in this study. Other than those who had been involved in delivering a healthy lifestyle intervention, midwives stated that they had not received sufficient training on healthy eating, weight gain or how to engage in discussions around these topics. Subsequently, midwives have a good awareness of what they need in regard to training and resources. The lack of training and guidance resulted in midwives relying on their own experiences or self-taught knowledge. Rachel states that training should include the

standard NHS message around healthy eating so that midwives do not have to create their own information:

having training that you're not just basing it on your personal experience, your personal understanding, what you do in your own time, all of that, it's just like this is what the NHS says. This is what we say because this is what we think is the best thing for you and your baby, kind of takes that out of it a little bit, the same as like with smoking cessation and breastfeeding, it takes your kind of personal opinion away a bit. (Rachel, Band 6)

Rachel suggests that having information that is sanctioned by the NHS potentially reduces the pressure of having to rely on their knowledge. She hints that it would be easier to deliver difficult messages that are clearly official NHS information and not the midwife's personal view. This suggests that both distancing from the message and depersonalising the messages itself might help her feel more comfortable with these conversations. Rachel compares this to other health messaging. Midwives feel that there is an expectation from within the organisation to discuss healthy eating, despite not receiving adequate training on the topic. Sarah is an experienced community midwife. Sarah expresses how she is told that she needs to cover this information with women, either explicitly being told by her team leader or implicitly that it is expected of her to do so:

I feel like erm well, yeah, probably because I qualified, I mean, it was touched on in, at university when we were training and, but I don't feel like it was that much, to be honest. I feel like this is one of those things, along with quite a few of the things that kind of come into place. We're told "you've gotta do it". There's not a lot of training around it and actually umm it's kind of self-directed and it, it's, the onus on you then whether you, you go and do that. (Sarah, Band 6)

Sarah clearly links this expectation with the lack of training suggesting that she feels ill-equipped to undertake duties that are expected of her. Sarah stresses that her learning has been entirely self-directed, not provided by her Trust. This was a pattern reflected across the dataset. In addition to having official messaging from the NHS about healthy eating, midwives also offered up some suggestions for additional practical resources and practical skills-based training. Rachel reveals that in settings, such as clinics, time is restricted and it is more difficult to hold open conversations:

like if you've got like a protocol to follow, for example in a clinic setting... you've got a little thing to follow. That would be something that could help some kind of protocol, training, guidance...which takes it off you and probably makes it less judgy as well. (Rachel, Band 6)

Rachel's suggestion of a "protocol" would serve two purposes – provide a consistent approach for midwives and mitigate any bias or subjectivity in any information or advice they provided. This would address the earlier concerns she raised and help them avoid appearing judgemental. Documentation was also raised in the interviews to facilitate conversations about healthy eating and weight. As part of her role, Lara also supports other midwives:

the documentation doesn't support the discussion properly... and I haven't got time to take on, if she's not, if she's struggling with her weight. So I think a lot of it is time pressure. Think sometimes they do want to avoid it. I don't think, you know, some are, are really good at it and signpost it really well and others, especially if they're new and they're not perhaps quite au fait with signposting of where to send these women. It's varied. (Lara, Band 8a)

Lara is talking about why she thinks midwives may avoid the conversation around eating and weight. Lara says because the resources to support the conversation are inadequate, it is difficult to know why midwives may be avoiding the discussion. She suggests that a lack of

time and high workload may have an impact too, but it is not possible to know. Lara seemed to imply that if all midwives had good quality literature to help them engage in these discussions, it might be easier to determine what the barriers really were against holding these conversations, highlighting that currently without the right resources it is hard to decipher whether the hurdle is a lack of time or a lack of knowledge. Lara highlights that in order to have effective conversations they all need good quality information to support the messages they need to give, and that currently the resources do not support those conversations. Others suggested that documentation to better support these conversations could include a prompt sheet. Amber is a third-year student close to qualification. Amber provided some valuable insights into the discussions despite her having limited experience of holding these conversations herself:

But actually, when you're really stressed and it's like a really busy day and you, you have to have a difficult conversation, having like prompts is really helpful probably.

Or just like something to hold on to when you don't have like the space to like, reflect on what you're, you're about to say. (Amber, Student)

Amber was able to talk about what she has observed with the experienced midwives she has worked with. Amber suggests that these conversations need adequate time. She alludes to the impact that a lack of time and high workload can have on her working day and it can lead to feelings of stress. She suggests that a resource such as a prompt sheet with suggestions of what to say could help. She infers that this could help her to hold effective and meaningful conversations when she does not have the space, time or energy due to workload or stress. Having a resource for midwives could potentially address the barrier of time and workload pressures used as reasons why conversations about healthy eating are avoided. Midwives also recognised that as well as practical resources, practical skills-based training is also needed, which could help midwives put the resources and learning into practice. Amber was a student

midwife at the end of her midwifery degree. She highlights the need for experiential learning around holding these conversations:

Absolutely role play, because I think they're really uncomfortable conversations. I think we need to learn. We need to role play them. (Amber, Student)

Amber shows her lack of confidence in having these conversations and that she feels unprepared for them as a new midwife. Amber stresses that this is essential to help overcome the discomfort of holding these conversations. This can be interpreted as more about how to hold conversations rather than what information to give. Practising the conversation through the use of role play would be beneficial especially for a newly qualified or less experienced midwife who has not had many opportunities to do this themselves in practise. It was not only new midwives who recognised the value of role play in training to develop their practical skills around how to have these conversations. Barbara is a community team leader managing a team of community midwives:

Be good to have more information about how to address it with patients. So with smoking cessation we get given videos and scenarios and like role play. This is how you have this conversation. There isn't really anything for healthy eating (Barbara, Band 6)

Barbara reflects that practical skills training and role play already form part of the approach for smoking cessation training, but that this does not exist for healthy eating. Again, like Amber, Barbara stresses the importance of knowing how to hold these conversations and less on the content of what to say. This suggests that it is the softer communication skills training that midwives at different levels of experience appear to want.

Lisa is a hospital-based midwife who works in an antenatal clinic supporting women often with complex pregnancies. She said she had received minimal training or guidance about the risks and recommendations in relation to gaining weight in pregnancy:

Minimal. Minimal. I think because of the focus on saving babies lives very much being on smoking cessation in recent years. But I have I have attended a study day for challenging conversations. And there's a little bit of, and there was some information there. (Lisa, Band 6)

Lisa also references the targeted approach taken regarding smoking in pregnancy and makes a direct link with the lack of training or guidance on weight in pregnancy. Lisa also speaks of attending a non-mandatory one-off training day about holding difficult conversations. Even as a very experienced midwife of 16 years, Lisa recognised that she needed extra skills training in this area. Her comment “a little bit of information” suggests that Lisa thinks there are still gaps in broader knowledge, highlighting that this area needs further training or emphasis. Midwives also wanted guidance in relation to the most appropriate and effective language to use and had innovative suggestions of the best way to include this in any training:

I think we should have. We should have guidance around language. I think we should have conversations with people who have a high BMI, tell them how it feels for them. I think we should have, yeah, conversation with women who have a high BMI and how it feels for them. I think we should look at the evidence base around a lot of the guidance around BMI and for example, why can't you have a woman with a high BMI in in a pool? (Amber, Student)

Again, this is suggested by Amber who was the least experienced midwife. Amber recognised the importance of carefully selecting the language used in these conversations. Amber offers an interesting viewpoint in relation to the importance of language and who should inform the language used in these conversations. Her suggestion is to talk to women who have a raised BMI to better understand their perspectives and to use language that reflects their voices. This is especially insightful for a midwife with little experience. Considering her inexperience, there may be an expectation that this knowledge and

experience is gained ‘on the job’, but listening to Amber suggests she wants to feel better prepared for these conversations at the outset. Notably, Amber was not the only midwife to suggest using women’s voices to better understand their standpoints, suggesting that even more experienced midwives would value this approach. Sarah also suggests using the voices of women to inform their learning:

And so, I think you know, using the women as well, I did that a couple of times, erm you know, using their voice, you know, how, how do they perceive them? Because sometimes I think midwives don't, you know, particularly when you're so busy, it's like one in one out, one in one out. And they don't think actually, when people in a, as a whole aren't very self-reflective, they're not gonna pick up those like kind of nuances. (Sarah, Band 6)

Sarah suggests this as a way of reminding midwives that they are dealing with individuals. She implies that capturing what women say and relaying that back to midwives may help midwives connect with the women they care for. She suggests, again due to pressures of time, midwives could forget that and that midwives begin to see a conveyor belt of patients to see “one in one out” rather than connecting with women’s unique circumstances. Debriefing with more experienced midwives was also presented as another way to help share and build knowledge. Amber recognised that some midwives were especially skilled at holding these conversations:

I was with a colleague who has, who has, who to be honest, has really good experience...debriefing would be really helpful. (Amber, Student)

She said she would like to meaningfully talk through her experiences with a midwife who is knowledgeable and capable in effective interactions with women. A debrief approach would help her reflect on the conversations she has had with women and learn lessons she can take into future interactions. There was some debate about whether experience alone provided the

skills necessary to be effective with these conversations. Lara felt that experienced midwives knew how to hold these difficult conversations suggesting it is part of their role:

We do know how to have a difficult conversation and I think that grows with experience and I said that earlier. I think that I feel like that is something that grows with confidence within you as a person to have those conversations. (Lara, Band 8a)

She suggests that this knowledge comes with experience and it is an integral part of being a midwife. She expresses that experience breeds confidence in holding these conversations. However, some midwives did not think experience alone necessarily led to better approaches to discussing healthy eating or weight. Sophia recalls the behaviour of a former colleague towards women with a raised BMI:

We had one midwife in particular; I'm laughing because she was absolutely shocking. But she was a very healthy person, used to run and everything like that. And if she had anybody's BMI was over about 26/27, she, she'd go for them. You know, she was always telling them, "you need to lose some weight. You need to do this. You need to do that". And yes, she was, she was savage. Absolutely savage. (Sophia, Band 6)

She thought the midwife's attitude was too forceful in how she told women to manage their weight. It is clear here that Sophia is criticising this approach and implies that the midwife's methods were insensitive and harsh. This suggests that experienced midwives may not necessarily have the essential soft skills to handle these conversations sensitively and with compassion. This might suggest that midwives, irrespective of their years of experience, might benefit from additional training and ongoing debriefing in their practise.

In summary, theme two captures how midwives would address the lack of training and resources, and the various elements of training needed. It is clear that a lack of clear NHS messaging and guidance around gestational weight gain and healthy eating is needed. More than content and subject knowledge, midwives want practical skills training and support with

how to hold conversations in terms of the language needed. Midwives want practical resources too that could help overcome the barriers mentioned such as time and workload. Finally, sharing experiences between midwives through debriefing would also be welcomed, although caution should be taken in assuming that experience equates to proficiency where communication skills are concerned. Midwives understood the needs for additional skills and training because they recognised that there were complex reasons behind women's weight issues in pregnancy and they also realised the issues started before pregnancy and extended beyond it across the lifespan.

Theme Three: The Complexity of Women's Weight Issues

Theme three covers how midwives understand the complex nature of why women may gain more weight than is reasonably expected during pregnancy. Midwives believe that 'eating more' than pre-pregnancy is common amongst women. However, there is no consensus amongst midwives as to whether the notion of 'eating for two' is still prevalent amongst women. Some midwives may still hear this phrase used by women and some even still use the phrase themselves. However, others completely discount that this phrase endures. Midwives also demonstrate a deep understanding of the other reasons women may struggle to manage their weight in pregnancy including emotional reasons and the impacts of their life before pregnancy. They also acknowledge that weight gained or changes made in pregnancy can have implications for future pregnancies. Some midwives used the phrase 'eating for two' to describe why they thought women gained weight. Sophia highlights that the notion of 'eating for two' is still strongly embedded in society:

"I'm pregnant and therefore I need to increase the, the actual amount that I eat". You know, and yeah, we do try and dispel that, but, but again it, it's kind of. It's quite woven through society, isn't it? The idea of eating for two, you know, you hear it a lot. (Sophia, Band 6)

She talks about how the collective “we” are trying to expose it as a myth, which presumably includes her midwife colleagues. The use of the word “try” expresses a sense of frustration and resignation that it may not be helping because it is such a deeply ingrained belief as a societal norm for pregnancy. She is clear that the use of this phrase amongst women is commonplace as a community midwife. However, some midwives think women now know that ‘eating for two’ is a myth:

So I think it is a, I think, yeah, I'd say on the whole, they do know it's a myth, you know, I'll say to her, you know, you'll get probably older generations in your family telling you, “come on, you need to eat up. You're eating for two now”. But you know that is not the case. (Harriet, Band 7)

Harriet says she thinks most women believe ‘eating for two’ is now a myth. However, her repetition of “I think” and “on the whole” suggests some hesitancy in having complete confidence that all women know this now. Midwives also think that women’s knowledge may be at a transitional stage of understanding between knowing they don’t need to ‘eat for two’ but unsure what advice has replaced it because of a lack of clear guidance. Jade recognises that there is an apparent space for something new in relation to eating advice for women in pregnancy.:

we're in some kind of in, in-between time where people know that you're not meant to eat more, but they don't know what you're meant to eat instead. So people are just carrying on with their usual diet erm which you know, for some people might be great, but other people might already be a bad diet (Jade, Band 5)

Jade reveals that women are carrying on as they were pre-pregnancy in the absence of any alternative advice. She acknowledges that for some women this may be suitable, if their eating habits were healthy. However, Jade raises an important issue for those women whose pre-pregnancy eating habits were unhealthy. There is a sense of frustration here from Jade

that there is this gap in advice and knowledge for women. In addition to eating more, midwives also recognised other factors why women gained weight above what might be recommended, and psychological factors were the next most frequently cited. Caitlin identifies the impact of psychological elements on eating and that it is much more than simply a lack of knowledge:

there's a reason why the weight is there. It's not just you know, very rarely is it because of lack of knowledge or anything. There's often reasons behind it. (Caitlin, Band 6).

Given Caitlin had been involved in delivering a healthy lifestyle intervention, this demonstrates her deeper understanding of the challenges of healthy eating for women. Some midwives also specifically relate eating with emotions. Sarah understands the sizeable impact emotional factors can have on eating. She also expresses how the enormity of the issue can impact on the amount of time needed to support women effectively to get underneath the issues:

you also have women that eat a lot for emotional reasons. It is a massive time thing. Is it's a lot to try and unpick kind of those habits, really. (Sarah, Band 6)

There is a sense here that Sarah may feel ill-equipped not just in terms of time, but in terms of her skills to work with women on some of these challenges. Whilst the emotional and psychological aspect of eating was discussed in some of the interviews, only one midwife said she talked about 'mindful eating' with the women in her care. In healthy eating interventions, there is some inclusion of understanding the emotional connections with eating. Harriet refers to 'mindful eating' after the phrase was used by the interviewer:

so then we talk about mindful eating and talking about, you know, before you go and make a choice of what you're gonna have, think about what's making you go for something at that point in time, you know, is it because you're hungry? You need to

go and eat. If you're hungry, then what's gonna satisfy you? You know, eating a bag of crisps at this point in time is not going to satisfy you, you're still gonna be hungry after that. (Harriet, Band 7)

Harriet shows a good understanding of some aspects of eating behaviour such as hunger and satiety cues. Harriet shows some attempt at greater consideration of the motivations of eating, which is insightful. However, the focus remains on the food rather than on the behaviour itself. Others also show some acknowledgement of a woman's history of weight issues. Lara recognises that for some women psychology is the main reason for their weight issues:

a lot of weight problem is, I think, psychological for some women as well and hereditary. So, you know, I think you haven't got time to go down that deep.” (Lara, band 8a)

There is a sense that this makes the issues more complex in nature that would require more time to address. Therefore, similar to Sarah, she expresses that she does not have sufficient time to explore those reasons adequately. There is a reluctance to engage with discussions about eating behaviours, over and above time restrictions, because of the perceived amount of time needed “to go down that deep”. Others revealed an awareness that weight issues that manifest during pregnancy often do not begin in pregnancy. Amber suggests that for some women any psychological issues could be deep-seated and most likely pre-existing, that have effectively been missed prior to pregnancy:

often with a woman with a BMI that high, there are going to be some really like underlying like mental health issues or like adverse childhood experience issues that should have been investigated earlier. (Amber, student)

She suggests that these should have been examined earlier, potentially before pregnancy. This supports the point mentioned above, that there is a reluctance to ‘take the lid off’ such problems. It implies that this is beyond the scope and ability of a midwife, which might

indicate a fear of the consequences if they start talking about past trauma. This highlights the potential need to look at pre-conception and pre-pregnancy information about advice for women. Amber implies that waiting for pregnancy to address such problems may not be a good time, which adds nuance to the theory of pregnancy as a teachable moment. Others also recognise the importance of considering women's pre-pregnancy history specifically in relation to weight management or weight loss. Sometimes women have lost weight to get pregnant but still may have a raised BMI. Maria is one of the most experienced midwives interviewed with many years as a community midwife:

they're coming in at booking with us with a higher BMI, they might actually say to you like, you know, "I have actually lost a lot of weight prior to, to getting pregnant". So although we see them as a high BMI for them actually that they've done really well to get to that point. (Maria, Band 6)

Maria reveals that many women with a high BMI at booking disclose having lost significant amounts of weight prior to pregnancy. Maria recognises the achievement of that weight loss and that it is important to see a woman in light of that weight loss and not solely for her current BMI. There were inconsistencies about the timing of discussing weight and eating habits with some thinking discussions needed to be held early to give time to take effect, whilst others thought early pregnancy was fraught with physical pregnancy symptoms that impacted on eating such as sickness, nausea and fatigue. Another aspect of weight issues in pregnancy reflected that life-long weight changes needed to be considered both pre-conception and with regards to longer-term health, and women's broader well-being. Lara identified a missed opportunity to provide education prior to pregnancy:

So I really, I believe that we are missing out on this pre-conceptual erm, around healthy to prepare and for a pregnancy, and this is the best way and we do our best

that we can... But I do think we need to educate earlier or get GPs to look at, like putting on a GP, preconception advice for women in their 20s. (Lara, Band 8a)

She sees this as an important element of healthcare to help women prepare for pregnancy.

Lara's suggestion of involving GPs demonstrates her view for the need of wider educational interventions to include other HCPs beyond maternity services alone. Harriet, the midwife delivering the lifestyle intervention, also talks about the broader impact her work may be having on women in relation to their future health and future pregnancies:

these changes that that were encouraging women to make are lifelong changes. You know, they're sustainable, lifelong changes" (Harriet, Band 7).

Harriet recognised the impact that behaviour change that happens during pregnancy can have on longer-term health beyond the current pregnancy. This outlines how midwives recognise the importance of pregnancy as a moment to facilitate changes for life, not just for the pregnancy period. This reinforces the notion of pregnancy as that teachable moment. Another factor that arose especially for those who had additional healthy lifestyle services was how women's general well-being improved whilst they were engaged with the intervention, which also helped women maintain any new behaviours. Sophia, who remembers being able to refer women to a healthy lifestyle intervention in the past, recalls how the service did not only impact on their healthy eating but it also improved their overall general well-being:

You know, they made the ladies feel positive about themselves. You know, and they'd come back to see us because obviously that the healthy lifestyle kinda could be an extra if they'd still keep all of the routine appointments for those and they'd always be buzzing, you know about. You know what they were eating and things like that. It was a really, really good service and it's such a shame that they culled the funding. (Sophia, Band 6)

Sophia implies that the service provided a boost to women's confidence who were "buzzing" after interactions with the service. She also alluded to the impact the intervention had on routine care suggesting that it improved engagement in regular antenatal care as a result. Sophia also conveys a sense that women attended her appointment after the intervention feeling very positive and implies that this may have enhanced her interactions with the women she saw because they were then engaging with her about their eating habits. This shows the impact of an intervention can be much wider than simply changing eating habits. Other midwives also acknowledge the importance of considering well-being too. Rachel highlights some important elements that must be protected in the interactions with women:

a big thing is that you want someone to have a positive experience, you want them to feel good about their, themselves, their relationship with you as their midwife, their relationship with their body, their baby" (Rachel, Band 6)

She expresses that women need to feel good about their pregnancy and confident in their body. She thinks that the relationship between woman and midwife is part of ensuring a good pregnancy experience. Rachel also hints that a positive pregnancy experience can also impact on the baby. From Rachel's perspective these factors are interlinked and suggests this must be a consideration when holding these conversations. Understanding the importance of the relationship also suggests that midwives may be more like GPs for maternity care, not experts in all areas and that their role is to manage the overall relationship with women, consider their whole health and signpost for other services.

In summary, it is apparent from the interviews that the idiom 'eating for two' may be making its way into the history books of 'pregnancy myths', but there was some awareness amongst midwives that nothing had really replaced it in terms of formal eating advice. Midwives suggested that there was somewhat of a void in women's knowledge in terms of caloric needs required in pregnancy, and if 'more' calories are needed, how much more was

not known by most women, or by midwives it seems. Therefore, this myth may have been replaced by a knowledge vacuum for both midwives and pregnant women. The interviews showed that midwives know that it is also important to consider the past history and the future impacts on current and future pregnancies, and that weight as an issue needed lifelong consideration. Midwives were aware of how interactions about weight can impact on their relationship with women, and it was important to protect that relationship to help women have a positive pregnancy that supports the well-being of mother-to-be and baby. Midwives recognised the complexity of weight, yet their decisions and women's additional needs were determined by a simple BMI categorisation.

Theme Four: BMI Drives Pregnancy Weight Conversations and Care

Theme four explores BMI as at the centre of discussions about weight in pregnancy. It is the key criteria for selecting women for medical referrals such as for a glucose tolerance test (GTT) or for signposting to a healthy lifestyle or weight management style intervention. The term 'BMI' was not mentioned by the researcher initially, but it was consistently used by all participants when the topic of weight was raised by the researcher. In all interviews the term 'BMI' was mentioned by participants unprompted in relation to weight gain. Universally BMI is the main factor midwives use to trigger any detailed discussion about healthy eating (if there is one at all) or a referral to healthy lifestyle intervention. A raised BMI was also a factor in decisions for referral to clinical interventions such as consultant-led care, additional fetal scans or for a glucose tolerance test (GTT). Extracts relating to these points have not been included because whilst this is an interesting finding in terms of understanding the impact of BMI on clinical decision-making this is beyond the scope of this study and does not answer the research questions. Reference to these findings is included for purposes of context only.

From the insights provided by midwives, any conversations they had with pregnant women about healthy eating were short even where there was a separate intervention to which they could refer women. One midwife who delivered a separate service described this as “passing the buck a little bit” (Harriet, Band 6). Having a separate intervention did not seem to increase the discussion prior to the referral. This highlights the potential issues of referrals to interventions that are delivered separately and outside of routine antenatal care. Maria explains how healthy eating is not a priority in their discussions with women as community midwives:

we don't do that much in terms of, sort of, you know, lifestyle, healthy eating. We do have, erm it's like a public health role now, is a public health sort of midwife that we refer to all ladies that have got a sort of higher BMI. We refer them to this service called blooming healthy. (Maria, Band 6)

Maria may feel this way because they have an additional service that women can be referred to with a dedicated midwife. It is clear that only women with a raised BMI are referred, suggesting that women with a lower BMI may not be receiving much in the way of healthy eating advice. Additional separate services or interventions did not appear to change the level of discussion on the subject with their general community midwife. This may be because midwives were not provided with the training or knowledge about the intervention to have a more meaningful conversation. Maria recognised the lack of training she has received to be confident having this conversation and that she would welcome knowing more about the service she is referring to:

I think it would be good to have some kind of training. I mean, I was thinking actually since we started this blooming healthy service. I don't recall the midwife that's done it actually come in to speak to us about it, because that would have been good for her to come and say...to know a little bit more about it and to know. (Maria, Band 6)

There was some understanding that it may be because the specialist midwives may be best placed to have these conversations because they do have the training and knowledge. Caitlin who delivered an additional support service speaks of encouraging midwives to simply refer to her team so they can have the more challenging conversations because she feels they are not the specialists in this area:

so we actually said, you know, we'll do it. We'll have that difficult conversation because we know that you've not had the training that we've had and that's why we're the specialists in this area. (Caitlin, Band 6)

Caitlin is stressing that healthy eating is a specialist area and requires expertise and additional training that general midwives are not receiving. There is some concern that having separate services could impact negatively on general midwives. Whilst Sarah recognises the value of specialist services, she raises concerns that this may lead to an over-reliance on these services that inadvertently reduces the skills of general midwives:

as much as it's really good that we've got a specialist service now for women to support them, it's almost like once you develop a specialist service, then are you de-skilling other people because of that specialist service. (Sarah, Band 6)

If specialist services are then discontinued, perhaps due to budgetary constraints, it could leave a service without the necessary expertise. Deskillling of midwives may leave general midwives reliant on their own self-acquired knowledge, which may focus on reducing risk, rather than promoting health. Lara, for instance, explained how her focus in terms of opening the discussion about healthy lifestyle was about explaining how unhealthy behaviours can negatively impact on their own and their baby's health, reflecting a risk-focussed perspective:

just to be open and honest really with them and I I find just you can be. To me, it's just about saying, do you recognise? Can you see that this is detrimental to yours or your baby's health? (Lara, Band 8a)

Lara expresses that being truthful and candid with women about potential risks and impacts on health helps women reflect on their behaviour and what effect they think it might have on them and their baby. Lara sees honesty as a key part of her role so that women were informed of the risks they were taking with their health and their baby's health. There was a general focus across the interviews on risk avoidance rather than on health promotion, which reflects the medical model of healthcare. Although there was a strong focus on risk of a raised BMI, excessive weight and unhealthy diet, there was also recognition by one midwife that BMI is not a good measure of health. Amber saw that consideration of factors other than BMI may be needed when making conclusions about a woman's health:

I think it was more nuanced than that (a raised BMI), because there were so many, there was so many kind of assumptions about her weight (Amber, Student).

She explained how she had seen inaccurate assumptions about a woman's health made based purely on her BMI. This highlights the potential of weight stigma and again the prejudice that often accompanies care for women with a high BMI. The focus on BMI by most of the midwives may be understandable when considering that they are seeing more women than ever enter pregnancy with a raised BMI. Maria speaks of the growing prevalence of diabetes amongst the women she sees, which reflects a shifting demographic:

That our sort of demographic is changing, you know what is considered to be a normal kind of healthy weight is probably shifting higher up. You know, the diabetes is just ever growing. You know that's now been added as an element on the saving babies lives because of, you know, the risks of stillbirth with diabetes. (Maria, Band 6)

Maria also speaks of the inclusion of diabetes in public health policy, and directly links this with the risk to the baby and the initiative 'saving babies' lives'. This might indicate that the future focus of a midwives' role will be on risk and that any guidance about weight in

pregnancy will also focus on risks to the baby, rather than also considering broader women's health and well-being. Without formal guidance, this direction of travel could impact not only on the information provided to women, but the way in which it is provided. In the absence of formal guidance of how to engage in these conversations, creating unnecessary fear, over or understating any particular risk for individual women or engendering shame or guilt in women could become a problem that creates barriers to effective interactions. This could become a growing issue as Caitlin explains how women entering pregnancy with a raised BMI has become the new normal:

we started 30 and above and we then we realised we've got too many so we went there was just the population was just too huge. So we moved to 35 and above, BMI 35 and above. (Caitlin, Band 6)

As a result of the increasing numbers of potentially eligible candidates for intervention, this has led to the threshold being raised. This means that more women were needing access to the intervention but were potentially not accessing it because demand now outstripped the resources needed to deliver it. Both Maria's and Caitlin's perspectives shed some light on the general focus amongst midwives to focus these conversations on risk in order to manage a growing number of women who need access to this care and advice. BMI may seem to be on the surface at least a useful way to help to identify those most at risk who need help.

In summary, the final theme encapsulates that BMI is the central focus for discussions and interventions around healthy eating. BMI at a certain level drives clinical decision-making and triggers referrals to additional services such as further medical testing and to healthy lifestyle interventions. Surprisingly, the existence of a separate lifestyle intervention does not seem to increase the discussion about healthy eating amongst general midwives and their caseload of women. There is even some indication that general midwives feel they are being deskilled when specialist services are created, removing the need for their ongoing

learning and development in these subjects. In addition, much of the discussions around healthy eating, possibly because it is so closely associated with BMI in the minds of midwives, focused on risk reduction rather than health promotion. There is some acceptance that BMI is not a good measure of health. However, in the absence of any substitute, the emphasis on BMI to drive all decisions endures. Finally, the rising numbers of women with a raised BMI entering pregnancy is shifting the numbers signposted for intervention. There is concern amongst midwives that this may cause additional pressures on already limited time and resources. This ultimately means that there will be more women who may benefit from this information but who may not receive it. Given general midwives will therefore potentially have to have these discussions, upskilling general midwives will be necessary.

These four themes reveal that a lack of formal training and guidance for midwives about healthy eating leaves midwives to rely on their own self-taught knowledge or their own personal experiences. Midwives are concerned that they may be accused of being judgemental or hypocritical when advising pregnant women about weight, when they themselves have weight issues. However, there is some awareness that the midwife is not there to be a role model of perfect health, but to provide evidence-based advice. Midwives are aware of some of the challenges that pregnant women face in managing their weight, as well as having some understanding of the psychological elements of eating behaviours, although this was limited and considered outside their brief. Midwives recognise that they need additional subject and skills training to help them hold these conversations and many had some useful suggestions of what might help them. Finally, while some midwives recognised the limitations of using BMI as a proxy measure for health, BMI was the main focus for these discussions and was the only criteria used to signpost for further support. Given that the demographic is changing and the rising number of pregnant women entering pregnancy with a raised BMI, it is timely and insightful that the midwives in the study are

calling for the additional knowledge and skills needed to be confident in holding conversations about healthy eating with the women in their care.

7.5. Discussion

The present study used in-depth qualitative methods to explore the perceptions and experiences of NHS midwives in providing healthy lifestyle information and support to pregnant women. Four themes were developed from the obtained responses. The results revealed that midwives own personal experiences of managing their own weight issues impacted on their interactions with women in both positive and negative ways. Some midwives felt that their own personal struggles with their weight facilitated the discussion with women because it provided them with a deeper understanding of the struggles women face and the complex nature of behaviour change in pregnancy, as highlighted by Olander et al. (2018). This study finds that midwives may use their own experiences to overcome the potential sensitivity of the topic. The literature overwhelmingly supports the finding in this study that midwives find weight to be a sensitive topic (Raju et al., 2023). Previous studies concluded that this generally led to the avoidance of any conversation around weight or healthy eating (Atkinson et al., 2018) especially if midwives anticipated that they would receive a negative reaction (Atkinson et al., 2017). Avoiding the discussion is not sustainable because women expect their midwife to advise them of all pregnancy risks (Olander et al., 2011).

Very few studies have highlighted any positive aspects of midwives using their own experiences of weight issues, as the results in this study showed. A study by Foster and Hirst (2014) did report the comment by one midwife who felt pleased she was a larger woman when providing advice about weight. However, there was no comprehensive analysis around this. The current study does bring a new perspective to this, which is that midwives may be using their own personal experiences in lieu of any formal training, education or guidance. This potentially shows the resourcefulness of some midwives to use what they have at their disposal by way of knowledge or experience and use it to their advantage to overcome a

challenging aspect of their role. The topic of HCPs in larger bodies discussing weight-related behaviour change has been explored further amongst the nursing population where some nurses with a raised BMI believed their own experiences helped them to better connect and empathise with patients (Aranda & McGreevy, 2014), but this had not been previously examined amongst midwives.

The lack of formal training for midwives found in this study reflect the findings in the literature and may explain why midwives resort to their own self-acquired knowledge and experiences when formal training is lacking. A decade ago, Furness and colleagues (2014) found that most midwives in England did not receive training. Only two UK based studies have addressed this gap. Hart and colleagues (2018) examined online training for student midwives focusing around behaviour change techniques and Basu et al. (2014) evaluated a half-day training programme for midwives around nutrition and weight management. Both studies found that training improved midwives' knowledge and confidence in discussing healthy weight with pregnant women. The current study found that midwives welcomed the introduction of training and many felt it would be useful to include in regular mandatory training. They also wanted guidance and prompts about how to have conversations rather than guidance on 'what to eat'. The current study highlighted how time may be a barrier for midwives attending such training. In their 2018 paper, De Jersey and colleagues discussed how time constraints may hinder midwives from attending training. They referred to a study from Australia that examined healthy weight education in mandatory training. Timing and duration must therefore be a consideration when developing any training provision. In the current study, one midwife recognised the need for practical training around communication skills such as the use of role play in training, which is mirrored in the literature (De Jersey et al, 2018). What this study also adds to the existing literature is the potential to use debriefing with a mentor or more experienced midwife as a way of building

confidence and skills to aid these discussions especially for less experienced or newly qualified midwives.

The current study found mixed views in relation to whether midwives believed that ‘eating for two’ during pregnancy was still a common belief held by women. The literature is also mixed in this regard. Some authors use the term as a short-cut to the topic of eating during pregnancy. In Paul (2020) the term ‘eating for two’ is used to simply reflect energy and dietary intake during the period of pregnancy with no commentary about whether this term is used by women or HCPs. In Pope (2020) the term is used in a similar vein. The use of the phrase in this way may be problematic because it may proliferate the idea that women ought to eat more during pregnancy. Some studies concluded that eating for two was still a common belief that influenced women’s eating behaviours amongst Western cultures. Rockliffe and colleagues (2022) linked eating for two with unrestrained eating in their UK study, Flores-Quijano et al. (2023) found that the notion of eating for two in their study in Mexico allowed pregnant women to eat more and Flannery et al. (2020) also found that eating for two was still apparent in their study in Ireland. Another UK study concluded that eating for two is still a cultural norm especially amongst women of Black African heritage (Moore et al., 2021). Most of the midwives in the study cared for women from diverse ethnic backgrounds. They remarked on the cultural differences they observed including the different influential factors affecting women’s eating such as dietary differences and family members. Midwives acknowledge these differences but had little in the way of resources or guidance to help tailor information for these women, in lieu of their own experience. The current study suggests, therefore, that training and resources for midwives should be tailored where necessary to take account of any cultural differences that can affect eating and lifestyle behaviours such as specific diets and social influences.

A quantitative study carried out in Canada (Moffat et al., 2021) found that the majority of women in their study rejected the idea of ‘eating for two’. The authors also suggested that the vagueness of the phrase required further scrutiny through more focused qualitative studies. Therefore, the latest literature mirrors the lack of conclusive acceptance or rejection of this belief found in both this and study four (see Chapter 6). Kraschnewski and Chuang (2014) suggested that it would be apparent that eating for two was confined to the history books once pregnant women in the future know that it simply means that they need to eat a healthy diet not only for themselves but also for their baby, rather than eating twice the calories. It is now a decade since that aspiration was stated, and if Kraschnewski and Chuang’s (2014) measure of successful change is applied, then we might conclude that there has been some progress towards this state given the findings from this study and the previous study (see Chapter 6), but we are not there yet.

Although the current study was inconclusive about whether eating for two was now resigned to the past, this study does contribute some further understanding as to why the situation has not sufficiently moved on. The current study found that there was a general awareness amongst midwives that there is now a void left where the eating for two ‘advice’ once was. The midwives who felt that women knew that eating for two was incorrect, did not know what knowledge was now in its place. In fact, it was clear that midwives themselves did not know what advice should be provided in its place either, which reflects the lack of formal guidance around GWG in the UK (NICE, 2022).

Previous research has found that discussions around weight or healthy eating were driven by BMI (Lucas et al., 2020) and this is in line with the findings from this study. The current study found that either the BMI being calculated or its inclusion on a woman’s maternity notes was the main trigger for any detailed discussion about healthy eating. The present study also supports findings from other literature that midwives recognise that BMI is

not necessarily helpful (Lucas et al., 2020) and that BMI or body size is not necessarily a reflection of health (Carrier, 2001). Hodgkinson and colleagues (2017) found that some midwives viewed a woman with a raised BMI as unhealthy, which the findings in this study did not show. The current study showed that midwives had a deeper understanding of the complexities of why women may have a raised BMI and that their current BMI may not be a reflection of behaviour changes that may have already taken place prior to pregnancy. Some midwives in the study also reported that entering pregnancy with a raised BMI is becoming the new normal, which reflects the findings from previous research (McCann et al., 2018) where midwives reported that the numbers of women with raised BMI is growing. The midwives in the current study highlighted that the growing numbers means the BMI level set to signpost for additional services is having to be raised to prevent services becoming overwhelmed. This raised further questions about the level at which BMI should be set to ensure that all women who need additional support can access it, or whether BMI should be used as an indicator at all. Midwives in the current study also supported the overall appraisal made by Bick (2015), which is that all pregnant women, irrespective of their BMI, should receive information around weight and healthy eating, but also recognised that they may not all always receive it.

What this study adds overall to the existing research is a snapshot and an updated perspective of the situation regarding training and guidance provided to NHS midwives in England. Despite calls a decade ago to address this problem (Furness et al., 2014), it appears that little has changed in this regard. Moreover, continuing to focus solely on BMI at a set level as a driver for any discussion or information provision around healthy eating means that the number of women who need advice, but are not receiving any, is growing. Subsequently, the situation is not being addressed and is potentially worsening.

Strengths and Limitations

The sample for this study was a key strength because it included midwives with a wide range of experience, including a newly qualified midwife and a student midwife. The study also included midwives who had experience supporting pregnant women from racially-minoritised groups and acknowledged the impact cultural differences had on women's lifestyle behaviours. These midwives talked about how this knowledge informed their understanding of women's individual backgrounds. However, midwives did not overtly talk about how they tailored advice based on cultural differences. This reinforces the point that midwives rely on their own experiences to present information, and the majority of midwives were from White ethnic backgrounds. It is important that research in this area considers all communities, especially where findings can impact on future health policy or service development (Onwumere et al., 2024). One further strength of the study relates to the method of data collection. The interviewer was not a clinician and did not work in the NHS but was experienced working with this population and understood well the environments in which midwives work. This helped to provide a supportive environment to engender an open and non-judgemental discussion. A limitation of the study should also be noted. Given the nature of the topic, midwives may have told the researcher what they think she wanted to hear and may have presented a more positive picture of the situation. However, on the main questions of this research, the findings were largely consistent suggesting that midwives were in most likelihood candid with their responses. Also, through the use of follow-up questions and the rapport built with the participants during the interview, the researcher made every attempt to elicit genuine experiences.

Implications for Future Research and Clinical Practice

Future research should further explore two enquiries. The first relates to HCPs and their own weight and body image. Some research has been carried out within the nursing population in relation to HCPs in larger bodies providing advice to patients in larger bodies

(Aranda et al., 2014). Whilst asking midwives about their own weight challenges was not part of the scope of this study, it may be useful to explore this amongst the midwifery profession given the nature of pregnancy as a key time for change to weight and health behaviours. Moreover, psychosocial education covering weight stigma along with reflective practice could help midwives distance their own body and weight experiences from the discussions they have with women.

Second, midwives' understanding and knowledge about eating behaviours and the psychology of eating could be explored further. The current study did examine this in some interviews to some extent, but a study focused on this would tease out more detailed views of midwives' knowledge and confidence in this area. In the current study any questions around eating behaviours generally lead to a discussion about nutrition or food, rather than eating behaviours.

In terms of how this study related to future clinical practice, it advocates that any future healthy eating advice should be provided to all women irrespective of their BMI, as many participants in the current study stated and is also supported by Bick (2015) in order to help all women achieve a healthy pregnancy, and was also the conclusion of review of GWG interventions (i-WIP, 2017). Consideration of women's holistic health, not just their physical health or weight, should also be carefully included. Midwifery care may provide the ideal opportunity to offer women a more holistic approach to weight, eating and wider well-being support. Finally, any future training should include the psychology of eating behaviours as well as practical communication skills, and practical tools for midwives to use during consultations, not only education relating to nutrition. The missing element to fill the void left by the former 'eating for two' advice may be specifically stating what is required calorie-wise beyond simply following a healthy diet such as needing 340 calories per day extra during the third trimester only (Molina-Recio, 2022), which is a simple and clear message. The findings

from this study could inform evidence-based practice to make care better for women and easier for the midwives who care for them. The development of a toolkit for Trusts to provide their midwife teams with the effective skills, knowledge and guidance to engage in these conversations with all women, without enacting weight stigma, is a recommended outcome of this research.

CHAPTER 8: GENERAL DISCUSSION

8.1. Overview of the Current Thesis and Aims

The current thesis aimed to investigate how pregnancy impacts on well-being, eating behaviours and body image and to explore the connections between mindfulness-based concepts, maternal-fetal attachment (MFA), well-being, body image and weight-related health behaviours, including eating behaviours that can lead to excessive gestational weight gain (GWG) (Daundasekara et al., 2017; Donofry et al., 2021). The main aim was to explore psychological constructs such as self-compassion, mindfulness, psychological flexibility, and MFA, which are associated with well-being, body image and health behaviour (Corbally & Wilkinson, 2021; Hennelly et al., 2020; Papini et al., 2022). These concepts have been found to be protective against problematic eating behaviours and body image disturbances associated with excessive GWG (Daundasekara et al., 2017; Donofry et al., 2021; Winter, 2016). The broad aims of this thesis were: (1) to examine the impact of pregnancy on well-being, eating behaviours and body image, and the potential role of psychological factors in addressing problematic eating and body image issues, (2) to explore the idea of pregnancy as a ‘teachable moment’, and (3) to ensure the inclusion of women from racially-minoritised groups in the research population to address the current imbalance in pregnancy literature and the evidenced discrepancies in outcomes for these women. In the following sections, the findings from each chapter are briefly summarised, outlining how each study meets the aims of this thesis, and synthesising the findings across the research project and with the literature in the field. Limitations, recommendations for future research and practical implications are also discussed.

8.2. Key Findings

Chapters 3-5 presented the research conducted during the quantitative phase of this thesis. To address the first aim of this thesis, three cross-sectional studies examined the

relationships between mindfulness-based concepts, MFA, well-being, eating behaviours and body image.

In Chapter 3 (study 1), the results revealed that being more self-compassionate, mindful, and psychologically flexible are associated with overall feelings of well-being. Furthermore, pregnant women who feel more connected to their unborn baby also experience greater well-being. These findings reflect what has been found in prior research amongst the general non-pregnant population (Baer et al., 2012; Doorley et al., 2020) and add further insight to the limited but growing research conducted amongst pregnant populations (Dhillon et al., 2017; Matvienko-Sikar et al., 2016b; Zessin et al., 2015). Mindfulness was a significant predictor of well-being, which aligns with the mindfulness literature in the general population (Asadi & Fathi, 2020) and in previous research amongst pregnant women (Mennitto et al., 2021). This thesis goes further adding more nuance to the impact these constructs have on well-being in pregnancy. Results showed that when levels of mindfulness, self-compassion and psychological flexibility are high, the link between well-being and MFA becomes weaker. This means that a woman's well-being may not be strongly linked to her emotional connection to her unborn baby. This is especially important for pregnant women experiencing low maternal-fetal attachment, such as those pregnant following a previous pregnancy loss. This finding may be particularly relevant to those who may be cautious to form an attachment with their baby due to fear stemming from a previous loss. Dependence on a strong connection with the baby for well-being is, therefore, not helpful for all women. Exploring other ways of supporting well-being and encouraging positive health behaviours that are not based specifically on a strong identification with the baby may be particularly helpful for women who may be hesitant to develop a strong maternal-fetal bond. Overall, Chapter 3 contributed new evidence to the pregnancy literature regarding mindfulness-based concepts and their associations with well-being during pregnancy. Well-being is closely linked with

health behaviours, such as eating behaviours (Hennelly et al., 2020; Hutchinson et al., 2017), which was explored in Chapter 4.

Chapter 4 (study 2) explored the associations between mindfulness-based concepts, MFA and eating behaviours during pregnancy. The research findings supplement the current understanding from research conducted in the general population (O'Reilly et al., 2014; Warren et al., 2017), revealing that as self-compassion, mindfulness and mindful eating increase, emotional eating decreases, and consuming high levels of fat and sugar is linked with lower levels of mindfulness. This suggests that these constructs may play a protective role in reducing these eating behaviours during pregnancy. The significant finding of this study is that women who have given birth before or are also managing a health condition may find it more challenging to focus on their eating, especially if they enter pregnancy with a raised BMI. This could be due to their attention being diverted elsewhere, such as caring for other children or managing the consequences of a health condition, rather than on eating. This thesis concludes that self-compassion could be the most effective target to protect against problematic eating behaviours in pregnancy as it also promotes mindfulness. This builds on the foundation set by prior studies amongst non-pregnant populations that shows how self-compassion can pre-emptively address problematic eating behaviours, making behavioural changes easier (Mantzios & Wilson, 2014). Well-being and eating behaviours are also associated with body image (Gonçalves et al., 2015; Papini et al., 2022; Winter, 2016), which was explored in Chapter 5.

Chapter 5 (study 3) explored what role mindfulness-based constructs, body image flexibility and MFA may play in body image during pregnancy. Until now, research on body image flexibility has focused on non-pregnant populations. Mindfulness-based constructs are positively associated with positive body image in pregnancy, high levels of body image flexibility and negatively associated with weight/body related shame and guilt. There was

also some alignment with the research among the general population (M. L. Hill et al., 2013) suggesting that these constructs could play a significant role in helping women to positively adjust to their changing pregnant body. Therefore, this study contributed considerably to the understanding of women's responses to physical changes to their body during pregnancy, finding that women with a lower BMI have better levels of body image flexibility. This is key given the strong links between body image and problematic eating behaviours identified in the literature (Collings et al., 2018, Shloim et al., 2015). Previous research has also found comparable relationships between feelings of shame, psychological well-being and BMI (Conradt et al., 2007). Self-compassion also moderated the relationship between BMI and weight/body related shame. Feelings of shame and guilt linked to eating and body image issues were talked about by women, irrespective of their BMI (in Chapter 6), reinforcing the findings from the quantitative phase and providing new perspectives on the role of BMI with weight/body related shame and guilt.

Collectively, the quantitative phase of the thesis has shown that self-compassion, mindfulness and psychological flexibility can positively impact on overall well-being, problematic eating behaviours and weight/body related shame and guilt. These studies deepened the existing knowledge base in the field of self-compassion and its potential modifying effect on the link between BMI with emotional eating, mindful eating and weight/body related shame. BMI was positively associated with emotional eating, grazing and negatively associated with mindful eating. These findings are consistent with the research in general populations (Chwyl et al., 2021; Mantzios, Egan, Bahia, et al., 2018) and, where examined, in pregnancy (Donofry et al., 2021; Tang et al., 2020). BMI did not link with fat and sugar consumption, which, whilst surprising, does concur with research in the general population (Mantzios, Egan, Hussain, et al., 2018b). These findings highlight the needs for

deeper understanding of eating behaviours that goes beyond BMI and weight is necessary, including the consideration of psychological and nutritional factors.

Parity also showed some interesting results. Multiparous women with a higher BMI had lower levels of mindful eating but this was not observed in primiparous women. The mindful eating scale used in the thesis spotlights the behavioural aspects of mindful eating, such as focussing on food and noticing the sensory aspects of mindful eating. Therefore, this observation between BMI and mindful eating may be explained by increased demands on time and focus for women with children. This offers a new perspective on the use of targeting mindful eating in studies and that a broader focus on self-compassion and mindfulness may be more appropriate when mindful eating may be especially difficult to follow at times of overload. Other parity differences have been observed in this body of work. Whilst well-being overall did not differ with parity, there were some interesting findings when examining relationships between parity, well-being and MFA. MFA was higher in primiparous women but not linked with well-being. For multiparous women lower MFA was associated with lower well-being. Previous research has found that well-being is lower in women who have been pregnant before than in first-time pregnant women (Hartley et al., 2016), but this is the first study to indicate a relationship between well-being and a connection with the unborn baby for multiparous women.

Some differences were also observed between women living with a medical condition and those without. In Chapter 3 (study 1), women with a medical condition had higher scores of MFA, although this was not observed in the other studies. Self-compassion was also a protective factor for women with a medical condition contributing to better well-being. The link between BMI and problematic eating was apparent for all women but was stronger for women living with a medical condition, especially for emotional eating amongst those with a higher BMI. These findings provide further insight into the role self-compassion could play

in enhancing well-being and in reducing the impact of poor well-being on eating behaviours and body image for pregnant women living with a medical condition.

Across all studies age was not a significant factor except in Chapter 5, where younger women had lower levels of psychological flexibility. This finding may provide further insight into the current understanding that younger women struggle to adjust to their pregnant body (Dryer et al., 2020). Women under the age of 26 were not represented in this body of work. The average age of participants was 33, marginally above the mean age of 30 years in a meta-analysis of diet and PA intervention studies (i-WIP, 2017). Remarkably, their review found no age differences across the studies. However, given the mean age of the samples, differences of age necessitate further inquiry by including younger women in future research.

It was anticipated that many of the factors explored in this body of work would change across the course of a pregnancy journey and this was indeed the case for MFA, which in line with the literature, increased with gestation in all three studies. No links between well-being and gestation were observed in study one, although there were some differences in problematic behaviours linked with well-being such as emotional eating in Chapter 4. An increase in grazing was also observed and is perhaps expected as women may prefer to eat smaller amounts of food more frequently as pregnancy progresses, especially as digestive issues are known to worsen (Nissen et al., 2023). Given the strong connection between these eating behaviours and weight gain, and that weight gain in the later stages of pregnancy contributes more significantly to overall GWG (Wijden et al., 2014), a deeper understanding of emotional eating in pregnancy, and grazing in particular, is useful to understand its association with weight-related behaviours over the course of pregnancy.

To address the research aims and expand the understanding of eating behaviours and body image in pregnancy, findings from the quantitative phase informed the qualitative stage of the research. Chapter 6 aimed to add further insight into experiences of eating behaviours

and body image with a focus on understanding the impact of BMI, parity and living with a medical condition, particularly in light of the mixed results across the quantitative studies. Overall, women talked about experiencing challenges with their eating during a recent pregnancy and how healthy eating was difficult to maintain. These findings elucidate the findings from the quantitative studies and may explain why problematic behaviours, such as emotional eating and grazing, increase with gestation. All women also talked readily and broadly about the necessary health behaviour changes needed in pregnancy and most agreed that the health of the baby was the main motivation for change. There was also wide agreement about how difficult this was to sustain over the long months of pregnancy. Pregnancy was not seen as one singular teachable moment, but rather a series of moments where motivations and challenges shift over time. Bearing in mind the strong association between self-compassion and health behaviours seen in the general literature (Biber & Ellis, 2019; Phillips & Hine, 2021) and pregnancy literature (Hennelly et al., 2020), these findings may explain why self-compassion can decline during pregnancy as observed in the quantitative work.

In Chapter 7, midwives understood the importance of healthy lifestyles and the challenges women face during pregnancy. They also acknowledged the psychological aspects of eating and understood that issues with eating do not suddenly appear during pregnancy, emphasising the need for a more holistic, long-term approach. This has been presented in the literature as a move away from out-dated notions of healthy versus unhealthy eating towards eating that promotes broader health and well-being (McDonald & Braun, 2022), which means eating that is healthy for body and mind. The findings also present new insights regarding the potential impact of inadequate training leading to a heavy reliance on personal experience and a focus on risk-based language. Whilst midwives demonstrated an understanding and awareness of the psychological aspects of eating behaviour, their focus of their discussions

with women still centred around BMI, diet/food and risk in relation to weight, which was also reflected in how women spoke of eating during pregnancy (in Chapter 6). Whilst there was some acknowledgement of the psychological reasons for women's eating behaviours, the consideration does not go further than a superficial recognition of the potential issue. There is an absence of any indication that this is being addressed at any deeper or more strategic level in relation to tackling GWG or healthy eating within midwifery practice. These findings may further explain why midwives are not prioritising healthy eating discussions during their antenatal interactions (Talbot et al., 2024).

Overall, the qualitative studies highlight that the psychological aspects of eating behaviours are not front-of-mind for pregnant women or the midwives who care for them. This finding supports the rationale set out in the quantitative phase to explore the psychological aspects of eating, and the use of eating behaviour measures because these factors are being given very little consideration in maternity practice. Midwives acknowledged the sensitivity of the topic and discussed their discomfort in addressing it, especially with women with a raised BMI, which aligns with other research (Atkinson, 2018; Raju et al., 2023a; Yin et al., 2014). Despite their discomfort, midwives accepted that it was their role to provide this information to pregnant women in their care. Moreover, it is also known both from the previous literature (Allen-Walker et al., 2017) and from the present findings that women want and expect this information from their midwife.

This body of work included women from diverse ethnic backgrounds and therefore addressed a key aim of this research. No differences were observed in the mindfulness-based variables based on ethnicity, corroborating other research (Sun et al., 2022), which supports the conclusion that mindfulness-based interventions could be effective for all women, including women from racially-minoritised groups. The midwives in this study also provided antenatal care to women from diverse ethnic backgrounds. Therefore, they provided some

valuable insights into the cultural differences between women and how they considered these differences to have a better understanding of women's lifestyle behaviours. This is an interesting finding, especially since the literature is inconclusive about whether ethnicity plays a role in GWG with some studies finding no significant differences in GWG (i-WIP, 2017). The conclusion in this thesis echoes the work by Soltani and colleagues (2017) and recommends that ethnicity still needs careful attention in maternity service provision.

8.3. Should BMI Remain a Key Criterion for Assessing Risk?

When considering quantitative research, both from this thesis and the wider literature, BMI appears to be linked with problematic eating behaviours (Donofry et al., 2021; Shloim et al., 2015a) and body image concerns (Mehta et al., 2011). It strongly suggests that BMI is a necessary factor to consider and is associated with risk in pregnancy and birth outcomes (Peacock et al., 2020), and therefore should not be discounted as a factor worth considering. However, this thesis highlights that there are other factors beyond BMI that are important to examine, such as a woman's relationship with food and the use of food as a coping mechanism for managing negative emotions, stress or poor body image. Additionally, the research has identified that other factors such as parity, medical conditions and, to some extent, age may also play a role in eating behaviours and body image. Furthermore, this thesis underlines that solely using pre-pregnancy BMI or BMI at booking-in overlooks other potential contributory factors, such as a prior history of weight issues or weight fluctuations. Relying on BMI alone, measured at one point in time, does not provide the fullest picture in terms of other factors that may contribute to weight gain during pregnancy or beyond. Since there is a growing number of women entering pregnancy with a raised BMI, the threshold to refer women to interventions is being raised to manage growing caseloads. Taking these other factors into consideration may help to better focus limited resources. Therefore, gathering a detailed history of pregnant women's eating and body image experiences through the use of

questionnaires and discussions with their midwife, in addition to BMI, might provide a more indicative assessment of whether additional support would be beneficial. For example, developing a questionnaire for antenatal use that includes measures of emotional eating, mindful eating, body image flexibility and body image as well as measuring self-compassion could identify women who may be at greater risk of problematic eating. Additionally, an increased focus on having a healthy relationship with food will also incorporate women from across the weight spectrum including those who are underweight or overweight, as well as those who are using eating as a coping mechanism for negative emotions or avoiding food or cooking due to stress. This is important because problematic eating behaviours are not confined to one single BMI group, which was observed in Chapter 6, where participants with a normal BMI described experiencing problematic eating behaviours in the past, such as binge eating. Expanding the assessment criteria to include all women in thorough discussions, not just those with larger bodies, will accomplish several things: (1) demonstrate a deeper understanding of the complexities of weight gain during pregnancy and weight retention postnatally, (2) prevent women from feeling targeted solely because of their weight, which, in turn, will help reduce stigma around weight and BMI, (3) better identify those most in need of additional support, and finally (4) reduce the discomfort felt by midwives.

8.4. Is Pregnancy a Teachable Moment for Behaviour Change?

This thesis explored the idea of pregnancy as a teachable moment and therefore met the aim of this thesis. The findings from this research highlight the power of psychological theories, such as McBride et al.'s (2003) teachable moment, and their practical applications in improving well-being, body image and eating behaviours during pregnancy. They also provide deeper insights into the crucial role NHS midwives play in supporting women's health during pregnancy. The answer to whether pregnancy is a teachable moment for behaviour change is not straightforward. It is true that midwives have an opportunity to

provide high-quality information and support to women to help them make positive health behaviour changes. However, for pregnant women it is an especially challenging time to make changes and to sustain them. Although pregnancy is an extended period of contact with HCPs, it is a long-time to sustain new behaviours that may not be previously ingrained. This thesis concludes that pregnancy should be considered, not as one single teachable moment – at booking in or another other suggest single contact point in the antenatal period - but as a series of moments, reflecting that motivations and challenges fluctuate over the nine-month period. Despite the challenges to behaviour change during pregnancy itself, it is an opportune time to impart the knowledge and deliver tools for change that may be better put into practice after pregnancy to prevent weight retention or additional postnatal weight gain. Therefore, it may be necessary to consider pregnancy as the teachable moment for a long-term change to health behaviour that can impact subsequent pregnancies and long-term health, whilst accepting that it may be too late or too hard to effect immediate change in the current pregnancy. This means taking a longer-term view on changing health behaviours and improving maternal health. A long-term perspective presents challenges because healthcare providers expect to see results and outcomes during the allocated spending period and metrics tend to measure outcomes over the short term. Moreover, integrating healthy eating discussions and interventions into maternity services presents challenges due to time, budgetary and resource constraints and as a result midwives already face heavy caseloads. The use of Very Brief Interventions (VBIs) as part of the ‘Make Every Contact Count’ (MECC), an initiative introduced across public health in England since 2016 has shown that very short interactions lasting between 30 seconds to two minutes can make a difference and encourage behaviour change (Parchment et al., 2023). Introducing discussion materials that could be used in all maternity interactions in the vein of MECC could address these time and resource constraints – effectively both sharing the load between staff members and

cumulatively imparting the necessary knowledge and behaviour change prompts. With the increasing concerns regarding weight-related health issues, there is a need for a more holistic and long-term approach to physical and psychological health and overall well-being, which affects women throughout their lives. Healthcare systems must adapt to accommodate this.

8.5. Conclusion

The current thesis explored the impact pregnancy has on well-being, eating behaviours and body image. The thesis also offers insights into the notion of pregnancy as a teachable moment to encourage healthy behaviours. The research explored what midwives require to provide all women with the information they need to enjoy a healthy pregnancy and sustain healthy behaviours throughout early motherhood and beyond. The findings suggest that self-compassion, in particular, may be an effective target for intervention to enhance well-being, reduce emotional eating, foster a more mindful approach to eating and reduce any negative effects of pregnancy on body image. A self-compassion-based writing intervention could be developed for use in pregnancy and provide a low-cost, and unintrusive approach to address these issues (Aydoğdu & Dirik, 2022). The current thesis provides an updated view on the training and guidance provided to NHS midwives in England. Since calls to provide effective training and resources to midwives from researchers a decade ago, the midwives in this research suggest that access to training on healthy eating remains limited and midwives are not prioritising this subject in their discussions with pregnant women. Additionally, focussing solely on BMI as a driver for discussions about healthy eating means that many women are not receiving adequate information. As a result, the issue is not only not being addressed but is potentially getting worse. Furthermore, the thesis identified factors beyond BMI that are also worthy of consideration to help identify women who may benefit from additional support – factors such as problematic eating, body images issues and low self-compassion that may be exacerbated by living with a medical condition or parity or age.

This research advocates for all pregnant women to receive high-quality, evidence-based information about healthy eating that goes beyond diet alone, which can help reduce weight stigma and help all women enjoy a pregnancy that is both healthy for body and mind.

8.6. Limitations

Several limitations of the thesis should be noted. The health behaviour scale used in Chapter 3 (study 1) did not perform as expected. As a result, it was not possible to extrapolate any data relating to general health behaviours or provide any context for health behaviour for subsequent studies. However, the fact this scale did not perform well was a finding in itself, strongly suggesting that different health behaviours in pregnancy cannot be measured using a single scale, as they are too diverse and varied. Another limitation occurred in studies two and three due to the omission of an instrument to assess well-being. This was based on the concern that its inclusion would lengthen the survey, thus impacting sample size and completion rates. Consequently, by prioritising these considerations, it was not possible to make comparisons relating to well-being across the quantitative phase. The decision was made to further explore well-being, body image and eating behaviours through the qualitative phase of the thesis, instead of conducting an additional quantitative study with all these variables included. A further limitation in the quantitative phase relates to BMI. In the first study, the data collected to calculate BMI was not reliable or comparable because it captured women's pregnancy weight at different gestational stages. This made the data of limited use for any inferential statistical analysis. This question was corrected to request pre-pregnancy BMI on the surveys for studies two and three, but this does mean that any variables in study one could not be analysed with BMI and therefore was not comparable across the whole quantitative phase.

The qualitative phase of the thesis also had limitations. First, there was a large amount of data collected and analysed. Over 25 hours of interview data from 37 participants was

collected across the two studies. This required substantial time to transcribe and analyse. Due to the large data set, there were challenges in deciding which data to include and exclude. However, this limitation was balanced with the aim of the thesis to include women from diverse ethnic groups or midwives with experience supporting pregnant women from these groups. Therefore, including a large dataset was necessary to meet this aim. One final limitation is noted relating to study five. The participants in this study were mostly from White ethnic backgrounds. Despite many attempts to reach out to midwives from Black and Asian backgrounds, a decision was made to close the study and to accept that as the caseload of the midwives interviewed was ethnically diverse, this helped to achieve the aims of the diversity within the thesis. Finally, despite efforts by the researcher to engage in a continuous reflexive process throughout this research using self-reflection, journal keeping and regular dialogue with the supervisory team, the researcher does acknowledge potential limitations related to their positionality and how this may have shaped theme development-8. Future research could benefit from a collaborative or participatory approach, incorporating multiple perspectives to further enhance the richness of the analysis.

8.7. Recommendations for Future Research and Practical Implications

Future research regarding pregnancy health behaviours and GWG should further explore the elements highlighted in this thesis relating to well-being, eating behaviours, body image and the mindfulness-based constructs associated with offering protective qualities during pregnancy. Further correlation and moderation analysis of these variables is needed to test the findings and assumptions made here. Future intervention studies designed for pregnant women to help address GWG should focus on measuring and improving eating behaviours connected with weight gain and psychological distress, such as emotional eating, grazing and mindful eating (Brenton-Peters et al., 2021). A self-compassion-based intervention could be helpful during pregnancy to help manage weight gain during and after

pregnancy and enhance both psychological and physical well-being. An intervention including self-compassion-based writing can enhance physical and psychological well-being and body image (Aydoğdu & Dirik, 2022), and may provide such a basis for intervention development. This approach has also been used for weight loss in the general population albeit with limited effectiveness (Brenton-Peters et al., 2024). Consideration should also be given to the impact of pregnancy on body image and how this may be associated with eating behaviours and well-being. Providing women with information about how their body changes during pregnancy could better prepare women promoting normalisation and acceptance of these changes. Additionally, identifying women who may be more prone to poor body image and whose eating behaviours may be affected as a result could also be beneficial in preventing poor well-being and problematic eating behaviours. This thesis highlights the importance of considering psychological aspects of weight gain, such as eating behaviours, well-being and body image. These factors apply not only during pregnancy, but also in early motherhood when eating habits can worsen due to time and attention being diverted towards caring for an infant.

The challenges facing midwives identified in this thesis are borne out of an amalgamation of factors: a lack of knowledge, lack of clear guidance, a midwife's own personal discomfort and the perceived discomfort of women to discuss weight. What is required to address these barriers goes beyond knowledge-based education or communication skills training. What is needed is psychosocial educational interventions to support midwives and other HCPs to feel more comfortable in distancing themselves in these conversations. This could help midwives 'sit comfortably in their own body' regardless of its shape or size and hold these conversations for the benefit of women and their babies. Reinforcing, as midwife Lara so succinctly put it, that these conversations are about women and their pregnancy, not about their midwife. Just as smoking cessation training is now a staple of

annual mandatory training for all NHS midwives, there is an urgent need for equivalent training to equip midwives, not only with the knowledge, but also with the ‘softer’ skills to engage positively and compassionately with pregnant women about healthy eating during pregnancy.

Additionally, opportunities for midwives to discuss healthy eating could be missed if BMI is used as the sole factor to assess whether further discussion or referral to additional services is required. In addition to BMI, a history of weight issues, problematic eating behaviours and any concerns around body image, should be essential considerations for any future referral pathways. Targeted interventions and support for problematic eating behaviours and body image disturbances during pregnancy may provide valuable support for women with positive effects for future health and subsequent pregnancies. Moreover, in light of the findings in this thesis, introducing an antenatal questionnaire to assess body image and eating behaviours, such as emotional eating, restrained eating and mindful eating, could identify pregnant women most in need of support to address some problematic eating behaviours. Inviting all women to complete the questionnaire at the initial booking-in appointment could help identify those at risk of excessive weight gain during pregnancy without singling out individuals and enacting weight stigma. Additionally, providing midwives with suitable training and resources to help them engage in meaningful discourses, underpinned by the results of the questionnaires, could provide better information to pregnant women and help them make informed decisions about how to best achieve a healthy pregnancy and make life-long changes to their health behaviours. Acknowledging the growing need to address long-term weight issues in the wider population, the pregnancy and the postnatal period may provide an opportune time to intervene with a holistic approach to weight, eating, body image and broader well-being.

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APPENDICES

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Appendix A1

Poster presentation for EHPS Conference, Portugal

A qualitative interview study exploring women's experiences of the impact of pregnancy on eating behaviours and body image

Helen Parsons

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Director of Studies: Prof. Helen Egan

Second Supervisor: Dr. Kathrina Connabeer

OVERVIEW

Why this research is important

Pregnancy may be a suitable time to eat more healthily but factors unique to pregnancy make sustaining healthy eating difficult. Unhealthy eating behaviours are associated with excessive gestational weight gain (GWG), which is related to poorer birth outcomes and longer-term weight problems. At a time when the body is undergoing rapid change, body image can become disturbed and can contribute to unhealthy eating. The study aimed to investigate women's eating behaviours and body image during pregnancy and early motherhood.

What is already known

There are no specific NICE guidelines relating to recommended levels of gestational weight gain (GWG) except that women should exercise and eat a healthy diet (Heery et al., 2016) and dieting is not advised (NICE, 2022). Whilst interventions designed to prevent excessive GWG have been successful in clinical settings, they often fail to translate into effective community programmes and the ideal intervention remains indefinable (Walker et al., 2018). Interactions between women and healthcare professionals (HCPs) about weight may enact weight stigma or create feelings of shame or guilt, which can increase anxiety for pregnant women (Christenson et al., 2018) adding further complexity to behaviour change during pregnancy.

What this research adds

Where this study especially adds to the literature is in relation to the use of BMI for determining the use of lifestyle antenatal interventions for women, especially relating to the discussion about using BMI as the main or only criteria for inclusion. Participants in the current study, irrespective of their pre-pregnancy BMI, discussed having difficulties in the past with their weight, body image or with eating behaviours, which included emotional eating, restrained eating and binge-eating. These women would be missed in a traditional referral pathway based on a BMI of 30 or above. If the limit was set at 35 or 40 even more women would be missed. Some women in the study also reported losing weight prior to conception, which reflects the findings from previous research (Li et al., 2013). This raises the issue of only using BMI set at a higher level as the only factor for referral.

Method

Participants: A purposive sampling method (Braun & Clarke, 2013) was used to recruit women ($n = 24$) with a mean age of 33.04 years ($SD = 4.3$, Range = 42-26). All participants had given birth to a live infant within 12 months of the interview. The mean number of weeks after birth was 18.6 ($SD = 10.38$; Range = 4-41). The time frame was chosen to ensure recall of their pregnancy experiences would be reliable for the data collection and is in line with other research in the field that collected data retrospectively from women who have recently given birth (Lavender et al., 2014). The number of births (parity) was: one birth ($n = 15$), two births ($n = 7$), three births ($n = 1$), six births ($n = 1$). Ethnicity was also collected: White ($n = 13$), Black, Asian and/or Mixed ($n = 11$). Height and pre-pregnancy weight was also recorded for some participants ($n = 21$), so the researcher was able to calculate pre-pregnancy BMI (mean BMI = 28.19, Range = 25.61, $SD = 34.72$). Thirteen participants reported living with a medical condition during their pregnancy.

Procedure: Semi-structured interviews were conducted; 19 via Microsoft Teams and 6 in person at Barnardo's Children's Centres between 16 January and 11 July 2023. Interviews took place between 4 and 41 weeks post birth (mean = 18.6, $SD = 10.38$). One participant was 28 weeks pregnant at the time of interview. Interview duration ranged from 22 to 67 minutes (total minutes = 985, mean = 42.82, $SD = 13.67$). Participants were recruited through personal contacts, social media and via mother and baby groups at Barnardo's children's centres.



Conclusions

There may be a missed opportunity for sufficiently discussing healthy eating behaviours during midwife interactions, especially if BMI is the main criteria used to determine further discussion or the trigger for signposting to additional services. Targeted interventions and support for eating behaviours and body image disturbances during pregnancy may provide valuable support for women with positive effects for future health and subsequent pregnancies. In addition to BMI, a history of weight issues or unhealthy eating habits should be considered essential components of any future referral pathways. According to Jakkola et al. (2013), it could be beneficial to use some form of instrument to assess the eating behaviour and body image of all women at the time of booking. This may help in identifying women who are at greater risk of gaining excessive weight. Given the growing need to address long term weight issues in the population, pregnancy and the postnatal period may provide an opportune time to intervene with a holistic approach to weight, eating, body image and wider wellbeing. Future research should further explore the elements highlighted in the current study relating to eating behaviours, body image and self-kindness during pregnancy. Moreover, any future pregnancy intervention should focus on measuring and improving eating behaviours and body image, which could impact on women not only during the current pregnancy but allow changes to be sustained into early motherhood and beyond.

Introduction

Average GWG has been steadily increasing in recent years and this may be irrespective of pre-pregnancy BMI (Meyer et al., 2023). BMI is an important factor to consider as evidence suggests that women entering pregnancy with a raised BMI are at greater risk of poorer pregnancy and birth outcomes (Fair & Soltani, 2021), but it is not the only consideration when exploring GWG. Heslehurst et al. (2014) suggested that HCPs may need to understand women's past history and its impact on their current pregnancy. The inclusion of other factors beyond BMI, including eating behaviours, might help identify pregnant women at greater risk of excessive GWG, irrespective of their pre-pregnancy BMI. Despite recommendations to follow a healthy eating regime during pregnancy, pregnant women may find it difficult to adhere to healthy eating advice (Grenier et al., 2021) because pregnancy can be a physically and psychologically challenging time (Zilcha-Mano, 2017). Eating behaviours are closely linked with emotional wellbeing and in pregnancy, women may engage in certain types of eating behaviours to cope with the many challenges pregnancy presents (Christenson et al., 2016). Most interventions designed to address excessive GWG have mainly focussed on diet and food rather than on the psychology of eating behaviours (Malta et al., 2021), so addressing this gap presents a rationale for the current study.

Research Aims

The literature suggests that a discussion of a pregnant woman's history of pre-pregnancy weight variability, an assessment of her eating behaviours and body image as well as her pre-pregnancy BMI could be considered when deciding if a referral to an intervention or further discussion is warranted. Therefore, a study that investigates all these factors with women from all BMI groups would be worthwhile. The study aimed to investigate women's eating behaviours and body image during pregnancy and early motherhood.

Analysis

Reflexive thematic analysis (TA) was conducted to code the data and generate themes to present the findings. There were five themes generated from the inductive reflexive TA, which explore the experiences of women in relation to their eating behaviour, body and weight prior to and during pregnancy, as well as during early motherhood. Key patterns were noted in the data, text highlighted and grouped into codes. Codes were then grouped into themes culminating in the final five themes relating to pregnancy, body image and the postnatal period (see Table 1). The five themes are (1) the sudden yet impermanent nature of behaviour change in pregnancy, (2) eating behaviour is driven by an expectation to eat more and gain weight, (3) balancing pregnancy priorities: baby verses self-care, (4) you're allowed to be bigger when you're pregnant and, (5) no time to think about eating. The themes developed here imply that there might be a way to identify women who are more likely to experience distress during pregnancy, have difficulty maintaining a healthy diet, managing their weight gain, and adapting to their changing bodies. Moreover, it is important to encourage women to be kind to themselves during the postnatal period, as transitioning back to their non-pregnant bodies and lives can be particularly challenging.

Table 1

Themes and codes

Theme	Codes
1. The sudden yet impermanent nature of behaviour change in pregnancy	Immediate improvements to eating behaviours can be activated at outset of pregnancy Setting intentions or planning to make changes can be initiated at outset of pregnancy Eating behaviour change at the start of pregnancy may not always be healthier or positive Sustaining behaviour change during a nine-month pregnancy is challenging Eating behaviours fluctuate between healthy and unhealthy during pregnancy Behaviour change from healthy to unhealthy happens gradually
2. Eating behaviour is driven by an expectation to eat more and gain weight	Little point in losing weight before pregnancy Inevitability of gaining weight during pregnancy A relief from the dieting Rationalising 'I can eat whatever I want' Permission to indulge
3. Balancing pregnancy priorities: baby verses self-care	Pregnancy is a good time for changing eating behaviours and baby is the main reason to do it Carrying a baby means there's someone else more important than you Baby is the main focus for women whose pregnancy was especially long-for Fear of harm to baby creates guilt and stress that drives behaviour and seeks to be healthy Healthy eating is important but not at the expense of mental health
4. You're allowed to be bigger when you're pregnant	Body confidence can improve in pregnancy Pregnancy leads to a heightened focus on bodily changes and body self-consciousness Self-consciousness is amplified and impacts on everyday life Body image may not change for everyone Eating habits are worse than before, with old habits returning Missing meals or using snacks of convenience to replaces complete meals Being in survival mode Food for fuel, no time for enjoyment Hurried eating is a common pattern Quick to prepare, quick to consume
5. No time to think about eating	




References





BIRMINGHAM CITY
University

Appendix A2

Screenshots of Guest Blog on Big Birthas Website


BigBirthas.co.uk

Menu


BMI 30+?

Pregnant?

Trying to Conceive?

Post Natal?

UK Info & Support




Guest Blog – weight and healthy eating in pregnancy – by PhD student Helen Parsons

[Guest Blog, Patient & Public Involvement, Research](#)

This month we have a guest blog by Helen Parsons. I remember discussing this research some months (maybe even years!) back, so I'm delighted to hear now about Helen's results. You might remember [her recruitment ad on here](#) last year! Many of us have discussions around weight and healthy eating in pregnancy, so I'm so glad some of you shared your views.

Over to you, Helen!



Hi I'm Helen. First and foremost, I am a mum of two and a Doula passionate about all things pregnancy and birth related. I am undertaking a PhD in Psychology at Birmingham City University, researching eating behaviours, body image and self-compassion during pregnancy and early motherhood.

I have now concluded my research and would love to share some of the findings with you.

A bit more about me






I have two teenage boys and have had a difficult relationship with food since I was a teenager. My weight has yo-yo'ed throughout my life. I am passionate about supporting women, especially during pregnancy, and I understand the challenges pregnancy can bring whilst navigating maternity services, especially with a raised BMI.

About my PhD

As a Doula, I know how the approaches and language used by maternity services providers can impact on pregnant women. My work has drawn me to investigating this area for my PhD. During my PhD I have interviewed new mothers as well as NHS midwives; from students and newly qualified midwives to those with over 25 years' experience. I

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bigbirthas.co.uk

Appendix A3

Poster presentation for Wales and Southwest England Maternity & Midwifery Festival, Bath 2024

A MIDWIFE'S PERSPECTIVE

A qualitative interview study exploring the experiences of midwives in providing healthy lifestyle information and support to pregnant women

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Director of Studies: Prof. Helen Egan
Second Supervisor: Dr. Kathrina Connabeer

OVERVIEW

Why this research is important

Pregnancy has been described as a particularly powerful teachable moment to change health behaviours because women may be especially motivated to improve their health and they have more contact than usual with Healthcare Professionals (Phelan, 2010). Midwives provide maternity services to pregnant women during the antenatal period and may have the opportunity to discuss healthy eating with pregnant women. The current study explored the experiences of midwives in providing healthy lifestyle advice to pregnant women.

What is already known

NHS midwives are the main maternity care providers to pregnant women in England. They are responsible for discussing healthy lifestyles and may refer pregnant women to specialised services including weight management services (Atkinson et al., 2017). These potential opportunities to provide pregnant women with healthy lifestyle information are important because pregnancy alone for some women is not sufficient to drive behaviour change (Fair & Soltani, 2021). However, midwives face barriers when it comes to discussing healthy eating with the women they care for (Atkinson, 2018). These barriers include finding the topic sensitive, not having sufficient training or resources, and believing that women are not necessarily motivated to change their behaviours during pregnancy.

What this research adds

Where this study especially adds to the literature is in relation to the continued need for effective training, resources and detailed guidance regarding gestational weight and healthy eating for midwives. In lieu of this, midwives often rely on their own personal experiences to shape the advice and information they provide to women. Midwives have a good understanding of the challenges women face in managing their weight gain and eating habits during pregnancy. They show empathy towards women, often recounting their own difficulties with weight and eating. Additionally, BMI is the main factor to signpost to interventions. Although there was an acknowledgement by some midwives that BMI is not a measure of good health, it remains the main factor used to make decisions about who to refer for additional support or intervention, if such services exist.

Method

Design: Semi-structured interviews were conducted with 12 qualified and practising NHS midwives and one student midwife near completion who worked in a community setting. All participants worked in NHS settings in England.

Participants: NHS midwives with Band 5 to 8a, 8 community-based, 4 hospital-based with a total of 172.3 years' experience ($M = 15.7$, $SD = 8.6$, Range = 3 months to 31 years). Interview length: 532 total number of minutes of data were collected ($M = 40.92$, $SD 12.13$, Range 26 – 66).

Recruitment: Participants were recruited through personal contacts and social media.



Conclusions

What this study adds overall to the existing research is a snapshot and an updated perspective of the situation regarding training and resources provided to NHS midwives in England. Despite calls a decade ago to address this problem (Furness et al., 2014), it appears that little has changed in this regard. Midwives use their own personal experiences in lieu of any formal training, education or detailed guidance, demonstrating the resourcefulness of midwives to use what they have at their disposal to overcome a challenging aspect of their role. They also use their own personal experiences of weight difficulties in an attempt to overcome the potential sensitivity of the topic. However, irrespective of any weight issues, most midwives still experienced discomfort discussing it. Furthermore, solely focussing on a constantly changing BMI level the sole basis for discussing or providing information about healthy eating results in an increasing number of women not receiving the support they need. Subsequently, this challenge is not only going unaddressed, but is potentially worsening. Future research should explore midwives understanding and knowledge about eating behaviours and the psychology of eating. The current study did examine this in some interviews to some extent, but a study focussed on this would tease out more detailed views of midwives' knowledge and confidence in this area. In the current study any questions around eating behaviours generally lead to a discussion about nutrition or food, rather than eating behaviours.

Introduction

NHS midwives are tasked with discussions about healthy lifestyles and may refer pregnant women to specialised services including weight management services (Atkinson et al., 2017). These potential opportunities to provide pregnant women with healthy lifestyle information are important because pregnancy alone for some women is not sufficient to drive behaviour change (Fair & Soltani, 2021). Whilst pregnancy may present an opportunity for HCPs to encourage change, midwives face barriers when it comes to discussing healthy eating with the women they care for (Atkinson et al., 2018). These barriers include finding the topic sensitive, not having sufficient training or resources, and believing that women are not always motivated to change their behaviours during pregnancy. A recent systematic review into midwives' experiences (Raju et al., 2023b) identified weight as a sensitive subject for midwives and midwives' own weight had an influence on their discussions with pregnant women. The idea that weight is a sensitive issue can result in weight stigma (Christenson et al., 2018). Some midwives avoid discussing weight or healthy lifestyles altogether due to the fear of exacerbating weight stigma or making pregnant women feel ashamed or guilty. This can increase anxiety for pregnant women (Atkinson, 2018), making it more challenging to develop and provide effective support services or interventions for healthy eating.

Research Aims

The study aimed to explore midwives' experiences of providing healthy lifestyle information and support to pregnant women during the antenatal period. The study also investigated what training or resources midwives have been provided with to underpin these discussions and to better understand the barriers and enablers to engaging pregnant women in a dialogue about healthy pregnancy.

Analysis

Reflexive thematic analysis (TA) was conducted to code the data and generate themes to present the findings. Four themes were generated from the inductive reflexive TA, which explored midwives' experiences of providing healthy lifestyle information and support to pregnant women. Key patterns were noted in the data, text highlighted and grouped into codes. Codes were then grouped into themes culminating in the final four themes, which were: (1) personal experiences shape midwives' advice, (2) midwives see the need for training to improve healthy eating discussions, (3) midwives recognise the complexity of women's weight issues, and (4) BMI drives pregnancy weight conversations and care. The themes developed here imply that formal training, including practical skills, detailed guidance and resources are needed to help midwives engage in discussions with women and to decouple their own experiences with providing evidence-based information. All women, irrespective of their BMI, should be provided with information from their midwives about how to be healthy in pregnancy to enhance their future health including in subsequent pregnancies.

Table 1: Themes & Codes

Theme	Codes
1 A midwife's personal experiences impact on the information she provides to women	<ul style="list-style-type: none">Midwives with their own weight issues use their experiences to show empathy and understandingMidwives are aware of the balance between their personal and professional livesMidwives have concerns about being seen as judgemental or hypocriticalThe midwife's role is not as a role model, but as an information providerMidwives' knowledge is focussed on food and nutrition, with some knowledge of the psychology of eating behaviours
2 Midwives want practical skills and evidence-based knowledge to build their confidence around healthy eating	<ul style="list-style-type: none">Practical resources and skills training can tackle barriers and support midwives to hold effective conversationsLanguage should be part of training, and the language needs to reflect the voices of pregnant womenContent of education must be evidence-based informationMentoring to share knowledge and experience could be a useful aid to learning and development
3 Midwives understand that weight issues for women are complex and extend beyond pregnancy	<ul style="list-style-type: none">'Eating for two' is almost confined to the history books, but new advice is not yet embedded in practiceThe complex psychological factors of eating demand more skills from midwivesMidwives understand the broader implications of GWG, including considerations of behaviours before and beyond pregnancyHealthy lifestyle interventions can enhance both women's pregnancy experiences and the relationship with their midwife; protecting this relationship is paramount
4 BMI is at the centre of discussions and interventions about weight and health in pregnancy	<ul style="list-style-type: none">BMI is the main factor to signpost to interventionsThe existence of separate interventions creates specially skilled midwives, but risks deskilling general midwivesBMI is not a measure of good health, but it is the main factor used to make decisions about health in pregnancyThe BMI demographic eligible for intervention is growing, but resources are not



References & information



BIRMINGHAM CITY
University

Appendix A5

Poster presentation for BCU PhD Away Day



Exploring health and lifestyle in pregnancy: a midwife's perspective



Why this research is important

Pregnancy may be a powerful teachable moment for health behaviour change (Phelan, 2010) when women are more motivated to change their lifestyles (Hillier and Olander, 2017). Not all women make immediate positive lifestyle changes in pregnancy and many interventions have tried to help pregnant women make changes (Fair and Soltani, 2021). Women have more contact with health professionals during pregnancy (Atkinson et al., 2017) although some midwives may avoid any discussion about weight due to the fear of offending or upsetting women (Christenson et al., 2018).

What is already known

It is uncertain which behaviours may change during pregnancy without intervention and research has not been able to identify which interventions are the most effective (Fair and Soltani, 2021). Interactions between women and health professionals about weight may enact weight stigma or create feelings of shame or guilt, which can increase anxiety for pregnant women (Christenson et al., 2018).

What this research will add

A better understanding of midwives' experiences of discussing healthy lifestyles with all pregnant women in their care might offer a different perspective and may enlighten future approaches to the services offered to pregnant women.



Early findings

Four key findings have been noted in the data so far:

- A midwife's own beliefs, experience and knowledge impact on the information she provides to women
- There is a lack of formal training or guidance provided to midwives in England in relation to healthy eating
- 'Eating for two' or eating more is the main reason midwives believe women may gain too much weight during pregnancy
- BMI is the main factor used to trigger any detailed discussion about healthy eating or referral to an intervention, if one exists

Method

Design: Semi-structured interviews with 11 qualified and practising NHS midwives from England

Participants: Band 5 to 8a, 7 community-based, 4 hospital-based with a total of 172.3 years' experience (M 15.7, SD 8.6, Range 3 months to 31 years)

Interview length: 439 total number of minutes of data (M 39.9, SD 13, Range 26 – 51)

Recruitment: Participants were recruited through personal contacts and social media

Planned analyses: Reflexive thematic analysis is in progress to code the data and generate themes to present the findings



Exploring experiences of midwives who engage with pregnant women antenatally

For this study we are looking for NHS midwives

Book an interview slot using Calendly



This project is looking at your experiences and perceptions of healthy eating and lifestyle behaviours of pregnant women in your care.

Third year midwifery students may also be eligible to take part.

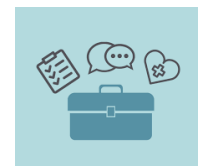
The study involves taking part in an online interview.

For more information or if you would like to take part email helenelizabeth.parsons@mail.bcu.ac.uk Version 1, 20.11.23



Implications for clinical practice

The findings could inform evidence-based practice to make things better for women and easier for the midwives who care for them. The development of a toolkit could provide midwives with the effective skills, knowledge and resources to engage in these conversations without enacting weight stigma. Pregnancy may be a suitable time and midwives may be best placed to support women to become healthier not only for pregnancy and birth, but also for a healthier life.



Helen Parsons 3rd Year PhD Student - Psychology

Director of Studies: Prof. Helen Egan

Supervisors: Dr. Kathrina Connabeer & Prof. Michael Mantzios

Appendix B1

Full demographic information for chapter 3/study 1

Demographic information for participants

FACTOR	n	%
GESTATION (by trimester)		
1st trimester (4-12 weeks)	16	15
2nd trimester (13-27 weeks)	45	42
3rd trimester (28+ weeks)	47	43
RELATIONSHIP STATUS		
Single	2	1.9
Living with a partner	47	43.5
Married	57	52.8
Other	2	1.9
EMPLOYMENT STATUS		
Employed (full time)	57	52.8
Employed (part-time)	29	26.9
Self-employed	13	12
Not currently working	5	4.6
Other	4	3.7
EDUCATION STATUS (age left FT education)		
16 or under	7	6.5
17	2	1.9
18	9	8.3
19 or over	90	83.3
PARITY		
1st pregnancy	48	44
NOT 1st pregnancy	60	56
1 child	41	
2 children	12	
3 children	1	
4 children	2	
Did not state	4	
HEALTH CONDITIONS		

Yes	18	17
No	89	83
Prefer not to say	1	0.9
ETHNICITY (summary)		
White	94	88.7
Asian, Black and Mixed backgrounds	14	11
Breakdown by ethnic groups*		
White	94	
English/Welsh/Scottish/Northern Irish/British	54	
Irish	3	
Gypsy/Irish Traveller	0	
Other White	3	
White and Black Caribbean	2	
White and Black African	0	
White and Asian	1	
Asian or Asian British	1	
Indian	2	
Pakistani	1	
Bangladeshi	1	
Chinese	0	
Other Asian	0	

NOTE: *Participants could choose more than one option

Appendix B2
Full demographic information for chapter 4/study 2

Demographic information for participants

FACTOR	n	%
GESTATION (by trimester)		
1st trimester (4-12 weeks)	14	11
2nd trimester (13-27 weeks)	50	39
3rd trimester (28+ weeks)	65	50
RELATIONSHIP STATUS		
Single	8	6
Living with a partner	45	35
Married	73	57
Partner not living together	2	2
EMPLOYMENT STATUS		
Employed (full time)	64	50
Employed (part-time)	32	25
Self-employed	8	6
Not currently working	22	17
Sick leave	1	1
Full time student	1	1
EDUCATION STATUS (age left FT education)		
16 or under	13	10
17	2	2
18	24	19
19 or over	89	69
PARITY		
1st pregnancy	45	35
NOT 1st pregnancy	84	65
1 child	52	
2 children	15	
3 children	11	
4 children	1	
Did not state	5	
HEALTH CONDITIONS		

Yes	23	18
No	105	82
ETHNICITY (summary)		
White	92	71
Asian, Black and Mixed backgrounds	37	29
Breakdown by ethnic groups*		
White	92	
English/Welsh/Scottish/Northern Irish/British	33	
Irish	3	
Gypsy/Irish Traveller	0	
Other White	0	
White and Black Caribbean	3	
White and Black African	0	
White and Asian	1	
Asian or Asian British	8	
Indian	2	
Pakistani	7	
Bangladeshi	3	
Chinese	10	
Other Asian	0	
Black, African, Caribbean or Black British	2	
African	1	

NOTE: *Participants could choose more than one option

Appendix B3
Full demographic information for chapter 5/study 3

Demographic information for participants

FACTOR	n	%
GESTATION (by trimester)		
1st trimester (4-12 weeks)	10	9
2nd trimester (13-27 weeks)	45	41
3rd trimester (28+ weeks)	56	50
RELATIONSHIP STATUS		
Single	5	4
Living with a partner	51	46
Married	55	50
EMPLOYMENT STATUS		
Employed (full time)	76	69
Employed (part-time)	21	19
Self-employed	6	5
Not currently working	8	7
EDUCATION STATUS (age left FT education)		
16 or under	7	6
17	3	3
18	19	17
19 or over	82	74
PARITY		
1st pregnancy	42	38
NOT 1st pregnancy	69	62
1 child	54	48
2 children	9	8
3 children	6	6
HEALTH CONDITIONS		
Yes	9	8
No	101	91
Prefer not to say	1	1
ETHNICITY (summary)		

White	93	84
Asian, Black and Mixed backgrounds	18	16
Breakdown by minority ethnic groups*		
White and Black Caribbean	3	
Asian or Asian British	4	
Indian	1	
Pakistani	2	
Bangladeshi	2	
Chinese	1	
Other Asian	1	
Black, African, Caribbean, Black British	3	
Other	1	

Note: *Participants could select more than one option

Appendix C1

Ethics letter for chapter 3 (study 1)



Faculty of Business, Law & Social Sciences Research Office
Curzon Building, 4 Cardigan Street
Birmingham
B4 7BD

BLSSethics@bcu.ac.uk;

18/Jan/2022

Mrs Helen Parsons

helenelizabeth.parsons@mail.bcu.ac.uk

Dear Helen ,

Re: Parsons /#9902 /sub2 /R(C) /2022 /Jan /BLSS FAEC - An investigation into the relationship between self-compassion, maternal-fetal attachment and health behaviour during pregnancy using a cross-sectional questionnaire.

Thank you for your application and documentation regarding the above study. I am pleased to confirm that Birmingham City University has agreed to take on the role of Sponsor for BCU's part in the research.

The Faculty Academic Ethics Committee has approved this activity for review by the external ethics committee(s) stated in the application.

Birmingham City University can confirm that our insurance indemnity cover includes the actions of researchers working in suitable premises and under appropriate supervision. Our policy cover will not apply to liability that is more specifically insured under any policy covering medical negligence, malpractice or indemnity, professional errors, omissions or negligence.

A copy of BCU's insurance details is available at:
<https://icity.bcu.ac.uk/Legal-Services-and-Compliance/Insurance/Index>

If you wish to make any changes to your proposed study (by request or otherwise), then you must submit an Amendment application to us. Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Committee should be notified of any serious adverse effects arising as a result of this activity.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact BLSSethics@bcu.ac.uk;

I wish you every success with your study.

Yours Sincerely,

Professor Maxine Lintern

On behalf of the Business, Law and Social Sciences Faculty Academic Ethics Committee

Appendix C2

Ethics letter for chapter 4 (study 2)



Faculty of Business, Law & Social Sciences Research Office
Curzon Building, 4 Cardigan Street
Birmingham
B4 7BD

BLSSethics@bcu.ac.uk;

07/Jun/2022

Mrs Helen Parsons

helenelizabeth.parsons@mail.bcu.ac.uk

Dear Helen ,

Re: Parsons /#10248 /sub1 /Am /2022 /Jun /BLSS FAEC - An investigation into self-compassion, mindfulness, maternal-fetal attachment and eating behaviour during pregnancy using a cross-sectional study.

Thank you for your application for approval of amendments regarding the above study. I am happy to take Chair's Action and approve these amendments.

Provided that you are granted Permission of Access by relevant parties (meeting requirements as laid out by them), you may continue your activity.

I can also confirm that any person participating in the project is covered under the University's insurance arrangements.

Please note that ethics approval only covers your activity as it has been detailed in your ethics application. If you wish to make any changes to the activity, then you must submit an Amendment application for approval of the proposed changes.

Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Committee should be notified of any serious adverse effects arising as a result of this activity.

If for any reason the Committee feels that the activity is no longer ethically sound, it reserves the right to withdraw its approval. In the unlikely event of issues arising which would lead to this, you will be consulted.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact BLSSethics@bcu.ac.uk;

I wish you every success with your activity.

Yours Sincerely,

Miss Nimrah Khan
Research Ethics Officer

On behalf of the Business, Law and Social Sciences Faculty Academic Ethics Committee

Appendix C3

Ethics letter for chapter 5 (study 3)



Faculty of Business, Law & Social Sciences Research Office
Curzon Building, 4 Cardigan Street
Birmingham
B4 7BD

BLSSethics@bcu.ac.uk;

09/Jun/2022

Mrs Helen Parsons

helenelizabeth.parsons@mail.bcu.ac.uk

Dear Helen ,

Re: Parsons /#10388 /sub1 /Am /2022 /Jun /BLSS FAEC - An investigation into mindfulness-based concepts, maternal-fetal attachment, body image, and weight-related negative emotions in pregnancy using a cross-sectional study.

Thank you for your application for approval of amendments regarding the above study. I am happy to take Chair's Action and approve these amendments.

Provided that you are granted Permission of Access by relevant parties (meeting requirements as laid out by them), you may continue your activity.

I can also confirm that any person participating in the project is covered under the University's insurance arrangements.

Please note that ethics approval only covers your activity as it has been detailed in your ethics application. If you wish to make any changes to the activity, then you must submit an Amendment application for approval of the proposed changes.

Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Committee should be notified of any serious adverse effects arising as a result of this activity.

If for any reason the Committee feels that the activity is no longer ethically sound, it reserves the right to withdraw its approval. In the unlikely event of issues arising which would lead to this, you will be consulted.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact BLSSethics@bcu.ac.uk;

I wish you every success with your activity.

Yours Sincerely,

Miss Nimrah Khan
Research Ethics Officer

On behalf of the Business, Law and Social Sciences Faculty Academic Ethics Committee

Appendix C4

Ethics letter for chapter 6 (study 4)



Faculty of Business, Law & Social Sciences Research Office
Curzon Building, 4 Cardigan Street
Birmingham
B4 7BD

BLSSethics@bcu.ac.uk;

10/Jul/2023

Mrs Helen Parsons

helenelizabeth.parsons@mail.bcu.ac.uk

Dear Helen ,

Re: Parsons /#11241 /sub1 /Am /2023 /Jul /BLSS FAEC - An investigation into the experiences of women who are overweight or obese about weight management, interventions and HCP interactions during pregnancy using semi-structures interviews.

Thank you for your application for approval of amendments regarding the above study. I am happy to take Chair's Action and approve these amendments.

Provided that you are granted Permission of Access by relevant parties (meeting requirements as laid out by them), you may continue your activity.

I can also confirm that any person participating in the project is covered under the University's insurance arrangements.

Please note that ethics approval only covers your activity as it has been detailed in your ethics application. If you wish to make any changes to the activity, then you must submit an Amendment application for approval of the proposed changes.

Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Committee should be notified of any serious adverse effects arising as a result of this activity.

If for any reason the Committee feels that the activity is no longer ethically sound, it reserves the right to withdraw its approval. In the unlikely event of issues arising which would lead to this, you will be consulted.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact BLSSethics@bcu.ac.uk;

If you would like to provide feedback on the ethics process, please complete the feedback form using [this link](#).

I wish you every success with your activity.

Yours Sincerely,

Miss Nimrah Khan
Research Ethics Officer

On behalf of the Business, Law and Social Sciences Faculty Academic Ethics Committee

Appendix C5

Ethics approval from Barnardo's for chapter 6 (study 4)

Barnardo's Research Ethics Committee (BREC)

Response to Applicant

This form provides feedback from Barnardo's Research Ethics Committee (BREC) against the criteria described in the BREC Guidance document. It informs you whether or not your application has been approved by BREC.

If you wish to discuss any aspects of the feedback given, or to arrange for re-submission of your application, please contact the Lead Reviewer that sent you this form.

Title of research
An investigation into the experiences of women who are overweight or obese about weight management, interventions and HCP interactions during pregnancy using semi-structured interviews. (Resubmission)

1. Purpose and value of research
1.1 Research aims and objectives
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
The research aims and objectives are much clearer and the research project will benefit from this.
1.2 Research questions
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions

1.3 Value of research
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
<p>The research has value to the development and improvement of services for pregnant women and fills a gap in the knowledge</p>
1.4 Dissemination of findings
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions

2. Research methodology
2.1 Sample and recruitment
<input type="checkbox"/> This section has been completed satisfactorily <input checked="" type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
<p>Your exclusion criteria are very important as you do not wish to retraumatise women who have experienced bereavement through the death of their baby. In order to make sure that they do not take part in the research this issue is discussed in several of the documents such as the PIS and the demographic form. However I am concerned that the death of a baby is a trauma that women may never fully recover from and that simply having to consider the issue on a form about research that they cannot take part in is likely in itself to be triggering. I would like to see this research go ahead and you are correct to consider this in your recruitment and sampling criteria, but I would also like to see this question broached in the most sensitive way possible, perhaps verbally before finally selecting participants. Barnardo's is a trauma responsive organisation, so I would advise seeking guidance from Debi Madden about the best approach to this matter. She would have the experience and knowledge of her service users that would help identify those that might be triggered by</p>

completing a form with this wording, or have solutions for how you could engage women verbally, perhaps through the team to filter the sample sensitively.

Thank you for the clarification about the demographics of the women that you are likely to engage.

2.2 Data collection and fieldwork

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

2.3 Interpretation of data

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

Thank you for this clarification.

3. Responsibilities towards participants

3.1 Competency of researcher(s)

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

3.2 Voluntary, informed consent of participants

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

Thank you for these adjustments
3.3 Consent of parents/carers
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
N/A
3.4 Participant comfort
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
3.5 Safeguarding children, young people, and vulnerable adults
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
3.6 Confidentiality
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
3.7 Recording and storing data, in line with the Data Protection Act 2018 and UK/EU GDPR
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)

Comments/suggestions
3.8 Anonymity of findings
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
3.9 Concluding relationships with participants
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
3.10 Recognition of participants' time and effort
<input checked="" type="checkbox"/> This section has been completed satisfactorily <input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
3.11 Complaints procedures
<input type="checkbox"/> This section has been completed satisfactorily <input checked="" type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
<p>Please add BREC as a body that will deal with complaints on an independent basis BREC@barnardos.org.uk</p>

4. Researcher welfare

4.1 Researcher's physical welfare

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

4.2 Researcher's emotional welfare

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

5. Roles and responsibilities

5.1 Agreement with gatekeepers

- ☐ This section has been completed satisfactorily
- ☒ This section needs more attention (see comments/suggestions below)

Comments/suggestions

Work closely with the children's centre team and leadership

5.2 Agreement with Barnardo's service(s)

- ☒ This section has been completed satisfactorily
- ☐ This section needs more attention (see comments/suggestions below)

Comments/suggestions

5.3 Agreement/contract with sponsors/funders

- ☐ This section has been completed satisfactorily

<input type="checkbox"/> This section needs more attention (see comments/suggestions below)
Comments/suggestions
N/A

6. Fieldwork tools and attachments
6.1 Fieldwork tools and attachments
<input type="checkbox"/> Fieldwork tools/attachments are satisfactory <input checked="" type="checkbox"/> Fieldwork tools need more attention (see comments/suggestions below)
Comments/suggestions
I would prefer the question about stillbirth to be used as a filtering question discussed verbally and approached in a trauma responsive way rather than appearing on a formal form.

Review outcome				
LEAD REVIEWER'S RESPONSE (ON BEHALF OF COMMITTEE)				
<p>Your application has been approved</p> <p><input type="checkbox"/> I am satisfied that this research conforms to Barnardo's ethical research guidelines, and you may proceed with your research</p> <p><input checked="" type="checkbox"/> I am satisfied that this research conforms to Barnardo's ethical research guidelines. We request that comments above are addressed before proceeding with your research, but you <u>do not</u> need to re-submit your application</p> <p>Your application has been declined</p> <p><input type="checkbox"/> Your submission requires amendments before it conforms to Barnardo's ethical research guidelines. Your research should not proceed at this time. Please refer to the comments given above if you wish to re-submit your application</p>				
<table border="1"> <tr> <td>Name</td> <td>Dr Jane Evans</td> </tr> <tr> <td>Position</td> <td>Independent Research Consultant</td> </tr> </table>	Name	Dr Jane Evans	Position	Independent Research Consultant
Name	Dr Jane Evans			
Position	Independent Research Consultant			

Date	13/03/2023
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Appendix C6

Ethics letter for chapter 7 (study 5)



Faculty of Business, Law & Social Sciences Research Office
Curzon Building, 4 Cardigan Street
Birmingham
B4 7BD

BLSSethics@bcu.ac.uk;

26/Mar/2024

Mrs Helen Parsons

helenelizabeth.parsons@mail.bcu.ac.uk

Dear Helen ,

Re: Parsons /#12094 /sub1 /Am /2024 /Mar /BLSS FAEC - Exploring the perceptions and experiences of midwives in providing care to pregnant women regarding weight and healthy lifestyles.

Thank you for your application for approval of amendments regarding the above study. I am happy to take Chair's Action and approve these amendments.

Provided that you are granted Permission of Access by relevant parties (meeting requirements as laid out by them), you may continue your activity.

I can also confirm that any person participating in the project is covered under the University's insurance arrangements.

Please note that ethics approval only covers your activity as it has been detailed in your ethics application. If you wish to make any changes to the activity, then you must submit an Amendment application for approval of the proposed changes.

Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Committee should be notified of any serious adverse effects arising as a result of this activity.

If for any reason the Committee feels that the activity is no longer ethically sound, it reserves the right to withdraw its approval. In the unlikely event of issues arising which would lead to this, you will be consulted.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact BLSSethics@bcu.ac.uk;

If you would like to provide feedback on the ethics process, please complete the feedback form using [this link](#).

I wish you every success with your activity.

Yours Sincerely,

Dr. Louise McKnight

On behalf of the Business, Law and Social Sciences Faculty Academic Ethics Committee

Appendix C7

Scales for all quantitative studies

Sussex-Oxford Compassion for the Self Scale (SOCS-S) (Gu et al., 2019)

Below are statements describing how you might relate to yourself. Please indicate how true the following statements are of you using the 5-point response scale (1 = Not at all true, 2 = Rarely true, 3 = Sometimes true, 4 = Often true, 5 = Always true).

For example, if you think that a statement is often true of you, circle '4'.

Note: In the below items, generic terms (e.g., 'upset', 'distress', 'suffering', 'struggling') are used to cover a range of unpleasant emotions, such as sadness, fear, anger, frustration, guilt, shame, etc.

Please provide an answer for each statement.

	Please provide an answer for each statement.	Not at all true 1	Rarely true 2	Sometimes true 3	Often true 4	Always true 5
1	I'm good at recognising when I'm feeling distressed.					
2	I understand that everyone experiences suffering at some point in their lives.					
3	When I'm going through a difficult time, I feel kindly towards myself.					
4	When I'm upset, I try to stay open to my feelings rather than avoid them.					
5	I try to make myself feel better when I'm distressed, even if I can't do anything about the cause.					
6	I notice when I'm feeling distressed.					
7	I understand that feeling upset at times is part of human nature.					
8	When bad things happen to me, I feel					

	caring towards myself.					
9	I connect with my own distress without letting it overwhelm me.					
10	When I'm going through a difficult time, I try to look after myself.					
11	I'm quick to notice early signs of distress in myself.					
12	Like me, I know that other people also experience struggles in life.					
13	When I'm upset, I try to tune in to how I'm feeling.					
14	I connect with my own suffering without judging myself.					
15	When I'm upset, I try to do what's best for myself.					
16	I recognise signs of suffering in myself.					
17	I know that we can all feel distressed when things don't go well in our lives when we are wronged					
18	Even when I'm disappointed with myself, I can feel warmly towards myself when I'm in distress.					
19	When I'm upset, I can let the emotions be there without feeling overwhelmed.					
20	When I'm upset, I do my best to take care of myself.					

Reference: Gu, J., Baer, R., Cavanagh, K., Kuyken, W., & Strauss, C. (2019). Development and Psychometric Properties of the Sussex-Oxford Compassion Scales (SOCS). *Assessment*, 27(1), 3-20. doi: 10.1177/1073191119860911.

Maternal-fetal attachment scale (Cranley, 1981)

	I think or do the following	Definitely Yes 1	Yes 2	Uncertain 3	No 4	Definitely No 5
1	I talk to my unborn baby					
2	I feel all the trouble of being pregnant is worth it					
3	I enjoy watching my tummy jiggle as the baby kicks inside					
4	I picture myself feeding my baby					
5	I'm really looking forward to seeing what the baby looks like					
6	I wonder if the baby feels cramped in there					
7	I refer to my baby by a nickname					
8	I imagine taking care of the baby					
9	I can almost guess what my baby's personality will be from the way he/she moves around					
10	I have decided on a name for a girl baby					
11	I do things to try to stay healthy that I would not do if I were not pregnant					
12	I wonder if the baby can hear inside me					
13	I have decided on a boy's name					
14	I wonder if the baby thinks and feels 'things' inside of me					
15	I eat fruit and vegetables to ensure the baby gets a good diet					
16	It seems that the baby kicks and moves to tell me that it is eating time					
17	I poke my baby to get him/her to poke back					
18	I can hardly wait to hold my baby					

19	I try to picture what the baby will look like					
20	I stroke my tummy to quieten the baby when there is too much kicking					
21	I can tell that my baby has hiccups					
22	I feel my body is ugly					
23	I give up doing certain things because I want to help my baby					
24	I grasp my baby's foot through my tummy to move it around					

Reference: Cranley M. S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing research*, 30(5), 281-284.

Acceptance and Action Questionnaire (AAQ-II) (Bond et al., 2011)

ACCEPTANCE AND ACTION QUESTIONNAIRE (AAQ-II)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

1. My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2. I'm afraid of my feelings.	1	2	3	4	5	6	7
3. I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
4. My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5. Emotions cause problems in my life.	1	2	3	4	5	6	7
6. It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
7. Worries get in the way of my success.	1	2	3	4	5	6	7

This is a one-factor measure of psychological inflexibility, or experiential avoidance. Score the scale by summing the seven items. Higher scores equal greater levels of psychological inflexibility.

Reference: Bond, Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary Psychometric Properties of the Acceptance and Action Questionnaire–II: A Revised Measure of Psychological Inflexibility and Experiential Avoidance. *Behavior Therapy*, 42(4), 676–688. <https://doi.org/10.1016/j.beth.2011.03.007>

Five-Facet Mindfulness Questionnaire-15 (FFMQ-15) (Baer et al., 2012)

FFMQ-15: 15-item Five-Facet Mindfulness Questionnaire

Instructions

Please use the 1 (never or very rarely true) to 5 (very often or always true) scale provided to indicate how true the below statements are of you. Circle the number in the box to the right of each statement which represents your own opinion of what is generally true for you. For example, if you think that a statement is often true of you, circle '4' and if you think a statement is sometimes true of you, circle '3'.

	Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true
1. When I take a shower or a bath, I stay alert to the sensations of water on my body.	1	2	3	4	5
2. I'm good at finding words to describe my feelings.	1	2	3	4	5
3. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.	1	2	3	4	5
4. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.	1	2	3	4	5
5. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.	1	2	3	4	5
6. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.	1	2	3	4	5
7. I have trouble thinking of the right words to express how I feel about things.	1	2	3	4	5
8. I do jobs or tasks automatically without being aware of what I'm doing.	1	2	3	4	5
9. I think some of my emotions are bad or inappropriate and I shouldn't feel them.	1	2	3	4	5
10. When I have distressing thoughts or images I am able just to notice them without reacting.	1	2	3	4	5
11. I pay attention to sensations, such as the wind in my hair or sun on my face.	1	2	3	4	5
12. Even when I'm feeling terribly upset I can find a way to put it into words.	1	2	3	4	5
13. I find myself doing things without paying attention.	1	2	3	4	5
14. I tell myself I shouldn't be feeling the way I'm feeling.	1	2	3	4	5
15. When I have distressing thoughts or images I just notice them and let them go.	1	2	3	4	5

Reference: Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mindfulness and perceived stress in a mindfulness-based stress reduction program. *Journal of Clinical Psychology*, 68(7), 755-765. doi: 10.1002/jclp.21865

Additional scales included in study one

Sussex-Oxford Compassion for Others Scale (SOCS-O) (Gu et al., 2019)

Below are statements describing how you might relate to other people. Please indicate how true the following statements are of you using the 5-point response scale (1 = Not at all true, 2 = Rarely true, 3 = Sometimes true, 4 = Often true, 5 = Always true).

For example, if you think that a statement is often true of you, circle '4'.

Note: In the below items, generic terms (e.g., 'upset', 'distress', 'suffering', 'struggling') are used to cover a range of unpleasant emotions, such as sadness, fear, anger, frustration, guilt, shame, etc.

Please provide an answer for each statement.

	Please provide an answer for each statement.	Not at all true	Rarely true	Sometimes true	Often true	Always true
		1	2	3	4	5
1	I recognise when other people are feeling distressed without them having to tell me.					
2	I understand that everyone experiences suffering at some point in their lives.					
3	When someone is going through a difficult time, I feel kindly towards them.					
4	When someone else is upset, I try to stay open to their feelings rather than avoid them.					
5	When others are struggling, I try to do things that would be helpful.					
6	I notice when others are feeling distressed.					

7	I understand that feeling upset at times is part of human nature.					
8	When I hear about bad things happening to other people, I feel concern for their wellbeing.					
9	I stay with and listen to other people when they're upset even if it's hard to bear.					
10	When someone is going through a difficult time, I try to look after them.					
11	I'm quick to notice early signs of distress in others.					
12	Like me, I know that other people also experience struggles in life					
13	When someone is upset, I try to tune in to how they're feeling.					
14	I connect with the suffering of others without judging them.					
15	When I see someone in need, I try to do what's best for them.					
16	I recognise signs of suffering in others.					
17	I know that we can all feel upset at times when we are wronged					
18	I'm sensitive to other people's distress.					
19	When someone else is upset, I can be there for them without feeling overwhelmed by their distress.					
20	When I see that someone is upset, I do my best to take care of them.					

Reference: Gu, J., Baer, R., Cavanagh, K., Kuyken, W., & Strauss, C. (2019). Development and Psychometric Properties of the Sussex-Oxford Compassion Scales (SOCS). *Assessment*, 27(1), 3-20. doi: 10.1177/1073191119860911.

Prenatal Health Behaviours Scale (DeLuca & Lobel, 1995)

The following items are things people sometimes do that affect their health. Please think about what you did over the past two weeks. Keep in mind that we want to know what you actually did, not what you would like to have done. Please choose one of the following answers to describe how often you did each thing.

	In the last two weeks how often did you do the following:	Never 0	Almost never 1	Sometimes 2	Fairly often 3	Very Often 4
1	...exercise for at least 15 minutes What exercise did you do?					
2	...get enough sleep?					
3	...drink milk, eat dairy products (such as yoghurt, cheese, or take a calcium supplement?					
4	...eat fatty or oily foods?					
5	...smoke cigarettes?					
6	...take vitamins?					
7	...eat snack foods instead of a regular meal?					
8	...stand on your feet for long periods of time?					
9	...drink things with caffeine such as coffee or cola?					
10	...eat enough food to satisfy your hunger?					
11	...stretch your muscles or do calisthenics*? *explain what this is					
12	...eat high-fibre foods such as whole grain breads or cereals?					
13	...lift heavy objects or do lots of bending?					

14	...use medicines prescribed by a doctor other than vitamins? What did you take?					
15	...overstretch or twist your body?					
16	...drink alcohol including wine, beer or spirits?					
17	...get some extra sleep because you felt tired?					
18	...drink enough fluids?					
19	...smoke pot or marijuana?					
20	...eat more food than you needed to?					
21	...skip a meal, such as breakfast or lunch?					
22	...use cocaine, crack or other hard drugs?					
23	...eat a balanced diet, including fruit and vegetables?					
24	...use store-bought medicines such as aspirin or cough syrup? What did you use?					

Reference: DeLuca, R. S., & Lobel, M. (1995). Conception, commitment, and health behavior practices in medically high-risk pregnant women. *Women's Health: Research on Gender, Behavior, and Policy*, 1, 257–271.

Warwick-Edinburgh Mental Well-Being Scale (Tennant et al., 2007)

Below are some statement about feelings and thoughts. Please select the answer that best describes your experience of each over the past two weeks.

	Please select the answer that best describes your experience over the past two weeks	None of the time 1	Rarely 2	Some of the time 3	Often 4	All of the time 5
1	I've been feeling optimistic about the future					
2	I've been feeling useful					
3	I've been feeling relaxed					
4	I've been feeling interested in other people					
5	I've had energy to spare					
6	I've been dealing with problems well					
7	I've been thinking clearly					
8	I've been feeling good about myself					
9	I've been feeling close to other people					
10	I've been feeling confident					
11	I've been able to make up my own mind about things					
12	I've been feeling loved					
13	I've been interested in new things					
14	I've been feeling cheerful					

Reference: Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): development and UK validation. *Health and Quality of Life Outcomes*, 5(1), 63–63. <https://doi.org/10.1186/1477-7525-5-63>

Additional scales included in study two

Dutch Eating Behaviour scale (Strien et al., 1986)

		Never 1	Seldom 2	Sometimes 3	Often 4	Very often 5
1	If you have put weight on, do you eat less than you usually do?					
2	Do you try to eat less at mealtimes than you would like to eat?					
3	How often do you refuse food or drink offered because you are concerned about your weight?					
4	Do you watch exactly what you eat?					
5	Do you deliberately eat foods that are slimming?					
6	When you have eaten too much, do you eat less than usual the following days?					
7	Do you deliberately eat less in order not to become heavier?					
8	How often do you try not to eat between meals because you are watching your weight?					
9	How often in the evening do you try not to eat because you are watching your weight?					
10	Do you take into account your weight with what you eat?					
11	Do you have the desire to eat when you are irritated?					
12	Do you have the desire to eat when you have nothing to do?					
13	Do you have the desire to eat when you are depressed or discouraged?					

14	Do you have the desire to eat when you are feeling lonely?					
15	Do you have the desire to eat when somebody lets you down?					
16	Do you have the desire to eat when you are cross?					
17	Do you have the desire to eat when you are expecting something unpleasant to happen?					
18	Do you have the desire to eat when you are anxious, worried or tense?					
19	Do you have the desire to eat when things are going against you or when things have gone wrong?					
20	Do you have the desire to eat when you are frightened?					
21	Do you have the desire to eat when you are disappointed?					
22	Do you have the desire to eat when you are emotionally upset?					
23	Do you have the desire to eat when you are bored or restless?					

Reference: van Strien, T., Frijters, J. E. R., Bergers, G. P. A., & Defares, P. B. (1986). The Dutch eating behavior questionnaire (DEBQ) for assessment of restrained, emotional and external eating behavior. *International Journal Eating Disorders*, 5, 295-315.

Mindful Eating Behavior Scale (MEBS) (Winkins et al., 2018)

	Never	Seldom	Sometimes	Often	Very often
Expected domain 1: Eating while focusing on the food					
1. I notice flavors and textures when I'm eating my food ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I stay aware of my food while eating ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I notice how my food looks ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I notice the smells and aromas of food ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. It is easy for me to concentrate on what I eat ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expected domain 2: Eating while paying attention to hunger and satiety cues					
6. I trust my body to tell me when to eat ^b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I trust my body to tell me what to eat ^b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I trust my body to tell me how much to eat ^b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I rely on my hunger signals to tell me when to eat ^b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I rely on my fullness signals to tell me when to stop eating ^b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I trust my body to tell me when to stop eating ^b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expected domain 3: Being aware of eating					
12. I snack without being aware that I am eating ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I eat automatically without being aware of what I eat ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I eat something without really being aware of it ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expected domain 4: Eating while not being distracted					
15. My thoughts tend to wander while I am eating ^c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I think about things I need to do while I am eating ^c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I multi-task while I am eating ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I eat at my desk or computer ^a	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I watch television while I am eating ^d	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I read while I am eating ^d	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reference: Winkens L., H., H., van Strien, T., Barrada, J. R., Brouwer, I. A., Penninx, B. W. J., & Visser, M. (2018). The Mindful Eating Behavior Scale: Development and Psychometric Properties in a Sample of Dutch Adults Aged 55 Years and Older. *Journal of the Academy of Nutrition and Dietetics*, 118(7), 1277–129

THE GRAZING QUESTIONNAIRE

Please circle the number that best describes you.

0 — Never

1 — Rarely

2 — Sometimes

3 — Most of the time

4 — All of the time

1.	Do you 'graze' between meals (i.e., repeatedly eating small quantities of food)?	0	1	2	3	4
2.	Do you eat more or less continuously throughout the day or during extended parts of the day (e.g., all afternoon)?	0	1	2	3	4
3.	Do you find yourself taking extra helpings or picking at extra food once you've finished your main meal?	0	1	2	3	4
4	Would you describe the way you generally eat as unplanned and repetitious (i.e. eating <u>between</u> planned meals and snacks)?	0	1	2	3	4
5	Do you find yourself picking at or nibbling food continuously?	0	1	2	3	4
6	Have you ever felt compelled or driven to eat, even when not hungry?	0	1	2	3	4
7	Have you ever felt that you were unable to stop 'grazing'?	0	1	2	3	4
8	Do you have a feeling that you have lost control over your eating while 'grazing'?	0	1	2	3	4

Reference: Lane, B. & Szabó, M. (2013). Uncontrolled, Repetitive Eating of Small Amounts of Food or "Grazing": Development and Evaluation of a New Measure of Atypical Eating. *Behaviour Change*, 30(2), 57–73.
<https://doi.org/10.1017/bec.2013.6>

The Dietary Fat and free Sugar–Short Questionnaire (DFS-SF) (Francis & Stevenson, 2021)

	Less than 1 per month	2–3 per month	1–2 per week	3–4 per week	5+ per week
1	Mince, beef or lamb, for example, in hamburgers, nachos or bolognaise				
2	Beef or pork such as steak, ribs, roasts or in sandwiches				
3	Fried chicken or chicken burgers				
4	Sausages, frankfurts or salami				
5	Bacon				
6	Salad dressings (not low fat)				
7	Margarine, butter or oil in cooking				
8	Eggs (not egg whites alone)				
9	Pizza				
10	Cheese or cheese spread (not low fat)				
11	French fries, fried potatoes				
12	Corn chips, potato chips, popcorn with butter				
13	Doughnuts, pastries, croissants				
14	Cakes, cookies				
15	Ice cream (not sorbet or low fat)				
16	Chocolate				
17	Lollies				
18	Spreads incl. peanut butter, jam, honey				
19	Pancakes or French toast				
20	Sports drinks (e.g. Gatorade) or energy drinks (e.g. Red Bull)				
21	Soft drink (not including diet)				
22	Milk (full fat only). Include milk drunk by itself or in cappuccinos, milkshakes, hot chocolates etc.				
23	Other sweetened beverages (e.g. juice with added sugar, cordial, sweetened teas)				
24	White bread (white bread only)				
25	In the past year, how many times have you eaten food from a takeaway or fast food restaurant for example McDonalds, KFC, Mexican, Chinese, Thai, Italian (pizza or pasta)?				
	None	1–2	3–4	5–6	7+
26	In the past week, how many teaspoons of sugar have you added to your beverages, cereal or food?				

Reference: Francis, H. & Stevenson, R. (2013). Validity and test-retest reliability of a short dietary questionnaire to assess intake of saturated fat and free sugars: a preliminary study. *Journal of Human Nutrition and Dietetics*, 26(3), 234–242. <https://doi.org/10.1111/jhn.12008>

Additional scales included in study three

Body Image in Pregnancy Scale (BIPS) (Watson et al., 2017)

Below is a list of statements dealing with aspects of your body during pregnancy. Please respond thinking about your current pregnancy and weeks' gestation. If you strongly disagree with a statement below, select 1. If you disagree with the statement, select 2. If you neither disagree nor agree with the statement, select 3. If you agree, select 4. If you strongly agree, select 5.

		Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
		1	2	3	4	5
1	I spend a lot of time thinking about my pregnancy weight (F1)					
2	I spend a lot of time thinking about my pregnancy body size (F1)					
3	I spend a lot of time thinking about my pregnant body shape (F1)					
4	I am preoccupied with the desire to have a slimmer physique during pregnancy (F1)					
5	I prefer not to let my partner see my naked pregnant body (F4)					
6	I prefer not to let other people see my naked pregnant body (F4)					
7	I like and appreciate my pregnant body sexually* (F4)					
8	I find my pregnant body sexy* (F4)					
9	I worry that my pregnant body would be unattractive to my partner (F4)					
10	I think more about how my pregnant body feels than how it looks* (F5)					
11	I am more concerned with what my pregnant body can do than					

	how it looks (F5)					
12	I am more concerned with how my body functions during pregnancy than how it looks* (F5)					
13	I am more concerned with the function of my breasts during pregnancy than how they look* (F5)					
14	I am more concerned with the function my stomach has during pregnancy than how it looks* (F5)					

* reverse code

Below is a list of questions asking about your feelings around your body changes during pregnancy. Please respond thinking about your current pregnancy and weeks' gestation. If you are strongly satisfied, select 1. If you are somewhat satisfied, select 2. If you are neither satisfied nor dissatisfied, select 3. If you are somewhat dissatisfied, select 4. If you are strongly dissatisfied, select 5. If the question is not relevant for your experience of pregnancy please select the N/A option.

		Strongly satisfied 1	Somewh at satisfied 2	Neither satisfied nor dissatisfi ed 3	Somewh at dissatisfi ed 4	Dissatisfied 5	N/A 0
15	How happy are you with your muscle tone during pregnancy? (F2)						
16	How happy are you with your body's flexibility during pregnancy? (F2)						
17	How happy are you with your strength during pregnancy? (F2)						
18	How happy are you with your energy levels during pregnancy? (F2)						
19	How happy are you with the pregnancy-related changes to your muscle tone? (F2)						
20	How happy are you with the pregnancy-related changes to your body's flexibility? (F2)						
21	How happy are you with the pregnancy-related changes to your strength? (F2)						

22	How happy are you with your facial complexion during pregnancy? (F3)						
23	How happy are you with your hair during pregnancy? (F3)						
24	How happy are you with the pregnancy-related changes to your skin tone? (F3)						
25	How happy are you with the pregnancy-related changes to your hair? (F3)						
26	How happy are you with your chest during pregnancy? (F7)						
27	How happy are you with the size/width of your shoulders during pregnancy? (F7)						
28	How happy are you with your ankles during pregnancy? (F7)						
29	How happy are you with your arms during pregnancy? (F7)						
30	How happy are you with your hands during pregnancy? (F7)						
31	How happy are you with your body's fluid retention during pregnancy? (F7)						

Below is a list of questions asking about your behaviours during pregnancy. Please respond thinking about your current pregnancy and weeks' gestation. If you have never engaged in the behaviour, select 1. If you have rarely engaged in the behaviour, select 2. If you have sometimes engaged in the behaviour, select 3. If you have often engaged in the behaviour, select 4. If you constantly engage in the behaviour, select 5.

		Never engage d 1	Rarely engaged 2	Sometimes engaged 3	Often engaged 4	Constantly engaged 5
32	Have you avoided exercising during pregnancy because your flesh might wobble? (F6)					
33	Have you not gone out to social occasions (e.g., parties) during pregnancy because you have felt bad about your body shape? (F6)					
34	Have you restricted your eating in order to feel thinner during pregnancy? (F6)					
35	Has worry about your shape during pregnancy made you feel you ought to exercise? (F1)					
36	Has worry about your weight during pregnancy made you feel you ought to exercise? (F1)					

F1 preoccupation with physical appearance, F2 dissatisfaction with strength-related aspects of one's body, F3 dissatisfaction with complexion, F4 sexual attractiveness, F5 prioritization of appearance over function, F6 appearance related behavioral avoidance, F7 dissatisfaction with body parts. Items to reverse code – 7, 8, 9, 10, 11, 12, 13, 14. All items with a subscale should be averaged so that subscale scores range from 1–5; for all subscales, higher scores reflect greater body image disturbance.

Reference:

Watson, B., Fuller-Tyszkiewicz, M., Broadbent, J., & Skouteris, H. (2017). Development and Validation of a Tailored Measure of Body Image for Pregnant Women. *Psychological Assessment*, 29(11), 1363–1375.
<https://doi.org/10.1037/pas0000441>.

Body Image-Acceptance and Action Questionnaire-5 (BI-AAQ-5) (Basarkod, Sahdra & Ciarroch, 2017)

		Never true 1	Very seldom true 2	Seldom true 3	Sometimes true 4	Frequently true 5	Almost always true 6	Always true 7
1	Worrying about my weight makes it difficult for me to live a life that I value.							
2	I shut down when I feel bad about my body shape or weight.							
3	My thoughts and feelings about my body weight and shape must change before I can take important steps in my life.							
4	I will have better control over my life if I can control my negative thoughts about my body.							
5	Feeling fat causes problems in my life.							

Reference: Basarkod, G., Sahdra, B., & Ciarrochi, J. (2018). Body Image–Acceptance and Action Questionnaire–5: An Abbreviation Using Genetic Algorithms. *Behavior Therapy*, 49(3), 388–402.
<https://doi.org/10.1016/j.beth.2017.09.006>

Weight- and Body-Related Shame and Guilt Scale (WEB-SG) (Conradt, Dierk & Schlumberger, 2007)

		Never 0	Rarely 1	Sometimes 2	Often 3	Always 4
1	When I have eaten more than I want, I experience feelings of guilt.					
2	When I am in a situation where others can see my body (e.g., pool, changing room), I feel ashamed.					
3	When I eat fattening food (e.g., tarts), I get distressed by the feeling that I did something wrong.					
4	The appearance of my body is embarrassing for me in front of others.					
5	When I can't manage to work out physically, I feel guilty.					
6	When I think of the possibility that others can see my naked body, I would rather hide somewhere.					
7	I am ashamed of myself when others get to know how much I really weigh.					
8	When I can't get a grip on my weight, I blame myself.					
9	I blame myself when I break a good resolution concerning my eating.					
10	I avoid exerting myself physically in front of others since I feel embarrassed.					

11	When I watch myself in the mirror, I feel guilty and decide to do more for my figure					
12	Since the size of my clothes is embarrassing for me, I would rather avoid shopping for new clothes.					

Item

Shame subscale

2. When I am in a situation where others can see my body (e.g., pool, changing room), I feel ashamed.
4. The appearance of my body is embarrassing for me in front of others.
6. When I think of the possibility that others can see my naked body, I would rather hide somewhere.
7. I am ashamed of myself when others get to know how much I really weigh.
10. I avoid exerting myself physically in front of others since I feel embarrassed.
12. Since the size of my clothes is embarrassing for me, I would rather avoid shopping for new clothes.

Guilt subscale

1. When I have eaten more than I want, I experience feelings of guilt.
3. When I eat fattening food (e.g., tarts), I get distressed by the feeling that I did something wrong.
5. When I can't manage to work out physically, I feel guilty.
8. When I can't get a grip on my weight, I blame myself.
9. I blame myself when I break a good resolution concerning my eating.
11. When I watch myself in the mirror, I feel guilty and decide to do more for my figure.

Reference: Conradt, M., Dierk, J.-M., Schlumberger, P., Rauh, E., Hebebrand, J., & Rief, W. (2007). Development of the Weight- and Body-Related Shame and Guilt Scale (WEB-SG) in a Nonclinical Sample of Obese Individuals. *Journal of Personality Assessment*, 88(3), 317–327. <https://doi.org/10.1080/00223890701331856>

Appendix D1

Interview schedule for chapter 5 (study 4)

You may decline to answer any question, may pause or stop the interview at any time and withdraw completely from the study if you choose without giving any reason.

Please confirm that you agree to take part in this study.

Please confirm that you consent to this interview being recorded.

START RECORDING

Thinking about your eating habits now...

Talk to me about how you decide what foods to eat and how often you eat?

When you are eating, how much attention do you give to the food you eating? Does your mind ever wander off to thinking of other things when you are eating?

Thinking about before you were pregnant...

What was your relationship with food like before you were pregnant? Did you have any difficulties with food prior to your (first) pregnancy?

Thinking about your eating during your most recent pregnancy...

Talk to me about your eating when you pregnant. Were your eating habits different during pregnancy?

Moving on to think about your physical activity during your pregnancy...

How easy or hard did you find it staying active during pregnancy?

Would you have liked to have some help to stay active?

What kind of things might have helped you?

Thinking about your body and weight now....

Talk to me a little about how you felt about your body and weight before you were pregnant.

Did you ever think about the fact that your body and weight were going to change during pregnancy? How did you feel about that?

How did your thoughts and feelings about your body change during your pregnancy?

What did you notice changing first? Your physical body or your weight?

What part of your body did you first notice changing?

How did your changing body impact on your relationship with your partner? How did it affect intimacy with your partner?

Thinking about your midwife or doctor appointments during your pregnancy...

Did your midwife ever discuss healthy eating or weight during your appointments?

Did your midwife signpost you to any weight, diet or healthy eating information or services during your pregnancy?

For those signposted to specialist services only

If you were signposted to such services, what was your experience of these services?

Where were the services delivered? And by whom? Who else attended? What did these services include or involve?

What things might have helped you in terms of healthy eating and managing your weight?

Would you have been open to any help during pregnancy?

Would you prefer group or individual activities?

Thinking about coping with stress or low mood...

Did you experience any moments of stress or low mood during pregnancy?

What did you do to help you cope with these emotions?

What did you do to improve how you felt?

Would you ever use food or exercise to help you cope with stress or low mood?

Pregnancy as teachable moment

Do you think that pregnancy is a good time for making changes in how you take care of your health?

Did you feel that you had to make changes because you were pregnant?

If I say 'being healthy in pregnancy' what does that mean to do? What does that look like to you?

How important was being healthy during your pregnancy to you?

What were your main motivations for being healthy during your pregnancy?

How do you feel now about your post pregnancy body/weight?

Do you think other women share your thoughts and feelings about what we've talked about?

If you could go back to the start of your pregnancy and speak to your pregnant self now what advice might you give to her in relation to what we have been talking about today?

Anything else?

Is there something else that we haven't covered that you would like to talk about in relation to your weight and body, eating and exercise and general health and wellbeing during your pregnancy? Or that may be affecting you now?

Appendix D2

Interview schedule for chapter 6 (study 5)

Introduction

1. Tell me a little about your current role and responsibilities in caring for pregnant women.
2. What are your experiences of communicating healthy lifestyle information to pregnant women?
 - If not mentioned – what about in relation to weight gain specifically?

Referring to other services

3. What do you do if you are concerned about a woman's weight gain?
4. Do you ever signpost women to services outside your team in relation to weight management?
 - If yes, what factors do you use to help you determine if a referral is needed?
 - If yes, what is the process for such a referral?
5. Are there any resources you have that you might use with a woman in relation to healthy lifestyles?
 - For example leaflets, websites, or Apps you may recommend?

Communication and training

6. Do you have a specific way of opening a discussion about healthy lifestyle that you use?
7. What are some of the challenges in discussing a healthy lifestyle with women in your clinic?
8. Have you had any training or been provided with any guidance about the risks and recommendations in relation to gestational weight gain?
 - If yes, what training or guidance have you been given?
 - If not, is this something that you would expect to have had?
9. Have you ever been provided with training or guidance specifically around how to open the discussion around healthy lifestyle?
 - If yes, what training or guidance have you been given?
 - If no, how would you feel about receiving such guidance or training? Would you find it helpful?

Perceptions about weight

10. What do you think are the main reasons women gain too much weight during pregnancy?
11. What do you think are the main barriers to you in supporting women with managing their weight gain in pregnancy?
12. What do you think could make it easier for you to support women with managing their weight gain in pregnancy?
13. What do you think (if anything) could help you improve your ability to promote a healthy lifestyle to the pregnant women under your care?

Conclusion

14. Is there anything else that you would like to add about your experience in relation to what we've been discussing here today that you feel we haven't already covered?