

A qualitative study of obese pregnant women's understanding of weight gain in pregnancy.

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The primary aim of this study is to explore the understanding of gestational weight gain amongst obese pregnant women. A secondary aim is to identify obese pregnant women's view of their behaviour in order to help identify appropriate care pathways for them. By directly talking to women, the study sought to discover what women understand about healthy weight gain in pregnancy, what further information they needed and their opinions about where this information should come from.

This qualitative study conducted eight semi-structured interviews with women who were 32-35 weeks pregnant and in the obese weight category. Thematic analysis revealed six themes: (1) unhealthy relationship with eating; (2) does my bump look big in this?; (3) pick and mix approach to advice; and (4) why weight matters; (5) honesty; and (6) weighing it up.

This study has illustrated that women who are already obese at booking seek clear advice regarding gestational weight gain that is delivered in a compassionate and individualised manner. Not discussing the issue can negatively influence their health and wellbeing and that of their babies. Weighing women routinely as a standard aspect of antenatal care should be reintroduced in order to bring this public health message to the forefront of clinical care.

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List of Abbreviations

BMI	Body Mass Index
CASP	Clinical Appraisal Skills Programme
CMACE	Centre for Maternal and Child Enquiries
GP	General Practitioner
GWG	Gestational Weight Gain
HRA	Health Research Authority
HSCIC	Health and Social Care Information Centre
MBRRACE	Mothers and Babies; Reducing Risk through Audits and Confidential Enquiries
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NIHR	National Institute for Health research

NOO	National Obesity Observatory
PICO	Population, Interest, Context, Outcome
PIS	Patient Information Sheet
PQRS	Preview, Question, Read, Summarise
RCM	Royal College of Midwives
RCOG	Royal College of Obstetricians and Gynaecologists
TA	Thematic Analysis
UPBEAT	UK Better Eating Trial
UKOSS	United Kingdom Obstetric Surveillance System
WHO	World Health Organisation

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Introduction

Obesity rates for men and women are still rising in the United Kingdom (UK) and many other high-income countries according to the World Health Organisation (WHO 2015). It is particular problem for women who are pregnant due to its associated health and social issues and risks. My interest in this area was born out of contact with overweight women in my care as a clinical midwife in a busy obstetric unit. I have observed first-hand the rising incidence of obesity in pregnancy and the challenges associated with caring for women who are classified as obese. I have listened to the deeply personal and often uncomfortable feelings harboured by these women and spending time with women who have suffered loss, guilt, poor health and a confusion of emotions all linked to their weight. This has fuelled an interest and desire to develop and disseminate an understanding of some of the experiences and feelings of these women. My personal field journal has allowed me to document a continued passive observation of women who I cared for clinically during the course of the study as a practitioner. During time with women in my care who were facing the challenges associated with obesity the conversation would occasionally turn to the subject of weight. To demonstrate how this impacted on the study I have chosen to share some of the entries that I included in this field journal and the shortened version of the ongoing personal reflections made (Appendix 1).

As a clinical practitioner, valuing the importance of providing evidence on which to base guidelines cannot be underestimated (Zhang et al. 2017). This study explores the feelings and some of the issues and challenges that many women face during their pregnancy. In particular, gestational weight gain which can be defined as the amount of weight gained between conception and just before the birth of the baby. The evidence from this thesis will provide supporting information that enables practitioners to influence and adapt guidelines that potentially reduce the risks associated with excessive gestational weight gain whilst placing the woman and her baby at the centre of care.

Organisation of the work presented

The thesis will be split into three parts to give a clear overview of all elements required for examination and scrutiny of this study. Starting with a literature review to provide a clear outline of the evidence available; a presentation of the research methods will be set out, then finally the analysis and discussion of the results.

Part one begins with the background to the study and illustrates the current issues and detail pertaining to the risk associated with maternal obesity and in particular to gestational weight gain. The subsequent literature review summarises the current evidence about obese pregnant women's knowledge and understanding of gestational weight gain. This section will end with an identification of the aims and objectives of the study.

Part two will clearly detail the method for collecting data and discuss the suitability of interviews for this purpose. Recruitment strategy and ethical considerations will also be discussed alongside some of the challenges presented as a novice researcher conducting interviews in the context of working as a clinical practitioner. There will also be detail about reflexivity and how the perspective of the researcher has impacted the study. This part will continue on to discuss methods and present reasoning behind the selection of using thematic analysis for this particular study.

Part three will present the overall findings and then focus on two of the six key themes that have emerged from the analysis. Due to the word constraints of this MPhil thesis the remaining four themes will be summarised to provide a balanced overview of the data. This section will conclude with a discussion about the findings and also discuss potential adaptations to clinical practice in the future. Appendices include the ethics letters, participant information sheets, consent form and the interview schedule.

Part One: Background and Literature review

Background

The growing prevalence of obesity is a public health problem in the UK and many other high-income countries (WHO 2015). Statistics for England indicate that there was a marked increase in the proportion of adults that were obese between 1993 – 2012, with currently over 25% of the population classed as obese (Body Mass Index (BMI) ≥ 30) (Health and Social Care Information Centre (HSCIC) 2014). Statistics of the prevalence of maternal obesity within the UK are not routinely collected, however recent surveys indicate that approximately 20% of mothers can be classified as obese (BMI ≥ 30) 5% as severely obese (BMI ≥ 35) 2% as morbidly obese (BMI ≥ 40) and 0.19% as super-morbidly obese (BMI ≥ 50) (Centre for Maternal and Child Enquiries (CMACE) 2010; Heslehurst, Rankin et al. 2010). This figure has remained fairly consistent throughout the course of this study with the most recent and largest ever maternity audit just published by the National Maternity and Perinatal Audit (2017). It shows that fewer than half of pregnant women had a body mass index (BMI) within the normal range between 18.5 and 25 and 1 in 5 were obese with a BMI of 30 or over.

Various reports indicate that maternal obesity is becoming one of the most commonly occurring risk factors in maternity care (Heslehurst et al. 2010; Public Health England 2015). The 2010 CMACE report highlights that obesity in pregnancy is directly linked with many increased risks and serious adverse outcomes including; gestational diabetes, thromboembolism, pre-eclampsia,

fetal congenital anomaly, dysfunctional labour, postpartum haemorrhage, wound infections, stillbirth and neonatal deaths. This stands alongside the ongoing impact on workload and resource use within the maternity services due to the extended care involved as a result of an increased need for specialised services such as diabetic care and higher rates of interventions, such as caesarean section (CMACE 2010). There are also challenges in monitoring the developing fetus; extra adipose tissue obscuring the view of an ultrasonographer during anomaly and growth scans is a common issue and detecting the fetal heart in labour using standard equipment is often impossible. Further impacts on services also include cost implications of specialist bariatric equipment such as beds, hoists and chairs (United Kingdom Obstetric Surveillance system (UKOSS) 2009; Parliament Office 2002).

Limiting gestational weight gain in pregnancy may reduce some of the above mentioned risks (Yaktine and Rasmussen 2009), particularly amongst women who are obese at the beginning of their pregnancy. At present it is unclear how best to deliver maternity services to this specific group of women. Current recommendations from the National Institute for Health and Care Excellence (NICE 2010) for weight management in pregnancy are based around weight loss programmes for non-pregnant women and strategies that are proven to be effective for the general population. These tend to focus on the broad message of healthy eating habits alongside regular moderate exercise with no advice currently given to pregnant women regarding appropriate gestational weight gain. It is clear that there is a need for further exploration and research for improved pathways of care in order to address rising weight/BMI amongst the pregnant population. The need for research to explore an optimal care pathway that is specific, cost effective, and realistic has been recognised and highlighted by a national project on Maternal Obesity in the UK (CMACE 2010). The project recommended that 'all pregnant women with a booking BMI ≥ 30 should be

provided with accurate and accessible information about the risks associated with obesity in pregnancy and how these risks may be minimised' (CMACE 2010, Recommendation 5). However, the report gave no indication of how weight management and behavioural change could be achieved and, indeed, highlighted this as an area for further research.

Current service provision across the UK fails to address the issue of maternal weight, largely due to insufficient evidence and national guidance that indicates what works. Some local services have proved effective; for example; 'The Monday Clinic' (NICE 2014); an award winning maternal obesity service in Doncaster, given the name as many tend to start diets on Monday. This service was created to support women and encourage them to address lifestyle and behaviour with regard to their diet and exercise during the antenatal period which could be maintained after they had given birth. At this clinic pregnant women with a BMI ≥ 30 at first midwifery contact in their pregnancy would be offered optional added support from the services of a 'Healthy Lifestyle Midwife'. During the clinic appointment there is an opportunity to raise awareness of the potential risks relating to a raised BMI and increased gestational weight gain for mothers and their babies. There was also time to assess risk, offer support in the form of a dietetic consultation and initiate individualised care planning thus providing a multidisciplinary team intervention as recommended by NICE (2011) on their shared learning database. However, more research is required to understand whether they are feasible on a national scale and cost-effective.

Behaviour change is more likely to occur during a life changing event such as pregnancy (Phelan 2010) and the desire to want weight management information in pregnancy also exists (Smith & Lavender 2011). However, there are personal and complex factors to be considered such as more frequent

antenatal visits due to obesity being linked with a likelihood of increased anxiety and a sense of shame. This makes it more difficult for women to channel energy into making the necessary changes to improve their health. Motivational factors that uniquely and specifically encourage the pregnant population to make these changes are at present unclear and require exploration. It is vital to identify the means to engage with obese pregnant women to enable them to address their weight in a way that considers their expectations and delivers appropriate, helpful advice.

LITERATURE REVIEW

The scope of existing research regarding obese pregnant women's use of information and advice on gestational weight gain is patchy and limited. On this basis, and of critical importance for the originality of this MPhil, this literature search has outlined of the scope of research that informed and influenced the study aims and objectives. This literature review identified and summarised the evidence available before the study was carried out about obese pregnant women's knowledge and understanding of gestational weight gain, as well as where they obtain or receive advice. As such, it sought to draw on a wide range of evidence and include both qualitative and quantitative studies. In the context of the identified literature review research question; 'what do obese pregnant women understand about gestational weight gain in pregnancy?', the existing documented research reviewed here, provided an analysis on the means to conduct further research that is robust and addressed key gaps in research.

Search strategy

The initial search strategy applied within this review used the Population, Interest, Context and Outcome (PICO) template, which was designed to focus and structure the research questions and deliver the desired search results (Booth and Fry 2003). The population (P) group that was primarily selected were women who were obese. The interest (I) was weight gain, advice and management, the context (C) was pregnancy, with the outcome (O) the comparison of studies where an analysis had been made of where obese pregnant women were obtaining advice about gestational weight gain.

This search strategy was employed in the Bournemouth University library data base system called MySearch

(<https://www1.bournemouth.ac.uk/students/library/search-library-resources>).

MySearch combines access to a number of key bibliometric databases, including CINAHL, Cochrane Library, Medline Complete and many others.

The initial search produced a high number of primary results (n=806). See Appendix 2, this was clearly too broad and therefore a more detailed approach was employed to narrow the results and give a focussed and replicable strategy. A revised PICO framework provided a scaffold for a more effective search strategy (Table 1).

Table 1: PICO Framework

Population	Population (2)	Interest	Context	Outcome
Women	Obesity	Advice on GWG	Pregnancy	What women know
<i>Wom*n Female*</i>	<i>Obes* BMI "Body mass Index" Overweight "Gestational weight gain [GWG]"</i>	<i>Advi* Management Recommendation* Guideline*</i>	<i>Pregnan* Antenatal Gestation* Maternal</i>	<i>Knowledge Understanding Information Perspective*</i>

Electronic databases in MySearch were searched from the date when the databases were established up to September 2015 as detailed in Appendix 3. Boolean operators of AND and OR were also applied in order to combine and focus the search with as much detail as possible. Other databases were also used within the search i.e. NICE, NIHR (National Institute of Health Research) and the Cochrane database to identify any existing literature reviews in this subject area. Additional supplementations to the online databases searched were from high quality studies, reference lists and reviewing major government policy and guidelines in the research area and databases of ongoing studies that focus on interventions such as www.clinicaltrials.gov, and a thesis search via EThOS (e-theses online service). By using a revised PICO framework and

search method the initial numbers of citations were substantially reduced without a reduction in quality of the papers retrieved.

Geographical limits were not imposed during the search to enable the review to consider how women from different locations are influenced. It is noted that midwifery care and education varies from country to country and therefore it may be difficult to generalise relevant findings, however it is important to consider any insights that international studies may provide. Language limitations are discussed below.

Selection criteria

The selection criteria for this literature review were trials and studies that focussed on the behaviour of women, specifically with regard to weight gain in pregnancy and the level of understanding about gestational weight gain amongst obese pregnant women; coupled with an indication of where women are currently receiving information or the impact of specific advice. Research papers that primarily focussed on the midwives or health care providers were excluded from this review due to the comparable volume of stand-alone research available for this subject and the consideration that this subject would detract from the original research question. No restrictions were placed on geographical location of the study or ethnicity of the participants and there were no specific dates set for the inclusion criteria. Language restrictions were imposed to include papers only published in the English language, due to funding limitations of the project. Studies published before 2000 have also been excluded in view of maternal obesity increasing in prevalence at a significant rate in the early 2000s (Kanagalingam et al. 2005) and the subsequent development of guidelines and research focussed on this subject. A flow chart in Appendix 4 illustrates the screening process and a more detailed illustration of the eligibility screening is provided in Table 2.

Table 2: Eligibility Screening

Category	Inclusion Criteria	Exclusion Criteria
Database search		
	English Language 2000 onwards No geographical limits Peer reviewed Literature	Non-English language Pre 2000 Non peer reviewed literature
Researcher Judgement		
Population/ Context	Obese pregnant women	Midwives Health care providers Specific ethnic or minority groups
Intervention	Focus on what advice Management, Recommendations and guidelines were utilised by the women	No evidence of obese pregnant women's involvement within the study.
Outcome	Assessment of the women's understanding/ Perspective / knowledge regarding GWG.	No evidence of women's understanding/perspectives or knowledge
Type of study	Papers described as research or evaluation. Replicable and recognisable methodology	Service evaluation Editorials Poorly evidenced methodology and/or analysis Conference abstracts

Data quality

All papers that were returned from the search and had potential for eligibility for inclusion were read and reviewed by the researcher using the Preview, Question, Read, Summarise (PQRS) system (Cronin et al. 2008). If then considered relevant for further assessment the document was critically appraised using a tool from the Critical Appraisal Skills Programme (CASP, 2004). The CASP tools are designed to address the fundamental principles behind the study types with particular attention to assessing study validity. The CASP tools assess both internal and external validity and are therefore appropriate to in this study. It is also a recommended tool to carefully and systematically examine the current research to judge its trustworthiness, value and relevance in the healthcare setting (Hannes et al. 2010). For the

quantitative studies the principles of assessing questionnaires using the critical appraisal (CA) tool outlined by the Center for Evidence Based Management (July, 2014), were applied. This particular analytical tool has been Adapted from Crombie, *The Pocket Guide to Critical Appraisal*; the critical appraisal approach used by the Oxford Centre for Evidence Medicine, checklists of the Dutch Cochrane Centre, BMJ editor's checklists and the checklists of the EPPI Centre. These two tools combined provide a comprehensive and thorough first critique of the included literature and can be viewed in more detail on the critical appraisal spreadsheets (appendices 6 & 7).

Data synthesis:

A narrative summary approach was used for data synthesis in this instance; this approach typically sorts and chronicles the presented literature that in turn produces an overall assessment of the evidence (Dixon-Woods et al 2005). The flexibility of this approach allows for varying levels of narrative complexity as it typical within different qualitative studies.

Summaries of the relevant studies were simplified, organised and tabulated according to source, location, methods, objectives and key findings. This provided a way for the studies to be compared and in doing so confirmed that the studies were too heterogeneous to attempt to quantitatively pool study results. Qualitative synthesis should be conducted with the goal of achieving transparency of the process framework, not reproducibility. A view supported by Bearman and Dawson (2013). Qualitative rigour is applied in this instance by complete transparency with the data collected and acknowledgment of the researcher' stance. This is discussed in more detail in the section entitled; reflexivity. This process echoes a method of realist synthesis, where there literature selected describes what the literature has to say in the context of how

the findings influence health education and policy. This narrative approach was used to discuss and scrutinise the studies and the relationships between them, this has enabled an overall assessment of the evidence presented (Table 3 below).

Table 3: Literature review

Source	Location	Methods	Objectives	Key Findings	CA/CASP Score	Reviewers comments
Quantitative						
Thompson et al. 2011. Pregnant women's knowledge of obesity and ideal weight gain in pregnancy, and health behaviours of pregnant women and their partners.	Australia	Quant / Survey	Examine women's and partners knowledge of weight and ideal weight gain in pregnancy. Health behaviours were also examined.	Many women were not aware that they were obese. Limited advice received from healthcare practitioners.	17	Relatively small sample size and only 14% of the women included were obese. Convenience sampling
Shub et al. 2013. Pregnant women's knowledge of weight, weight gain, complications of obesity and weight management strategies in pregnancy.	Australia	Quant / interview survey	Assess level of knowledge amongst pregnant women about: 1. Their own weight and BMI. 2. Awareness of GWG guidelines 3. Complications that arise by excess GWG 4. Safe weight management strategies in pregnancy.	1. Many obese women significantly underestimate their own weight. 2. Misconceptions re GWG were commonplace 3. poor knowledge of risks 4. many incorrect beliefs about safe weight management in pregnancy	17	Self-reporting height and weight of the participants. Convenience sample. No assessment of ethnicity
Leslie et al. 2013. Prevention and management of excessive gestational weight gain: a survey of overweight and obese pregnant women.	UK	Quant /survey	Gain views of newly pregnant women about (1) Their current body weight and potential GWG. (2) Helpful resources to prevent excess GWG.	Lack of knowledge regarding excessive GWG. Advice on physical activity the most popular choice from a pre-selected list of ideas.	19	Questionnaire focused solely on resources that the women may find useful and did not explore women's knowledge or understanding about GWG.
Wilcox et al. 2015. Gestational weight gain information: seeking and sources among pregnant women.	Australia	Quant/ Survey	Assess pregnant women's sources of GWG information and how, where and which women seek GWG information.	More than half of the women were seeking GWG guidance and were more likely to consult non-clinician sources.	16	Reliance on self-reported pre-pregnancy weight and elimination of categories due to low numbers. It was also clear that the majority of the women who responded were in the healthy weight category
Qualitative						
Arden et al. 2014. Responses to gestational weight management guidance: thematic analysis of comments by women in online parenting forums.	UK	Qual / thematic online forum posts.	Examine how gestational weight management guidance was received by UK women.	Different perceptions of the level of control that they had over being overweight – reports of feeling of guilt and stigma from healthcare professionals. Women reported confusion with the messages received.	16	User bias Unable to determine demographic data. Unclear if women were responding to NICE guideline if a news article/hearsay
Olander et al. 2011. The views of pre and post natal women and health professionals regarding gestational weight gain: An exploratory study.	UK	Qual/ Focus groups	Explore the views of pre and post natal women and health professionals regarding gestational weight gain	Women lacked concern regarding their gestational weight gain and lacked information from health professionals.	18	No demographic data collected.
Furness et al. 2011. Maternal obesity support services: a qualitative study of the perspectives of women and midwives.	UK	Qual / focus groups Thematic analysis	Explore experiences and perceptions of pregnant women and midwives of support for weight management in pregnancy and their ideas for service development.	Women need unambiguous advice regarding healthy lifestyles, diet and exercise in pregnancy to address a lack of knowledge and a tendency towards unhelpful self-talk messages.	18	Small scale, localised study. Woman may not have been representative of the local population. Unclear of the midwife/researcher relationship No other support services were included.
Heslehurst et al. 2013. Women's perspectives are required to inform the development of maternal obesity services: a qualitative study of obese pregnant women's experiences.	UK	Qual/ Interviews	Explore obese pregnant women's experiences to developing services that women will find acceptable and utilize.	A strong association with women's lived experiences and engagement with antenatal weight management service.	20	Difficulties in recruiting non-engagers to the dietetic service.

Findings

Study characteristics:

Table 3 shows eight papers were included in the review; four quantitative and four qualitative studies. The former were dominated with surveys employing questionnaires whilst the qualitative selection were conducted using traditional focus groups and interviews with one innovative study thematically analysing online forum posts. The studies selected were located primarily in the UK (n=5) and Australia (n=3). All of the selected studies scored fairly highly on the critical appraisal tool that was used for assessing quality, enabling the reviewer to maintain a high level of confidence in the findings. More detail about the challenges and weaknesses associated with individual papers have been considered and discussed in this review.

Women's level of knowledge:

A consistent absence of knowledge about gestational weight gain (GWG) was demonstrated throughout all of the studies included. The questionnaires in the quantitative studies presented their findings in a concise numerical format. For example, the Australian study by Shub et al. (2013) demonstrates that misconceptions about weight gain in pregnancy were commonplace, especially those who enter pregnancy overweight or obese, with 7.3% of normal weight women overestimating the recommended weight gain contrasted with 64% of obese women. This view is contradicted by Thompson et al. (2011) who stated that women's knowledge of recommended GWG was not associated with

their pre-pregnancy BMI however in general amongst the women surveyed 29.5% were able to identify the recommended weight gain in pregnancy. Leslie et al. (2013) illustrated that 39% of women were unconcerned about potential weight gain in their current pregnancy despite 22% of those women had not lost weight gained in previous pregnancies. This is the only quantitative UK study that fits the inclusion criteria and did not ask the specific question of how much GWG is recommended. The final quantitative study (Wilcox et al. 2015) showed that 45% of women could not identify the recommended GWG guidelines from the Institute of Medicine (Yaktine and Rasmussen 2009).

For the qualitative studies it was noted that the women who were being observed online were confused about GWG (Arden et al. 2014) with one of the themes within the study specifically highlighting the absence of information and advice available. Within the study by Olander et al. (2011) a common theme once again was absence of advice with the women assuming that midwives and other healthcare professionals would discuss and inform them of appropriate weight gain if it was an important issue. Furness et al. (2011) explored two overarching themes, one of which being the 'explanations for obesity' theme with a clear reason cited as lack of information about weight, diet and exercise.

Limited knowledge of risk:

The data presented by the selected studies demonstrate the knowledge by women around the risks associated with excessive GWG in a variety of ways but convey this definite distinctive theme. Shub et al. (2013)

demonstrated that most women associated excessive GWG with back pain and difficulty moving (71%) with only 5% of women suggesting more serious neonatal complications such as hypoglycaemia, jaundice, special care nursery admission or increased perinatal mortality. These findings are echoed elsewhere with many women unconcerned about potential GWG (Leslie et al. 2013; Olander et al. 2010). The study that examined online forum posts (Arden et al. 2014) discussed the reinforcement of perception of low risk consistent with research that individuals rely on direct experiences and anecdotal evidence to inform personal risk perception (Wahlberg and Sjoberg 2000). Heslehurst et al. (2013) found negative accounts where women felt they were being perceived as lazy or greedy and this in some way influenced the way they were treated by healthcare professionals. This defensive stance taken by some woman also led to the belief that they were denied access to low risk maternity services because of their weight. Being labelled also made women feel defensive and upset. This discouraged women from having an open dialogue about the risks associated with excess GWG. Furness et al. (2011) discussed the lack of consistent advice given to the cohort of women included in this study and the confusion exacerbated by ever changing media messages.

Seeking information from a variety of sources:

All of the studies involved described a lack of information provided by healthcare workers and examples of information seeking behaviour from other sources. Highlighting that pregnancy is a time of significant information and knowledge acquisition (Wilcox et al. 2015). Over half of the women in this study (55.4%) had actively sought GWG information

with first time mothers seven times more likely to elicit this behaviour. Sources include: Internet, books, friends, General Practitioner (GP), family, magazines, midwife, obstetrician, chat/blog, brochures, dietician, social media, television/radio, naturopath or pharmacist. Other studies discussed the benefits of leisure facilities/ gyms (Leslie et al. 2013).

Awareness of how much weight was being gained during pregnancy:

Arden et al. (2014) noted that a number of women were openly critical of health professionals' failure to raise issues about weight in pregnancy. This interesting point may be exacerbated by the reduction in the incidence of weighing women during the antenatal period and thus missing an opportunity to discuss weight with women.

In a study conducted by Heslehurst and colleagues (2013), women described being unaware of how much weight they were gaining in previous pregnancies, focussing more on the nutritional properties of their diet for their health and their babies' health. Once again this point is echoed by Leslie and colleagues (2013) who highlighted that the link between unawareness of potential consequences of excessive GWG may be due in part to the notion that weight is not an important part of a relevant health concern as it is not monitored in pregnancy. At present in the UK, regular weight measurement amongst pregnant women is not advocated (CMACE 2010), however smoking cessation strategies are openly discussed and carbon dioxide monitoring is routinely used during the antenatal period within the trust where this study was conducted. Could this be signalling to women that one public health message is more important than another?

Summary analysis of literature findings:

This review is unique in its focus upon women's knowledge around GWG compared to many other reviews concerned with service evaluation. It reveals that the scope of literature around the specifics of women's' knowledge is limited and on occasion contradictory. This clearly demonstrates a potential opportunity to capture and present data in a more holistic way that is consistent with the ideal care practice of healthcare workers in the UK.

Quality of studies

The extent of the studies that met the eligibility criteria was limited but did reflect a diverse range of methods. Well-constructed research regardless of study size yields valuable evidence, albeit with limitations; small-scale qualitative studies, for example Heslehurst et al. (2013) provided a real depth of rich data required to inspire and inform further work. The small-scale localised study by Furness et al. (2011) only included six women who were purposively selected did demonstrate results that were comparable to other studies however one focus group reduces the credibility of the findings. Olander et al. (2011) presented a high quality qualitative study with four focus groups which found gaps in service involvement but did not consider the wider implications of where women seek out information.

The unique nature of the study by Arden et al. (2014) demonstrated a naturally occurring public reaction following the publication of NICE guidance from women posting on public forums. Whilst fascinating, there were limitations to the study that included a lack of demographic data, some posters were from overseas and therefore would have been commenting on a healthcare system that was very different to the NHS (National Health Service) and very little data was available about the weight status of the women leaving comments.

Three of the studies were based in Australia and therefore it could be argued that the results are not simply transferrable to a UK healthcare model this only leaves one quantitative UK study (Leslie et al. 2013). This relatively large-scale study using questionnaires (428 women) focussed upon the development of potential interventions in Scotland that aimed to determine the particular views of newly pregnant women living in areas of social disadvantage and once again it could be argued that there may be differences in approaches between the English and Scottish NHS.

Referring once again to the critical analysis and CASP spreadsheets (Appendices 5&6), the quality of the studies selected was assessed as broadly good, therefore worthy of being included within this literature review. However what is also apparent is that there is not enough quality evidence to affect a change of service provision within the NHS. More studies are required about this particular subject to form a strong body of evidence that can be used to inform practice in the future.

Additional literature - Update

Since the start of carrying out interviews, time has passed and therefore an opportunity has arisen to carry out another literature search. A new search dated from 2015 – 2019 based upon the original search strategy (Appendix 2) was carried out. Interestingly the original search from the year 2000-2015 delivered 395 citations that required screening (Appendix 4) however this new search that only encompassed the last 3 years, delivered 1473 citations for screening. It can be confidently stated that there has been a great deal more interest in this subject. This interest is motivated by the importance to try and gather strong evidence in order avert an ongoing obesity crisis throughout the world.

The exact same screening techniques as used in the original literature search (Appendix 5) have been applied and four qualitative studies have been selected. These studies will be highlighted within the discussion section of this thesis as detailed in part 3. These particular research articles have also been included in the updated critical analysis and CASP spreadsheet to demonstrate that the same standards of critical analysis in this new search have been maintained.

Aims

On the basis of what we know from the literature review this MPhil thesis focuses on the following aims and objectives. The primary aim of the research is to explore understanding of gestational weight gain amongst obese pregnant women by conducting a thematic analysis of the data generated to explain their perceived behaviour whilst pregnant.

A secondary aim of this research will be to identify obese pregnant women's' view of their behaviour in order to recognise what constitutes appropriate care pathways.

Objectives

To address the main aims and to ensure that the focus of the research is informed by the current literature available a number of questions were integrated into the initial guide for interview questions, thus the study sought to discover;

1. what women who are obese understand about healthy weight gain in pregnancy;
2. what gestational weight management/weight gain guidance obese pregnant women receive from healthcare professionals;
3. whether women seek weight management information themselves – sources and reasons why;
4. what advice women would like to receive about weight gain in pregnancy;
5. how women feel about weighing with the sole intention of measuring gestational weight gain.

In the first instance these conceptual ideas formed a basis on which to develop and explore themes around the subject. The emerging data evolved and questions were adjusted dependent on that my interpretation of those data.

Understanding what obese pregnant women find useful and engaging could provide a valuable insight into the mind-set of these women. Such insight could help designers (and funders) of future service to explore ways to develop an optimal, cost effective and sustainable way to deliver specialist maternity services for obese pregnant women.

Part Two: Methodology and Methods

Introduction

The study explores obese pregnant women's understanding about weight gain in pregnancy. This is a sensitive issue, but the importance of and need for this research had been identified through the literature review and discussions with local women and health professionals. These particular groups have been selected as obese women are often treated differently and exposed to many complex influences. The qualitative research design will enable these women to have a voice, by asking women what has influenced their behaviour.

A convenience sampling strategy was adopted for the interviews with a theoretical sampling strategy developing as concepts and theories emerged from the data. This sampling strategy involves developing new lines of questioning and exploration and following them up with on-going interviews (Roulston 2010). The specific set of participants' criteria for entry into the study did not change however it should be noted that the exact questions posed to the participants evolved throughout the data collection phase.

By asking women why they are seeking gestational weight gain advice, the research will clarify and deepen understanding of this issue, as gaining weight in pregnancy in a moderate way would reduce many risks

(Masho et al. 2013), the resulting insights can help future develop future interventions. This study has also investigated how obese women feel about the concept of regular weighing during pregnancy, and whether they see this as an opportunity to monitor weight gain and discuss knowledge. There is a need to raise the question of regular weighing once again in this contemporary and specific context, with a view to developing a deeper understanding of women's perceptions of what may be considered accepted and in some cases, expected practice.

The literature review has highlighted that gestational weight gain has been reported to be an expected and natural aspect of pregnancy, with some obese women reporting that their body is more socially acceptable during pregnancy (Warriner 2000; McGiveron 2015; Padmanabhan et al. 2015) This study will explore whether a positive outlook towards this change in body image is reflected amongst local women and whether it is an opportunity to openly discuss weight issues without the negative feelings usually associated with recommendations for weight management. Clear gestational weight gain guidance may enable women to feel that they have permission to gain a moderate amount of weight without feeling shame at gaining weight and in turn could encourage women to accept weighing as a routine part of the ante-natal check once again.

Obesity in this study will be defined using BMI, a widely used tool in part because it is a cheap, easy and non-invasive means of assessing excessive body fat. BMI is used as a measure all around the world it enables comparison between studies, regions, population sub groups

and time (Hall & Cole 2006). Defining obesity through BMI raises significant challenges and its use is debated in the literature. The NHS National Obesity Observatory (NOO, 2009) recognises that other forms of measurement such as skin fold thickness or waist circumference may hold certain advantages however this is difficult to measure consistently and accurately across large populations. This is a view also expressed by the Harvard School of Public Health (2016), recognising that BMI is not a perfect measure, because it does not accurately calculate body fat. However, for most people, BMI is a very good gauge of their level of body fat. There will be some in depth critical analysis and discussion later in the discussion chapter about BMI as an appropriate measurement tool; however BMI is the accepted mechanism for defining obesity within the Trust where the study was conducted.

The current method of assessing those risk factors by BMI is used by the World Health Organization (WHO), UK NHS trusts and NICE guidelines. By using this measurement tool once again echoes the planned pragmatic philosophical approach within the study as this measurement reflects the real life exposure to this terminology that the women in this study will be able to identify with.

Personal philosophical outlook and professional interest

An ever present element of all qualitative research is the concept of reflexivity. This is acknowledged within this section by revealing my professional background and how this has impacted upon my personal

philosophical outlook. I qualified as a midwife in 2006 and immediately started work within a busy obstetric unit. I had always known throughout my midwifery training that my passion was promoting normal midwifery within a high risk medical setting and quickly fitted into this role. I continue to absolutely love my work and if anything despite the physical and mental challenges associated with the work undertaken I have purposefully pursued a career path that has enabled me to advocate for pregnant women who have complex, physical and emotional needs.

I qualified as a Supervisor of Midwives in 2011 and became involved in complex care planning. This is where women who fall outside of the usual care pathways request something that challenges hospital policy. For example this could be a case where a woman who has had a previous caesarean section is requesting a homebirth; a case where the hospital guidelines would recommend a hospital birth where the mother and baby could be continuously monitored. Having an open and honest discussion with women and enabling them to make a real informed choice about their individualised care based upon evidence that is grounded in good communication does make a profound difference to the type of care women receive. This role is ever evolving, interesting and has a continuous problem solving element to it. Each case presented is different and relies upon dealing with a situation in a sensible and flexible fashion that suits the current existing conditions and does not always follow fixed guidelines or rules. This is entirely compatible with a pragmatic philosophical standpoint (Patton 1990)

The process of self-inquiry and personal reflection is an established expectation within the midwifery profession and as a serendipitous consequence I have been able to draw on those skills throughout the data collection and analysis. The idea that the more you understand how you are perceived by others, the greater your understanding of the way they will communicate with you as well as how the imprint of your own personal ideals, morals and influences will always be present within qualitative research;

Reflexivity is a treat running through qualitative research as a principle at core (Ryan et al. 2001: 20)

Midwives are educated to consider the 'whole women'. The training undertaken demands and expects that women are viewed holistically; once again these have been valuable and practical applications that have influenced the way that I have conducted the interviews and the data analysis.

Inevitably there are also challenges involved when considering the different style of interview technique required when conducting research interviews. This is in contrast to opening and conducting a dialogue with a woman in order to make a diagnosis and formulate an individualised plan. I have found that there are distinct differences when distancing myself as a practitioner and behaving like a researcher.

A career in midwifery demands that a practitioner should be in a position to empower women to make choices about their care based around

informed consent and that the information we provide women is evidence based. It is challenging when listening to women with complex care needs and allowing them to speak openly, fluidly without interruption when the clinician in me feels the need to speak out and inform. On a day-to-day basis, working as a clinician involves forming fast, trustworthy relationships with women. I spoke of this aspect of my personal care in a previous blog and have understood it to be quality that a lot of midwives have. Midwives can be dealing with intimate and deeply personal elements to a woman's life in a matter of minutes, sometimes seconds of meeting them so being able to speak up, instil confidence, demonstrate competency and earn trust after 14 years of practice now comes naturally. Also in a time pressed situation, gathering a history, gleaning just the essential information without lots of superfluous chatter is also ingrained into a clinical midwives way of working when it's important to make a diagnosis or put forward a plan of care in a timely fashion or to squeeze a booking appointment into what feels like a very short one hour slot. In contrast, interviewing women for this study has been entirely different. Time has to be taken to ensure that women have space to think and contemplate an answer with due consideration. Answers to the questions I was asking don't just come in short answers such as 'Yes, this is my first baby' and if the answers are clipped I have to make a conscious effort to draw out a more detailed response and not to steer the interviewee in a particular direction if she says something that 'seems' off piste.

This has taken time and guidance from my academic supervisors. During the course of this study I have kept a field journal that has included suggestions about how I can improve my technique and also

suggestions on adapting questions in order to elicit more open answers from the women. Some of the suggestions that were made after reading transcripts are listed here:

- Try to ensure I stay out of clinical midwife role rather than researcher. It was noted that during the first interview some clinical advice was given.
- Open more questions, as a few of the question were closed such as 'is that right'.
- Try not to make suggestions, ask: can you tell me a bit more?
- Make sure probing questions in particular are asked individually.
- Speak less as an interviewer. The transcripts suggest you may be talking too much.
- Try not to make assumptions, let the interviewee offer the information to you.
- Negative hurtful self-talk mentioned within the last transcript – self-loathing? Because of her attitude towards herself some consideration of whether she chose not to seek that information and maybe consideration that her healthcare professionals (HCP's) were aware of this and did not want to distress or upset her any further? Do some women not want to ask, will women who have a more positive self-image and who are larger be more inclined to ask for advice.
- Explore what information women actually get about their weight and BMI at the booking appointment.

- Do women feel they are at a clinical disadvantage; for example when they are weighed during every admission to calculate their risk of venous thromboembolism?
- Helpful that you can provide a good social response.
- Try not to respond to each sentence, wait longer for a more detailed response.
- Try not to be too familiar with the participant.
- Add a final question such as 'Is there anything else you would like to say that you think I may have missed?'

These suggestions were helpful and enabled me to analyse my technique and adapt the questions accordingly.

The interview style and technique changed considerably during the course of the study by developing an open dialogue. To satisfy my clinical role I purposefully allowed a period of time for debriefing after each interview had finished. This allowed women to have the time to ask me questions as a practitioner. Women often wanted to know the full and detailed risks associated with gestational weight gain and what action they could take to reduce these risks.

During one particularly challenging case this time afterwards allowed me to make a referral to a mental health specialist and provide the support she needed. My interview technique was also adapted very quickly during the course of this interview to that of a clinician once again so that I could provide some emotional support and comfort to a woman who

was clearly distressed. On a number of occasions I suggested the interview should be stopped, however the interviewee insisted on continuing. I believe that she didn't want to feel different and she wanted to have a space to tell her story after keeping a secret from her loved ones for quite some time. On this occasion the midwife in me referred the woman (the research participant) to a specialist perinatal mental health team for ongoing support after the interview, with her consent. I felt this was a good example of how a midwife-researcher deals with clinical issues in a study and is also reflected by research at Bournemouth University, conducted by Ryan and colleagues (2011) which explores the concept of practicing midwives conducting research.

Method

Selecting the most appropriate research paradigm and method to best answer the research questions is a fundamental aspect of the research process (Cresswell 2013). Crotty (2009) refers to the research process and its construction as 'scaffolded learning' and suggests that it provides the initial framework upon which the learner can establish longer term structures. In terms of how this research study has evolved, the emerging design has been a process that has gradually changed. Initial thoughts about a mixed-method approach were considered, however a purely qualitative study had a greater congruence to the aims and objectives set out. Upon careful consideration, and in deliberations with academic supervisors, it was concluded that the most appropriate method of collecting the data was by conducting semi-structured interviews and interpreting the data by thematic analysis. The section below sets out the reasoning behind that decision.

As this study seeks to explore obese pregnant women's and midwives' understanding of weight gain in pregnancy the simple choice for this study was a purely qualitative method. *The manner of qualitative research is a systematic, subjective approach to describe life experiences and give them meaning* (Burns & Groves 2009). An additional reason for considering this method is that qualitative studies also allow researchers to explore behaviours, and situations through a holistic framework (Holloway 2005).

Interviews

The specific method chosen here, semi-structured interviews, is appropriate to achieve the research aims and objectives as it enables the collection of detailed contextual data and has the flexibility to encourage the participant and researcher to explore, reflect on emotions, feelings, beliefs and experiences (Boyce & Neale, 2006). This is the most common type of interview within qualitative research (Braun & Clarke 2013) and will enable the researcher to ask specific questions as listed on an interview guide in order to maintain focus on the research aims whilst providing scope for the participants to explore issues that may not have been anticipated. By maintaining flexibility and being responsive when asking questions during an interview provides an opportunity to create a rapport with the participant (Roulston 2010). This aspect of interviewing is vital, by encouraging participants to use their own words to describe their thoughts and experiences this way can help women feel safe enough to discuss sensitive and personal issues such as their weight.

Qualitative interviews should provide open-ended questions to encourage participants to provide responses that are in depth and are important to them (Braun & Clarke 2013). The intention is to capture the variety of ideas, thoughts and experiences via a partially constructed conversation. It is also important to acknowledge that the interviewer plays an active role in the construction of the meaning behind the dialogue. This highlights the essential element of reflection and how the practice and values of the interviewer may have shaped some of the data produced.

The data collected were transcribed, prepared and organised by coding and condensing the data as set out in the analysis section of this chapter. By reporting patterns within the transcripts it will enable interpretation of the rich data and contextualisation within the current framework of literature. Kumar (2012) suggests that as well as providing a structure, thematic analysis can potentially and unexpectedly interpret other areas of a research subject. Attention will also be paid to the unspoken elements of the information gathered during the data collection such as sensory perceptions, context, body language and behaviours during each phase of the research. Once the data is documented in full then flow charts, concept maps and diagrams can be utilized to illustrate relationships and themes and assist critical thinking and organisation of data (University of Texas 2007).

In this MPhil research, thematic analysis takes into account the experiences and personal clinical expertise and with an imaginative

interpretation of the data presented can spark new and unique views on which to draw themes (Charmaz 2006, p.181).

The guiding principle of being pragmatic throughout this research study is coherent with the practical element of collecting qualitative data and secondly, understanding that sensitivity alongside an honest straight-forward approach will enable the researcher to glean an insight when gathering qualitative data. A pragmatic approach is a view of culture that is essentially progressivist, optimistic and views the world as a place to be explored without radical criticism (Crotty 2009). This would echo the principles of this proposed research study and fits with the flexible method of TA.

Setting

The geographical location of the South of England was chosen partly due to the location of the commissioning NHS Trust . Recruitment will be at the antenatal clinic. There are suitable and convenient rooms for discussing the study in the clinic that will be familiar to the women. This is also close to the location where they attend clinic for their scan appointment. It was intended that interviews would be carried out in a location of the woman's choice at her own convenience, whilst offering the highest possible level of privacy. The lone worker policy was considered when the researcher is attending a dwelling for an interview.

Inclusion/exclusion criteria

In order to achieve a representative sample of the local population whilst considering time limitations and funding, the following inclusion criteria were chosen for pregnant women:

- English speaking
- Body mass index (BMI) of ≥ 30
- Accessing antenatal care via within selected NHS Trust
- Aged > 16
- Competent to consent

Exclusion criteria:

- Non-English speaking
- Not pregnant
- BMI < 30
- Women not receiving antenatal care by local NHS Trust
- Aged < 16
- Inability to consent
- Women with a history of an eating disorder
- Women with a severe mental health condition that requiring medication that may encourage weight gain as a side effect.
- Women who have undergone bariatric surgery.

Due to the financial and time constraints it was not been possible to select those who did not speak English as a translator would not be available. It is also vital that women are able to give full informed consent to enter the study to ensure that those who can't consent are protected against any potential risks or burden of entering a research study without fully understanding those risks. Individuals under the age of 16 have also not been selected for entry into the study to minimise any potential risks to a child. The reasons for including those aged 16-18 were discussed length during a full Health Research Authority ethics review panel and it was highlighted that the views of these young women were vital. This would enable a broader demographic range and more accurately reflect the challenges faced at a local level.

Women with a history of an eating disorder or a mental health condition that requires medication that may lead to weight gain as a side effect will also be excluded from the study. This is to ensure that women are protected from any potential harm.

Sample size

As with many qualitative studies it is difficult to anticipate the precise number of interviews required as it would depend upon many factors such as methodological design and practical issues. Cresswell (2013) suggests that in order to collect an extensive qualitative data set, 8-15 individual interviews should be conducted. This view is also supported by the paper of expert voices put together by Baker (2012) who suggests aiming for a sample of 12 to enable the researcher to develop experience of structuring, planning, conducting and transcribing interviews. The initial number of 8-15 had been chosen as it was

anticipated that this sample size is small enough to generate quality and richness to the study without generating too much repetition (Elo, Kääriäinen et al. 2014). Ethical approval was granted for up to 20 participants as detailed in the Health Research Authority (HRA) approval letter (Appendix 8).

It is widely understood that stating a specific number of qualitative interviews at the beginning of a research study would be self-limiting and thus not flexible enough to answer the research questions (Baker et al. 2012). The numerical range of intended interviews reflects the practical limitations and resources available for this particular research study.

On average 19% of women who booked in this particular NHS trust in 2012 and 2013 were classed as obese with numerical data indicating an average of 1254 women per year. This indicated that there was potential for 193 women to fulfil the entry criteria if an eight-week data collection window was utilised. Unfortunately figures that would indicate the number of women within this group that would have fulfilled all of the entry criteria was not available and therefore a precise predicted figure was not possible. It was vital that a representative sample of the population was recruited to provide an accurate data set (Kumar 2012).

A convenience sampling strategy was adopted for this study. This common approach (Braun and Clarke 2013) was used as it was accessible to the researcher and limited the ethical difficulties associated with other methods of sampling. This particular sampling method was agreed with the HRA. The specific set of participants' criteria for entry into the study will not change however it should be noted that the exact

questions posed to the participants evolved throughout the data collection phase.

The interview was held when the woman was between 32-35 weeks gestation. This time had been selected as it gave the participant plenty of time to experience the many different elements of the care pathway associated with having a body mass index (BMI) >30, for example; specialist anaesthetic appointments, diabetic testing and referral to an obstetrician. By this time in her pregnancy the woman would have also been exposed to many ideas and opinions about weight gain in pregnancy.

Participants were recruited through the local trust when the women were 20 weeks pregnant. They were interviewed at a choice of location, either within the clinic where they had their scan or in their own home when they are between 32-35 weeks pregnant. Women were advised that each interview would last approximately one hour with a maximum time of 1½ hours.

Lone working in home environments was a consideration. The NHS trust involved in this study has lone worker policy in place to minimise such risks. This involves a second member of staff being aware of your location at all times and close contact via telephone.

Recruitment

All pregnant women in the local area are offered a 12-week scan in a clinic. It is at this appointment that women are also formally weighed. This is primarily to enable sonographers to generate a personalised growth chart for their unborn baby but is also used to calculate their

body mass index (BMI) and to then consider referrals to appropriate antenatal care pathways. It is at the next scan appointment at 20 weeks gestation when women are identified as having a BMI >30 was then be given a participant information sheet (Appendix 9) by the midwife who was weighing her in order to generate awareness of the study. At this stage in their pregnancy the risk of miscarriage has significantly reduced (Tong et al. 2008) and they would have also received their first trimester screening results. This information sheet informed them that they may be asked at their next hospital appointment for the glucose tolerance test (26-28 weeks gestation) if they would like to enter the study.

Approach:

All pregnant women with a BMI >30 are offered a glucose tolerance test at 26-28 weeks gestation in this NHS Trust. It is at this appointment that the women were asked if they wish to enter the study by the midwife caring for them during that appointment. The researcher was present within the clinic setting in an adjacent room ready to receive the company and questions of any women wishing to take part in the study. At this point written consent was obtained using a purpose designed consent form (Appendix 10). At this point there was an opportunity for the participants to ask any questions about the study and what is involved. Once consent had been gained then a one to one interview was negotiated at the convenience of the participant between 32-35 weeks pregnant. This will have given the women time to experience many different elements of influence and information regarding gestational weight gain.

It was considered that some participants may find that attending an interview is inconvenient or time consuming however willing participants took part in this research project in the hope that it will enhance practice in the future and give pregnant women in a higher weight category a voice. Any excess car parking costs was reimbursed.

Data collection

During the data collection phase, semi-structured one to one interviews were facilitated in an appropriate location to suit the participant. The following options were available: A quiet room close to where they would usually attend for a scheduled clinic appointment or in their own home. The interview was semi structured with a number of narrative, closed, probing and open questions. These interview techniques have been practiced and rehearsed by the researcher with the guidance of Dr. Jenny Hislop during a qualitative research methods course in 2014. By using a semi-structured interview, the researcher will have a list of questions with fairly specific topics to be answered (Appendix 11) but will allow the interviewee to be flexible in their response (Bryman 2012).

This process as the advantage of allowing the researcher to explore issues and perspectives from many different angles and enables fortuitous and new events to be explored. Some of the questions changed during the interview process and some changed in preparation for the following interviews after discussion with academic supervisors about how framing questions slightly differently may elicit a richer response. This is discussed in more detail in the methodological rigour section.

The interviews were recorded using a digital recorder with a verbatim transcript written up later. Field notes were also kept and noted immediately after each interview to record any non-verbal communication and observations as recommended (Silverman 2005).

Data analysis

Thematic Analysis (TA) was chosen as it is a method for identifying patterns and themes within collected data. By organising the data into collected codes and then themes the rich data can also be described in detail. It is one of the most widely used qualitative methods of data analysis (Bryman 2012) but not branded as a specific method until recently. TA gained popularity due to its flexibility as an analytical tool. TA does not prescribe theoretical position, methods of data collection, ontological or epistemological frameworks and is simply a method of data analysis (Braun & Clarke 2013). Using this method also has other advantages to a new researcher as TA is viewed as an excellent starter qualitative method and a firm foundation on which to build research skills. Using this method also makes the research more accessible and understandable to the intended audience who are likely to be practitioners hoping to apply some of the findings to their area of clinical practice. Thematic analysis follows a process set out by Braun and Clark (2006) as a six-stage method:

1. Becoming familiar with the data.
2. Generating initial codes.
3. Searching for themes.
4. Reviewing themes.

5. Defining and naming themes.

6. Producing the report.

For the first element 'becoming familiar with the data', it was imperative that the original transcripts were re-read on a number of occasions on the understanding that this data would become the bedrock of the study. The transcripts were also checked back against the audio recordings to ensure no errors were made and also to check that any audible clues from tone or diction could be drawn upon.

For the second element 'Generating initial codes', a coding diary was kept and first thoughts initial codes were listed here based upon what sounded interesting or relevant. This was also a good opportunity to note some of the non-verbal communication and gauge the mood of the participant. At this point the original transcriptions were also assessed for codes and points of interest independently by academic supervisors and experienced academic researchers. This presented an opportunity to compare their analyses, check for potential themes and discuss differences in emphasis or interpretation.

The third element 'searching for themes' was approached by taking the initial codes and listing them in potential groups that had relationships to each other. This was approached in two different ways; firstly by highlighting the original coding journal with different colour highlighter pens for those codes which obviously fitted together. Secondly by creating a mind map on one sheet of paper where every single code was

placed somewhere either standalone within a primary idea for a theme or a potential sub- theme. These visual representations seem simplistic but are compatible with the method set out by Braun and Clark (2006).

The fourth element 'reviewing themes' entailed a process of creating a clear table of codes. This was done by reviewing each code within the original transcribed data to check that the context was correct and it did still fit into that particular theme. This was also supported by discussing once again the context of each potential theme with experienced academics and supervisors. See Table 4.

Theme Table (Table 4)

Unhealthy relationship with eating	Does my bump look big in this?	Pick & Mix
<p>Bulimia disclosure obsessive – secretive – guilt - control Eating for 2 – or definitely opposite Purging Orlistat** Methyldopa/ metformin* as an appetite suppressant Vomiting as a positive action for reducing weight* Allowed to eat more as pregnant –seen as the one time in life when you can eat what you fancy** Not allowed to diet More snacking – explanations for behaviour Sick bucket Enjoys being pregnant as people leave you alone and don't feel it's time to comment about weight gain. Thinks excessive GWG is normal – will lose it afterwards – did it before Periods of being unwell and physically sick having a positive side effect</p>	<p>Having a baby bump rather than fat **** No longer normal Negative body image Changing clothing styles so lumps aren't visible Says she doesn't care but actually would rather look noticeably pregnant Sees herself as ever changing and evolving Paranoia** Not wanting to be a fat mumma Comparing bumps – more fat than baby Changing clothes so lumps and bumps aren't visible Sees herself as very active No longer feels normal Comfortable with her shape Battle with weight PCOS Sees herself as ever changing/evolving Hurtful comments pre conceptually Big anyway so now she can embrace her size Feels out of place at the gym Self-conscious Happy with her boobs Big boned</p>	<p>Online sources*** – WHO, NHS direct forums* evidence based? Apps - OVIA Pregnancy book* Family advice – eating for two C & G baby club Emmas Diary Sisters Pick and mix advice – taken what she wanted Don't know where to go Mum – worry about daughters' health* Conflicting family advice Reliance on anecdotal advice Doesn't always trust online sources Would like a fact sheet –what is normal? Friends Leaflets – often discarded Change 4 life</p>

Honesty	Weighing it up	Why weight matters
<p>Many women would have preferred a straightforward approach to weight advice*****</p> <p>Consistently not receiving advice ***** annoyance expressed</p> <p>Rude staff – rushed***</p> <p>Smoking cessation – understanding the risks and therefore becoming motivated to stop*</p> <p>Wishes she had been given advice at first weight – by the time she gets to consultant apt it's too late.*</p> <p>Would like more exercise advice</p> <p>Working out BMI at beginning of pregnancy makes her more conscious not to gain weight*</p> <p>Wants to protect baby from risk*</p> <p>Assumption of knowledge</p> <p>HCP's too self-conscious to comment?</p> <p>Would have like nutritional advice during hyperemesis from specialists</p> <p>Prefers to deal with facts and face to face</p> <p>Little understanding of risks of excessive GWG**</p> <p>Unaware of increased interventions due to raised BMI at the beginning of her pregnancy</p> <p>Unaware that raised BMI limits choice of place of birth</p> <p>Unaware of requirement for + folic acid</p> <p>Would like more postnatal advice</p> <p>Clear advice such as 300 calories 3rd trimester remembered*</p> <p>Great advice re GD</p> <p>Vital to use tact and compassion*</p> <p>Recalls clear smoking and drinking advice – acted upon*</p> <p>Declined dietician – would not see the benefit in GWG advice</p> <p>Vague advice</p> <p>Stigma in having to do a GTT</p> <p>Categorising women is unfair and wrong – individualisation?</p>	<p>Range of weight gain ideas 0 – 2 stones</p> <p>Paranoia about stepping on the scales and seeing weight in digits</p> <p>Previous up and down weight gains****</p> <p>Required permission to start dieting</p> <p>All women only weighed once or twice in pregnancy</p> <p>Hates stepping on scales* – worried what people will think of her</p> <p>Slimming world****</p> <p>Doesn't have a problem with regular weighing</p> <p>Has weighed herself</p> <p>Understanding that no one likes being weighed but it's important* - potential for modified behaviour</p> <p>Helpful to monitor weight</p> <p>Doesn't want to put weight on as worried about postnatal effort to lose</p> <p>Proud to gain less than expected</p> <p>Should be less about weight and more about how you feel*</p> <p>Acknowledgment that a healthy diet doesn't constitute a 'diet'</p> <p>Frequent weighing = mindfulness – incentive to eat better</p> <p>No clue about current GWG</p> <p>Pre conceptual motivation to lose weight – to get pregnant</p> <p>Could be a trigger for a conversation</p> <p>Understanding of baby gain as weight of baby, placenta, amniotic fluid*</p> <p>Thinks not being weighed by MW is weird</p> <p>Awareness that her weight will be a lifelong struggle</p> <p>Happy not knowing her weight</p> <p>Thinks body shape is more important than weight</p> <p>If midwives were concerned they would have been weighed more frequently *</p>	<p>Painful knees</p> <p>Stomach twinges</p> <p>Tiredness</p> <p>Out of breath*</p> <p>Feeling frumpy</p> <p>Limiting mobility*</p> <p>Vomiting bug</p> <p>Fluid retention</p> <p>Little or no exercise</p> <p>No wanting to exercise</p> <p>Sluggish</p> <p>Hip pain</p> <p>Prolapsed disks</p> <p>Tight skin – feels like it's going to rip</p> <p>Swollen legs – can't bend them</p> <p>Gall bladder removal</p>

* Multiple references

The fifth element 'defining and naming themes' involves defining the essence of what that theme is about in a succinct and clear way in preparation for writing a detailed analysis about the content of each theme. They were initially tested by writing a few sentences about each theme to test if the scope and diversity could be succinctly captured. Finally, the sixth element 'producing the report' will tell the story of the data in a way that is logical concise and present an analytic discussion of the way that the data informs the original research questions.

Methodological rigour

To ensure that the research standards and integrity of the study is high, a number of strategies for ensuring methodical rigour will be applied. Trustworthiness and competence have been followed by using methods that are already used in qualitative research (Shenton 2004) such as: individual viewpoints verified by research team members to offer a complementary insight that can add to the richness of the data and increase perspective. By taking this approach it ultimately gives a richer insight into attitudes, needs or behaviours of those individuals being observed. As previously mentioned, a reflexive field journal has been kept and referred to when considering relaying stories in an appropriate manner and credibility will be maintained through sharing data and findings with the supervisory team alongside auditing and good documentation that is transparent and dependable.

Dependability concerns itself with the responsibility of researchers to substantiate that every part of the research is methodical, transparent and clearly documented (Tobin & Begley, 2004). In this study the researcher has kept an audit trail where external reviewers can view its dependability through a discussion of methodological and analytical decisions throughout the research (Koch 2006). This has also strengthened the confirmability of the study in that the data produced is not fabricated or exaggerated by the researcher.

Ethical considerations

Ethical approval has been sought and granted from the NHS Research Ethics Committee following a full review board meeting (25/5/16). This approval was confirmed by the HRA and also provided the approval required for the Research and Development department within the local NHS Trust. Ethical approval from the Bournemouth University's Research Ethics Committee has also been granted. In view of this study being part of the Wessex Clinical Academic Doctoral Programme, an application for entry on to National Institute of Health Research (NIHR) and Clinical Research Network (CRN) portfolio has also been accepted and this research project subsequently adopted.

Prior to the research the student and supervisors considered various scenarios and a design a plan that could be put into action during this study should participants required further support and specialist care that had not been identified during standard antenatal care.

Respect for welfare and dignity was upheld in a compassionate and comprehensive manner and consideration was given to women

involved in the study who face difficulties throughout their pregnancy that were unforeseen, including miscarriage, fetal anomaly or health complications. This was achieved by checking maternity records before follow up interviews with the individual women and modifying contact accordingly whilst respecting the wishes of the woman.

The participant information sheet (PIS) provided contact details for women should the research raise issues or experience that they may find difficult at any point throughout the study (Appendix 10).

Provision for plenty of time for potential participants to consider their participation within the study was of paramount importance. The PIS was carefully worded to ensure that any potential anxiety was minimised and clarity was given to women about the study. The wording used is also represented on a PIS used in a large scale complex intervention study conducted in the UK that involved 1,546 obese pregnant women (UPBEAT 2014). This demonstrates the sensitive and thoughtful choice of language.

At all times the researcher behaved with integrity and ensure that the participant did not feel coerced and is making an informed decision as is normal practice for the researcher and in line with guidance from the Nursing and Midwifery Council (NMC 2015). The participants were asked to sign two copies of the consent form, with one to be kept by them and one kept by the research team. The signed consent form was kept in a locked cupboard, separated from the research data to maintain the anonymity and only the researcher has access to personal identifiers. Participants were informed that they were free to leave the study without giving any reasons.

The study was conducted in accordance with the World Medical Assembly (WMA) Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects guidance (<http://www.wma.net/en/30publications/10policies/b3/>).

It was considered that some participants may have become upset about some sensitive issues or circumstances that are raised during the interviews. We minimised this by carefully designing questions for interviews which do not cause distress to participants. The primary researcher is experienced in discussing sensitive and difficult issues and will ensure high standards are maintained when conducting the interviews. If a participant became upset the interviewer offered to stop or take a break. Details of relevant services e.g. Patient Advice and Liaison Services (PALS) and access to a midwife will be provided to all participants.

In compliance with the ethical standards set by NHS Health Research committee, the data will be kept confidential and locked in a filing cabinet in the researchers' office. All digital data will be kept on a laptop that is password protected with access only possible by the researcher and the supervisory team. To ensure confidentiality when publications are made, all participants' responses will be anonymised and pseudonyms assigned.

Interviews were recorded on audio recording devices (Jacob & Furgerson 2012). Once the audio data have been transferred to the researcher's password protected computer, the files were erased from the recording device. Electronic data from the interviews were be anonymised once transcripts were completed. All information that could potentially identify a participant was removed in addition to

names. Notes made during the discussions were not referred to participants by name but by pseudonyms. The researcher has ensured that individuals are not recognisable in the data set or in any papers/conference proceedings that evolve from the project. Direct quotations from the data may be used to illustrate a finding. The quotations were anonymised and labelled only by participant's status.

Codes have been stored separately from the data set. Electronic versions of the data will be stored on encrypted devices such as password protected memory sticks and computers. Hard copies of research data will be stored in locked cupboards within locked offices at the hospital where the research is being undertaken. The Chief Investigator has taken full responsibility for ensuring appropriate storage and security for all study information including research data, consent forms and administrative records. All processing of personal information related to the study will be in full compliance with the Data Protection Act 1998. All the data and information will be retained for 10 years from completion in line with the data management policy at this local NHS Trust. There is no plan to archive the data at the end of the study for use by other researchers.

The study has been subject to monitoring and auditing in accordance with the International Conference on Harmonization; Good clinical practice requirements by the sponsor. Compliance with the study by investigators and participants has been scrutinized and reported.

Quality assurance

This study will adhere to the principles outlined in the NHS Research Governance Framework for Health and Social Care (2nd edition) and Bournemouth University Research Governance (2014). It will be conducted in compliance with the study protocol, the Data Protection Act and other regulatory requirements as appropriate and subject to monitoring and auditing.

In addition to the research and ethics training undertaken at Bournemouth University, Good Clinical Practice (GCP) training has also been undertaken by the primary researcher and her supervisors. As this research has been entered onto the NIHR Clinical Research Network (CRN) Portfolio all of the recruitment data has been logged onto PHT's database in accordance with local research governance. An Investigator site file will also be maintained and kept securely on the PHT site.

To ensure inter-rater reliability of data (Armstrong et al. 1997), transcripts will be primarily coded by the primary researcher with selected transcripts coded blind (i.e. independently from the student) by one of the supervisors, with an additional review system in place with all academic supervisors.

Part Three: Findings and Discussion

Summary of findings:

The analysis of the interviews revealed six main themes. Bearing in mind the word limit of this MPhil, this chapter briefly summarises four of these themes: (1) Unhealthy relationship with eating; (2) Does my bump look big in this?; (3) Pick and mix approach to advice; and (4) why weight matters. The two themes discussed in more detail include: (5) honesty; and (6) weighing it up. These particular two were selected for more in-depth discussion as these themes appear to challenge current practice and fewer references in the literature review related to these particular issues.

Individual participant characteristics

All participants were residents of the local area on the South coast of the United Kingdom. The age of the participants ranged from 24-36 years, parity from 0-2. One woman was in the obese category (BMI ≥ 30), Five women were categorised as severely obese (BMI ≥ 35) and two were categorised as morbidly obese (BMI ≥ 40). Three of the women were smokers at the beginning of their pregnancy with all of them non-smokers at the time of their interview. The ethnicities of all of the women were white British. Four women were interviewed in their own homes whilst the other four in a clinic setting.

Name	Parity	Booking BMI	Profession	Age range	Smoker
Ruth	P0	36	Carer	30-34	No
Amber	P1	37	Midwife	35-39	No
Debbie	P1	38	Post Grad	30-34	No
Tracy	P1	41	Administrator	25-29	No
Christine	P0	33	Sales	20-24	Yes
Tina	P2	41	Post Grad	35-39	No
Alice	P0	39	Shop assistant	30-34	Yes
Molly	P1	38	Photographer	30-34	Yes

Unhealthy relationship with eating

The first theme originating from the analysis is the changing relationship with eating during their pregnancy and the challenges this posed for healthy weight management. All participants expressed a transient approach to their diet for a number of different reasons. Some women mentioned that pregnancy was a time to not worry about weight and the excess gain would be tackled after the baby was born and thus less concerned about overeating right now. A view supported by Keely and colleagues (2017 pg 87) in their article “If she wants to eat...and eat and eat...fine! It's gonna feed the baby”.

Three women mentioned that they could manage their weight better later in pregnancy including knowing that resuming diabetes medication would act as an appetite suppressant. During the interviews there was one very emotional disclosure of bulimia by a woman who had relapsed during her pregnancy. She had not told her partner, friends, family or any health care providers about this relapse and during the consent process for this study had not indicated that she had previously suffered with an eating disorder. She felt that her current weight gain was “horrific”, it felt unhealthy and purging was the only way she could control it.

Although this could be seen as an extreme version of a dysfunctional approach to diet, there were multiple references during interviews with four other participants that suggested that vomiting was seen to be a positive action for reducing weight. For example Ruth commented;

“Every time I throw up I think, well, at least that’s the calories gone.”

The use of medications such as Metformin and Methyldopa were seen as having ‘good side effects’ as appetite suppressants.

“It (my weight) started to come back down after I was diagnosed (with gestational Diabetes) and I think with taking the Metformin, because it’s also known as an appetite suppressant...it was just the thought of, like, oh actually going to lose weight hopefully.” Molly

In contrast to purging another aspect of changing eating patterns during pregnancy emerged. Many viewed pregnancy as a time when you were allowed to eat more...

'It's the one time in life when you can eat what you fancy' Tracy

Women stated that they enjoyed being pregnant as:

"People leave you alone and don't feel it's time to comment about weight gain" and that it's definitely not the time to go 'on a diet'. Tina.

Snacking was mentioned frequently to help with nausea, although many women found making healthy snack choices challenging. One participant stated that for her excessive GWG was normal as she knew she would lose the weight afterwards as she had done before.

With another participant, Alison stating:

"I knew I was going to gain the weight anyway... I could try everything I could but I probably would have gained it anyway"

The women in this study appeared to have an ongoing struggle with weight that is exacerbated by pregnancy this comment by Christine illustrates this point;

"I was always quite big, and there have been a couple of years that I was very slim, actually a little underweight and then I've gone right back up. Had to lose the weight to get pregnant, lost the weight, gained all of that back now plus a bit more. There is quite a lot of guilt around it..."

Tina had also had a tumultuous relationship with weight throughout her adult life that was also influenced greatly by her pregnancies;

“I’ve always been big. Yes. Always. I did my first diet when I was 17 and I lost four stone, and when I look back in pictures, actually I was quite thin by the time I finished, but you never realise that at the time do you? You look back and think; if only I knew how thin I was at the time..... Then I went to university and put weight on and got progressively bigger and bigger until I got pregnant with my first. I was really big when I got pregnant with her. Then I had her in July, started the diet the following January and lost eight stone in that year. Eight stone. Maybe took me 18 months... It came off quite easily; I maintained to a degree and when I got pregnant with Esme, again, put on this weight... I was a lot lighter when I got pregnant with Esme. But again, afterwards lost four stone.....”

The concept of viewing pregnancy as a pause from having to worry about weight was also mentioned by Molly;

“I probably need to lose about 5 stone, which is something I’m probably going to look into once I’ve had the baby.”

Does my bump look big in this?

This theme explores the confusing and challenging body image issues in an obese pregnancy. Overwhelmingly women discussed the importance of being able to display a baby bump rather than just appearing overweight. One woman who stated that she did not care what people thought, said that she would rather look noticeably pregnant. There was a clear sense of pride among participants in being able to display to the world that they were carrying their baby; one woman stated:

'I've got quite an obvious bump, so I kind of think; well people can think I might look fatter but I also look pregnant. I think if I didn't have a bump and just looked generally fatter, I wouldn't like that at all. I really like it when you get a bump and then it's kind of... a focus point... I'm very proud of it'. Tina

There were other positive messages conveyed that were linked to body shape in pregnancy with some women stating that they were big before their pregnancy anyway and “big boned” so now they can embrace their size. One woman remarked that she was “very happy with their boobs” and their ever evolving bodies was a fascinating journey. Women stated that they felt comfortable with their shape; however this was often preceded by comments that revealed some self-doubt.

Participants on a number of occasions said that they felt stigmatised as obese and that they no longer felt ‘normal’. ‘Paranoia’ was a word that appeared during six of the interviews, often in a context of worrying about what other people thought of them.

*“being heavily pregnant makes me even more paranoid that people look at me and just see me as fat rather than pregnant”
Ruth.*

The fear of being judged for being obese led to women changing clothing styles so that “lumps aren’t visible”, and comparing their bumps to others. Participants talked of hoping that it wasn’t more fat than baby and dealing with hurtful comments from a variety of sources. Some women saw themselves as very active but felt very out of place in a gym and extremely self-conscious.

“People look at you like you’re crazy for going to the gym when you are a bowling ball with arms and legs” Christine

Pick and mix approach to advice

The interviews revealed a variety of different sources of information about gestational weight gain. There were multiple references to online sources of advice with some participants seeking evidence-based advice from the WHO and NHS Direct as well as from a number of different sponsored organisations; however some participants commented that they did not know what information to trust and where to look. This uncertainty links with the later theme about honesty and the confusing nature of the advice that women are exposed to. Some women frequently used pregnancy and baby forums but did not trust the information relayed and did not know where to go for any information about weight gain would be normal for them.

Women consistently relayed that they received conflicting advice from these sources and displayed a heavy reliance on anecdotal advice from family and friends, such as the traditional message of ‘eating for two’. One woman illustrated her pick and mix approach to advice:

‘Obviously as soon as you are pregnant, everybody who has ever been pregnant starts telling you different things. So, I’ve sort of picked a bit from everybody and thought, okay I fancy that bit!’ Ruth.

Another participant found the opinions of others a little more challenging to deal with and had this to say;

“Literally everybody I speak to tells me in some form or another I should or shouldn’t do.... I find it really aggravating because it’s like.... It’s a battle enough for me, let alone for somebody to tell me what to do. Especially when they are not doing it at that moment in time. Some people are like, very few actually say, well you are not eating for two, you shouldn’t be eating for two, and you should be healthy. You shouldn’t eat the cake, you shouldn’t eat this. I just want to be left to deal with it myself without having to justify what I’m doing” Christine.

Other sources of information were listed that are corporate sponsored organisations such as the Cow & Gate baby club and Emma’s Diary. The information provided was seen as interesting, easy to read but again not specific in providing advice about GWG. Apps such as OVIA, which are designed to track and give information about development of a pregnancy gave the women an indication on how much a baby should weigh and some recipe ideas but reported no GWG advice. The pregnancy book was referred to by those who still had an old copy and leaflets were referred to, such as the *Change4Life* booklet. However, once again no consistent GWG advice was published. However six of the women did identify one clear message about consumption of 300 extra calories per day in the third trimester on a number of occasions, indicating that clear consistent advice can be remembered.

Tina was the only one of the participants in this study who was offered a dietician referral and she chose not to pick that advice and declined but had this to say;

“I don’t think women are given enough advice (about weight gain, If my experience is typical for what people receive, and obviously I am a third time mum..... For someone who is a first time parent and doesn’t successfully lose weight or hasn’t had that experience of successfully losing weight and is concerned about gaining weight there aren’t many avenues in to getting any advice”

Why weight matters

Participants described many different ways in which their weight gain had impacted on their lives. They frequently referred to symptoms, related to having a higher BMI that can be exacerbated in pregnancy. This was a theme that was challenging to categorise as this could have been viewed as a simple list of symptoms; however the impact that these symptoms and co-morbidities were having on the lives of these women was impossible to ignore and illustrate some of the day to day struggles that they face.

Some of the symptoms described, for example excessive tiredness, fluid retention, limited mobility and feeling sluggish, can of course be attributed to pregnancy alone. However, diabetes, prolapsed disks, painful knees and excessive swelling were attributed by the women to their weight gain when pregnant. One woman who was pregnant with her third child illustrated this point:

'When I'm pregnant, I get really swollen legs. They seem to be swollen constantly and the skin feels really tight so that I find that really, really uncomfortable to a point where I can't get down on the floor because I can't bend my legs. It feels like the skin is going to rip. But then I've had that with both of my girls so I kind of think that is just normal, once I start losing the weight afterwards it goes away.' Tina

Some participants also highlighted that they did little or no exercise as they did not want to or have the energy to. They 'felt frumpy', were frequently out of breath. Further discomfort like hip pain was also a contributing factor. Overall this once again led to women talking about not feeling normal anymore and wondering why, if their weight was such a large factor in their health, it was not being monitored while they were pregnant?

Honesty

One of the most consistent and recurrent messages within the interview was overwhelming honesty. Interviewees time and again commented that they wanted to receive a straightforward approach to weight advice that was from a professional source that they could trust. This finding was particularly interesting as this specific aspect of gestational weight gain has been rarely documented, yet it resonated strongly amongst the participants.

Women spoke of a real love and motivation for wanting a baby and a need to protect their unborn child, however they felt ill advised about the risks. Some of the participants were aware of the risks associated with excessive gestational weight gain and expressed annoyance that they were consistently not being told about these risks from health care professionals. Some women stated that they were made aware of risks associated with GWG by conducting their own research. One of the participants, a registered midwife, spoke of understanding the risks of gaining a large amount of weight during the pregnancy. This participant assumed she had not been advised about this as she was viewed as a healthcare professional and would therefore not require any extra advice. However, all but one of the interviewees said they received no advice whatsoever about gestational weight gain from a healthcare professional.

Amber stated this when she was asked what advice she would have found most helpful;

“That people (HCP’s) would have been more honest and say, this is your BMI, these are the risks and this is why you need to think about weight management”

Another aspect of not being made aware of the implications of having a raised BMI and the effects that excessive GWG has on pregnancy, is the limited understanding of the risks amongst some of the women interviewed. Amber made this point;

“I’d like to deal with the facts. So maybe I’m not as sensitive as others, I think it would just help with keeping you informed about your situation. I wouldn’t want to be oblivious and gain loads of weight and run the risks of what might, you know, happen

because of that. I'd much rather know then deal with it, you know, as it goes along."

There were practical implications such as some women not being aware of the need to take extra folic acid as obese women have an increased risk of fetal neural tube defect, namely 5mg rather than 0.4mg as per RCOG (Royal College of Obstetricians & Gynaecologists) guidelines (2010) and only hearing about being at an increased risk of developing gestational diabetes once they had been called for a glucose tolerance test. Women spoke fondly of the care and advice regarding managing their diabetes and the kind of diet they should focus on to maintain good blood sugar levels but felt this only addressed one aspect of the risks they may have inadvertently been exposed to.

On a number of occasions women were seeking out for some individual advice and wanted to talk to someone about eating habits and exercise. They also spoke of hoping for postnatal advice. Women spoke of being able to handle the advice as long as it was delivered in a tactful, compassionate and sensitive way. It was also reiterated that they would prefer to deal with facts in a face to face situation.

One participant who stated weight gain had been discussed with her had this to say:

“There was more of a focus that I was already on a larger scale.... Both the consultant and the midwife had said; you are a little bit overweight... probably not a good idea to put too much on” Alice.

This approach was viewed as vague and not very helpful. Alice suggested a number of reasons why this was the case such as the self-consciousness around body image that the health care workers themselves experienced preventing them from passing comment. Fear of upsetting women or ruining the midwife-woman relationship was also cited as another potential reason this was seen as a taboo subject.

Tracy also highlights that she understands the sensitivity of discussions about weight, but in the context of first being told about your BMI at the beginning of pregnancy had this to say:

“Obviously you want them (midwives) to be tactful. I prefer people to be straightforward... There are going to be people out there like myself that have battled with their weight and their weight is a big issue..... It can be quite a hard subject so I think maybe there is a reluctance... everyone’s different, people react to things in different ways, but for me personally because I’ve had quite a battle I would prefer someone to say, you know, in the nicest way, you may be aware obviously that you have weight issues compared to the average maybe. This is important because, you know, you’ve got the baby to think about now. Is there any support you want? Is there any support

we can give you? These are the types of things we can offer, would you like that?

A view also echoed by Debbie;

"I just want to be told straight ... I do appreciate that sometimes depending on where you are in your life and things can change that. Sometimes you can be told straight, I think that's your professional judgement as a practitioner. I think this is the right time to be straight and to the point with this person, or is this something I really need to lead up to"

Three participants felt staff were rushed and therefore would be unable to sit down and deliver any more advice than they were already passing on. They noted that other public health messages were being passed on did contribute to behavioural changes. Four participants acted upon smoking cessation advice and either quit smoking at the beginning of their pregnancy or they were supported to stop during their pregnancy. Molly explained how both she and her husband viewed this aspect of their health;

"We may have the odd takeaway maybe once a month just as a treat because we have both given up smoking for our babies... he was probably on 30 a day and I was about 10 a day, so yes, that's our treat"

Ruth was another participant who has given up smoking;

"I said that as soon as I found out I was pregnant, I will stop smoking and I did it. For me my motivation was my baby"

Other participants stated that they reduced or completely stopped their alcohol intake. Some women also clearly recalled information regarding calorie intake during the third trimester that had been passed to them via their community midwife in leaflet form.

Two women mentioned the advice to only consume an extra 300 calories during the third trimester. In both cases this was completely unprompted; interestingly one woman equated that to half a sandwich whilst the other thought a chocolate bar would be the better option.

Another aspect of honesty that was discussed during interviews was that some women were not aware of the implications of a raised BMI on their care during their pregnancy or that their choices would be limited for intrapartum care. Debbie remarked:

“It annoyed me a bit that they hadn’t been upfront with me from the start..... I wasn’t aware I would need an extra growth scan but the appointment arrives in the post and you think, oh my god, what is this?... I understand why I need the scans but I had to phone up and ask the poor receptionist; which I don’t think it’s probably her job to say that I need it because I have a high BMI!”

It was also noted that the scheduled 34 week consultant appointment seemed a little late and therefore not helpful in regard to managing GWG if only given during the final trimester. It was at this point that some women learned that they would not have their first choice of

birth place as it was recommended that they birth on an obstetric labour ward designed to accommodate high risk births.

“I said I would rather have lower (risk) care.... I just wanted normal, whatever normal is. You know, kind of an active labour and delivery and I would rather just be with the midwives. It was kind of then said; well no, they would want you on the labour ward because of your BMI.” Debbie

Debbie spoke of understanding the reasoning behind this guideline and accepted it. She did comment that this conversation could have been handled a little better with more time for discussion about birth choices rather than the rushed appointment it appeared to be.

Weighing it up

Unsurprisingly the issue of weighing during pregnancy was a key theme. The opinions expressed formed a coherent message aimed at healthcare professionals and questioned why women were not being routinely weighed at various points throughout their pregnancy. Alternatively women also expressed some of the reasons why the act of being weighed had the potential to make them feel uncomfortable. These findings present a real insight into the feelings about being weighed during pregnancy, especially to a group of women who have stressed that they have had previous struggles with fluctuating weight.

Women in this study were routinely weighed at their 12 week scan appointment, primarily to generate a chart to enable fetal growth monitoring throughout the pregnancy. Fetal growth is normally assessed during antenatal appointments by measuring symphysis pubis to fundal height with a tape measure. A further reason for assessing maternal weight at 12 weeks gestation is to calculate the woman's current BMI; this influences the care that they receive for the duration of their pregnancy. From this point on the majority of women in this study were not weighed again in their current pregnancy with the latest gestation at interview being 36 weeks.

There was a clear issue of uncertainty about GWG with a few remarks about guesswork in relation to how much weight had been gained. For example, Tracy comments;

“So I feel like I’m almost the same weight if I’m honest as when I started. I might not be, but I think it’s almost kind of better than I thought because I thought being big to start with I would end up massive.”

Some had no idea how much weight they had gained during their pregnancy and were quite happy to remain unaware. However, another perspective was to consider not weighing but to self-evaluate reasonable weight gain. Tina remarked;

*“It should be less about weight and more about how you feel.....
I guess my weight and go by the fit of my clothes.”*

Tina was not the only one to mention and correctly identify that individual difference in the way that fat is distributed around the body has a significant influence when evaluating health related risk factors. It was commented by Ruth that body shape should also be seen as a consideration rather than weight alone.

Being weighed provoked a strong reaction from Ruth;

“I hate stepping on scales.....I’d feel extremely paranoid if I could actually see my weight in digits”

Molly comments about the discomfort that she experiences when she steps on the scales, she had already given an ambiguous response to the question of whether it is necessary to be weighed during pregnancy by saying “I suppose so”...

“I know part of the weight is going to be the baby and part of it is going to be me. I hate standing on those scales; the only time I like standing on them is when I see that the numbers are going down”

An alternative view is from Amber who revealed that she actually weighed herself before antenatal appointments so she could keep an eye on her weight. She believed if weighing was reintroduced it would be important to understand why it is being done and to include all women to ensure women with a higher BMI did not feel victimised. Amber also commented that working out your BMI at the beginning of pregnancy makes you more conscious not to gain weight and could encourage the potential for modified behaviour. Comments like this was supported by other participants who suggested it would be helpful to monitor weight and that they did not have a problem with regular weighing.

“I think if you could maybe be a little more mindful about the foods you ate if you knew every few weeks you were going to be weighed and the weight was going on. You may with that midwife have a conversation saying, well this is a little more than we would like you to be putting on. Are there any kinds of things you think in your diet that you know you shouldn't be having or you're having too big a portion or anything? I'm not saying that the midwife has got to have all the answers, but it may be that she can point you to others in the know or maybe give suggestions like why don't you try and have a bit more fruit to top up meals and maybe use vegetables instead of potatoes. I don't know, but they would be able to think about it.” Debbie

Women had a range of ideas about how much weight gain would be acceptable during their current pregnancy and this ranged from no gain at all, to two stones. Participants who were aware of their

current weight gain mentioned that as it was less than expected, it gave them a sense of pride and wellbeing. Women had a clear understanding that weight gain also included the weight of the baby, placenta and amniotic fluid and therefore some consideration was to be made for this. Overall there was a general understanding that no one likes being weighed, but it is an important aspect when considering personal health and wellbeing with pregnancy being a particularly important time to consider this;

“I don’t know many people who like being weighed but It’s one of those things that if you know why it is happening and it is explained it could make you more conscious not to gain weight and have an open discussion about a healthy diet and lifestyle”

Tina

Frequent weighing was related to a sense of mindfulness alongside an incentive to eat well and it was recognised that this could also be a trigger for an honest conversation. Some women acknowledged that healthy eating did not necessarily constitute a diet. However some women stated they almost felt they required permission to start dieting despite the knowledge that they were able to join traditional ‘slimming’ clubs such as Slimming World while they were pregnant.

Christine stated that she thought *“not being weighed by the midwife is weird”*. She was expecting to be weighed more frequently while she was pregnant so also stated that if midwives were concerned about weight then surely she would have been weighed? Alice also stated;

“I’ve not been too bothered about it (weight gain) no. I think if they were that concerned about people gaining too much weight in pregnancy then they would surely offer more services or something?... They would weigh me more often than twice...”

Christine also highlights that weighing women is not high on the midwives priority list;

“They would have bought it up if it was an issue.... So you think, well, I mustn’t be that big or they would mention it”.

The idea of being singled out for special treatment due to BMI, i.e. dietician referral or the concept of more frequent weighing did upset some of the participants. Women wanted to be treated the same way that everyone else did whilst being mindful that some extra appointments were essential such as diabetic appointments.

“You already know full well that there is automatically going to be a label put on you because of the fact that you are not the ideal weight. I think being automatically lost in a category is wrong” Alice.

Discussion

This is one of the first studies to explore obese pregnant women's understanding of gestational weight with the aim of explaining their perceived behaviour whilst pregnant.

The six key themes indicate how women feel and what they understand about the deeply personal subject of weight gain. The findings illustrate the perception that pregnancy is a time where the usual rules about eating habits can change and that it can be viewed by women from a completely different perspective, with very different expectations when compared to their usual non-pregnant behaviours.

To summarise, the themes that emerged were;

- Unhealthy relationship with eating;
- Does my bump look big in this?;
- Pick and mix approach to advice;
- why weight matters,
- honesty;
- weighing it up.

The findings highlight some of the challenges that are present both to the women and also those who want to communicate effectively with women about weight when they are pregnant. The six themes also support results from recent qualitative studies, such as Nikolopoulos et al. (2017), who stated that 'Women reported that they had not had in depth discussions about GWG with their HCP, but they would like to' (page 95). It is clear that there is no one simple solution to

improving health outcomes in relation to a healthy GWG but these findings would suggest that openness between HCPs and pregnant women is vital. By not encouraging woman to make a lifestyle change in relation to weight when they are pregnant is a missed opportunity in view of women's readiness to change at this crucial point in their life (Lavender et al 2015).

Let's be honest....

There are seemingly endless complexities and considerations to be made when attempting to understand women's experiences of GWG. It could be argued that those insights are more complex when taking into account that the women involved within this study had already revealed their tumultuous relationship with eating by discussing previous fluctuating weight gains and current clinical status of having a raised BMI. For example, Ruth comments;

"I put on a lot of weight in the past couple of years, I'd got back down to a size 12 and I shot back up because obviously contentment"

Her contentment was attributed to her recent marriage and settled home life. This was the first interview conducted and it seemed to be an issue that consistently set the tone with all other interviews conducted. Women spoke of frequent 'battles' with their weight and with expected weight gain during a pregnancy, could the concept of exacerbating an already unhealthy relationship with eating rather than

developing a new and significant change that is not for the better be considered?.

One participant did state that getting pregnant again meant that she could delay losing the baby weight from her previous pregnancy and continue not worrying about it. This would suggest that women may be viewing pregnancy as a time when they are released from the usual social expectations and pressure to get into shape. This is supported by Keeley and colleagues (2017) and Padmanabhan et al (2015), who had identified 'pregnancy as a pause'. Interestingly all women in the study by Keeley and colleagues discussed changing their behaviour once their baby was born by adopting healthy behaviours and losing weight. This thought process was also demonstrated by a number of the participants who discussed the concept of weight management as an issue to be considered and approached in the postpartum period rather than when they were pregnant.

A most recent study identified during the post data collection period, also supports a view that women perceive their pregnant body as fragmented into; 'the bump' and 'me'. By doing so, their bump related weight gain was acceptable whilst any other weight gain was viewed negatively. This conflict was alleviated by seeking reputable information about gestational weight gain from healthcare professionals. As they rarely received the required information about weight management women sought their information elsewhere and filtered that information using 'common sense' (Padmanabhan et al

2015). Alvona et al (2018) suggests that woman see pregnancy as a time for indulgence and luxury and that scans and tests provide a sense of security. Some women are judged within this study to have little understanding of the risks involved to their growing baby, although this study was conducted in Singapore so differences in culture and health provision have to be taken into consideration.

In a culture today that is increasing influenced by digital leisure time and access to social media, consideration should also be given to expectations during pregnancy. Women are continually exposed to images of perfect pregnant bodies that convey unrealistic ideals (Mayoh 2019). This less than honest continual stream of ideals and images is also cited as a source of guilt and anxiety in the study by Mayoh and also mentioned by the women interviewed in this study. This subject matter would certainly benefit from more research in the future.

Within the theme of honesty there are clear indications that obese pregnant women see themselves as being treated differently without a meaningful clear discussion about weight management with a HCP being conducted. Women were conscious that their booking weight carried certain risks but often didn't know or weren't advised of any increased risk of GWG until very late in their pregnancy. By this point it was too late to do anything about the physical changes that had occurred and the emotional consequences such as guilt, frustration and fear had an opportunity to take hold. Women spoke of being able to handle the right information if it was delivered in a compassionate, straightforward and non-judgemental way that was

individualised to their situation. This is in stark contrast to the advice that women receive about smoking in pregnancy.

Women spoke fondly of the care and advice regarding managing their diabetes. The advice they spoke of focussed on the kind of diet they should try to adopt in order to maintain consistent blood sugar levels especially to avoid the high sugars associated with large for gestational age babies. But women who were diagnosed with diabetes felt this only addressed one aspect of the risks they may have been able to influence if they had also been counselled about weight gain earlier in their pregnancy.

The participants' views about the barriers for HCP not delivering advice suggest a suspicion from women that midwives may be nervous about upsetting the women they are caring for and potentially changing the midwife/woman relationship by approaching this taboo subject. Talking about sensitive issues take time and real consideration to avoid saying or suggesting something that may appear hurtful or condescending. This is a view accurately reflected in current research. Holton et al. (2017) conducted a study that looked at attitude amongst HCPs and in particular midwives commenting about the difficulties they had to overcome when discussing weight with women. Midwives commented that 'many women become defensive if care providers attempt to discuss their weight'.

Other barriers to open discussion were put forward such as health care workers feeling self-conscious about their own body image

therefore feeling unable to comment. This applies to HCPs who were all sizes not just those with a raised BMI, as midwives within a normal weight range didn't want to come across as preaching to women or telling them off about their weight.

Time was another reason given by women for feeling that their midwife did not convey the messages to them about GWG. The NHS faces a shortage of 3,500 midwives (Royal College of Midwives 2017) and this places inevitable pressure on staff to fit all of the care that they would like to give into a 15 minute timeslot during an antenatal appointment. It was clear by the responses from women in this study that they were aware of the time pressure that midwives face on a daily basis.

With such a time pressed service it is perhaps understandable that midwives might avoid opening conversations that could potentially take some time in order to prioritise care in a clinic setting.

So with women having a sense that their midwife may be too busy to be able to offer advice, is it surprising that they are looking in other places to seek advice and information? There were multiple references to the frustrations of finding credible information specifically about gestational weight gain as there are no published guides in the UK that give a specific numerical figure. Many commercially produced pregnancy guides and apps recommend that if you are underweight or overweight you should consult your midwife

on how much you should gain, however midwives are not guided via training or guidelines on a formula to make a specific recommendation. This ambiguity can be a hindrance when women of a normal weight can be advised a range of a gestational weight gain that is viewed as 'normal' but we cannot do the same for women who are overweight or obese. The latest report of the commission on ending childhood obesity from the WHO (2016: page 13) has a recommendation that health care professionals should 'Monitor and manage appropriate gestational weight gain' but again does not say what this appropriate weight gain is. Other studies have also reported the lack of reputable dietary and activity information during pregnancy (Gross and Pattison 2007, Clarke et al 2005, Bush et al 2010). They argue that if healthcare professionals simply direct pregnant woman to 'eat more healthily' this just wasn't enough as women did not have a level of knowledge to be able to act upon it. These studies also support the view that women felt that healthcare professionals focussed on their perception of 'more risky' behaviour such as smoking and alcohol.

In contrast to the public health messages around GWG, advice given regarding smoking cessation in pregnancy is structured and frequent during the antenatal period. In the NHS trust where this study was conducted, pregnant smokers are automatically referred to smoking cessation services unless they opted out. They have access to support groups, nicotine replacement therapy and at each antenatal appointment carbon monoxide monitoring, in the form of a breath test, is carried out. This provides women with a visual representation of the current carbon monoxide that they are exposed to and naturally

some time to discuss the benefits of giving up smoking. NHS digital (2016) has provided statistics provided via the Department of Health on women's smoking status at time of delivery in England for the 3rd quarter 2015-2016. These statistics suggest that smoking rates amongst this group continue on a downwards trend.

All of the women in this study that were smokers at conception managed to give up by the time I conducted the interviews. They spoke of understanding the risks of smoking and being given clear advice about smoking and drinking alcohol in pregnancy and therefore becoming motivated to stop to help reduce the risks to their baby. Interestingly women spoke of being motivated to stop smoking for the benefit of the baby rather than to benefit their own health. This demonstrates that clear public health messages to pregnant women that are repeated and consistent can work. Similar to GWG, the subject of smoking cessation can be difficult to approach and slightly uncomfortable to talk about but with training for HCPs that focuses on positive open discussion about public health issues a real difference can be made. Ongoing investments into smoking cessation training amongst maternity staff within this NHS trust expects staff to have these regular conversations regarding smoking during each antenatal visit. Notes are audited regularly to ensure this is carried out and the importance of doing so has been highlighted most recently by the saving babies lives care bundle for reducing stillbirth, published by NHS England in 2016. This care bundle was designed to support providers, commissioners and professionals take action to reduce stillbirths. Element one of this care bundle is all about reducing smoking in pregnancy and emphasises the importance of

driving this public health message forward to pregnant women. The action required to enable providers of antenatal care to deliver the extra support and training for staff as well as equipment for NHS trusts has been vastly supported by the publication of this document with more funds available for the resources required to deliver this vital care bundle.

As of yet there have been fewer compelling documents urging immediate action with regard to limiting gestational weight gain. In contrast when midwives discuss weight with pregnant women this is generally for the benefit of medical services. The most common times when pregnant women are asked to step on the scales within this NHS trust are for the following reasons;

- to document weight on a drug chart to ensure correct drug calculations
- to be able to assess risk when considering manual handling and ensuring the correct equipment is on hand if required (larger beds chairs etc.)
- to see if an anaesthetic review is required in case of an emergency requiring a general anaesthetic
- to calculate a risk of developing a venous thromboembolism and the dosage of prophylactic treatment for deep vein thrombosis

This list illustrates the reasons for documenting weight and acting upon the findings is essential when providing safe and effective care to pregnant women. What is clear is that these 'step on the scales' moments are not intended to precede a health promotion discussion.

We don't need to shelter women from the facts; as one of the participants said "*We can handle the truth*".

Only one woman in this study was offered specialist dietetic services. she declined the referral as she stated she had lost weight in the past easily and did not believe this service could offer her any advice or help she did not already have access to. It was not clear if her expectations and understanding of the dietetic care pathway had been explained well when the referral was initially suggested. This underutilised service could have a positive impact and has been explored in detail by a recent study by Heslehurst et al. (2017). In the latter study, it was considered by the women that dieticians, not midwives were in fact the expert health professionals when focussing on weight gain advice. The concept of tailoring advice specific to personal circumstances helping women implement changes is also echoed in this study. When discussing eating patterns with dieticians, women felt they were being recognised as individuals rather than an assumption of an unhealthy diet. Dedicated time to set realistic and achievable goals and offer advice that can help a woman manage their unique situation cannot be underestimated.

Weighing it up

The message from women about their perception of the importance of weighing was abundantly clear. The fact that women were not being weighed was seen to indicate that weight gain was not a real problem. This inadvertent message is not compatible with the public health message health care workers are hoping to pass on to the women in their care but appears to be a common feature of practice.

Sweeping the problem under the carpet appears to be potentially harmful and an irresponsible aspect of practice that should be addressed.

We know from the women in this study that being singled out, labelled or given special treatment because of their BMI would not be well received, so should weighing be reintroduced for all pregnant women? This would ensure that women associate less guilt and potentially would respond to open discussions about weight gain and what was expected. Continuity of care should also be considered in this context, the benefits of care pathways that maximise good communication have been highlighted by previous studies (Schmied et al. 2011). The most recent National Maternity Review, '*Better Births*' also highlights the vital relationship between the midwife and the woman by specifically discussing and focussing on continuity of carer; "To ensure safe care based on a relationship of mutual trust and respect in line with the woman's decisions. Every woman should have a midwife, who is part of a small team of 4 to 6 midwives, based in the community who knows the women and family, and can provide continuity throughout the pregnancy, birth and postnatally" (National Maternity Review 2015, Pg 10). In this study the beneficial elements of continuity of care were reflected in the care that was given by the diabetic specialist midwives and their individual approach that didn't stigmatise women.

Debbie made a statement quite clearly about the concept of weighing presenting a clear opportunity for a discussion and had a few suggestions about some of the advice that could be passed on. She

appeared to have an understanding that different women would need different individualised information about how they could effectively manage their weight. Steinberg et al. (2015) demonstrate that frequent weighing has a real impact about how people effectively manage weight with those most successful weight maintainers not shy of stepping on the scales. It was noted in Steinberg's study that individuals who were weighed frequently or weighed themselves reported a higher incidence of adopting weight control behaviours compared to those who were weighed less often.

This is just one aspect of weight management that Debbie had considered a few more of the suggestions offered by Debbie also corroborates other studies that discuss successful methods and tips that can be passed on to women such as tracking food intake (Burke et al. 2014), getting moving (Wing & Hill 2001) alongside talking to women and trying to establish what will work for them individually. To try and consider a one size fits all package would appear ineffective considering that we all respond and need different elements to motivate, keep individuals interested and engaged whilst creating strategies and new habits that are achievable and work for them. This would also directly go against the principle of the *Better Births* National Maternity Review (2015). Ideas such as slowing down eating, portion control, increasing exercise, changing food types, meal planning, building social support such as a weight loss group all have a place. It is vital to consider that some of these ideas would not work for some whilst in contrast would be embraced wholeheartedly by others. Much like making that pick-and-mix

selection, suggesting perhaps the need for a more women centred approach in midwives caring for overweight pregnant women.

Limitations and strengths of the study

This was a small scale study in a large UK hospital; the nature of the qualitative research means that the study cannot be generalised beyond this group of women. However, the advantage of the method is that it allowed an in-depth exploration of women's views and experiences that would not have been achieved through quantitative methods such as a survey.

Not all women wanted to take part and made it very clear at the point of approaching women for consent that they were not happy to join the study. Some gave reasons such as time limitations but it was made clear to them that no explanation would be required of them. Some didn't answer the door for their appointment after they had formally consented. This may have been an indication of the sensitivity of the study subject. The rigorous ethical process ensured women were protected from embarrassment, upset or feelings of coercion.

The limitations of the study meant that it was not possible to identify, develop and apply a new approach that is a more accurate indication of increasing maternal risk factors in relation to visceral fat deposits in the body. This is discussed in greater detail below.

The study was conducted by a novice researcher with limited experience in conducting interviews of this nature. However, the contrasting skills of the researcher as a clinical practitioner ensured that women could speak with confidence that they were speaking to a registered practitioner who would understand some of the complexities about their pregnancy and would treat them with the high standards associated with the NMC code of practice (2015). The interview in which the woman revealed her serious eating disorder is an example of a potential conflict between the clinician and the researcher in the 'midwife-researcher (Ryan et al. 2011). Effort and time had been invested in exploring the challenges associated with this dual role to ensure that clear understandings of the ethical boundaries were established.

Why use BMI?

The researcher recognises that the use of Body mass index may be considered controversial, with some disputing the accuracy of the measurement.

It was decided early in the preparation for this study that obesity would be defined by using this commonly used measure. This is a widely used tool in part because it is a cheap, easy and non-invasive means of assessing excessive body fat. BMI is used as a measure all around the world it enables comparison between studies, regions,

population sub groups and time (Hall & Cole 2006). Defining obesity using this one measure raises significant challenges and its use is debated in the literature.

The NHS National Obesity Observatory (NOO, 2009) recognises that other forms of measurement such as skin fold thickness or waist circumference may hold certain advantages however this is difficult to measure consistently and accurately across large populations. This is a view also recognised by the Harvard School of public health (2016) and it's understood that BMI is not a perfect measure, because it does not accurately calculate body fat. Nuttall (2015) discusses the fact that BMI is a poor indication of the percentage of body fat within an individual. It also fails to specify information about the collection of fat in different locations around the body which is known to have an influence on morbidity and metabolic consequences such as insulin resistance. However, for most health organisations, BMI is frequently the only gauge to assess levels of their patients' body fat.

The decision to use body mass index was made based on the fact that it is current method of assessing those risk factors associated with obesity and the measure is used by the WHO, UK NHS Trusts and NICE guidelines. While this method of measurement is clearly not ideal it should be noted that the women within the area in which the study was conducted are exposed to this generic classification as recommended by NICE and their opinions about that should be included within the study.

Recommendations and implications for practice

Understanding what obese pregnant women find useful and engaging could help service providers to develop better, cost effective and sustainable specialist maternity services for obese pregnant women.

Maternity service should reintroduce the weighing of obese pregnant women, allocate time for staff to weigh women, discuss weight and general health issues or provide a specialised clinic for this client group. The latter is more difficult as women spoke about feeling singled out and the idea of a specific. By integrating weighing as a normal part of the antenatal check could also help women who may have started their pregnancy in a normal weight range and are potentially more at risk from the effects of increased GWG.

Midwives are expert and developing relationships with women with many having an ability to adapt their behaviour and approach when speaking to women that suits their character and personality. By utilising these skills and tailoring conversations, women could benefit from an honest approach. We seem to have been successful in training midwives to address smoking in pregnant women, we need to try to expand this training to cover weight management advice during pregnancy. Training around motivational interviewing could also be implemented to further enhance these skills. This style of interview technique is a woman centred method that guides and enhances intrinsic motivation to change by exploring and resolving ambivalence (Miller and Rollnick 2012). This style of interviewing is about arranging conversations in a manner that promotes change based on their own values and interests. As is demonstrated throughout all of

the interviews, all women have a desire to be happy and healthy. By guiding a conversation that fundamentally addresses these desires gives women an opportunity to make a positive change. In the words of Pascal (1670) *“People are generally better persuaded by the reasons which they have themselves discovered, than by those which have come into the minds of others”*.

The insights of women have provided greater clarity when considering future potential interventions and will uniquely contribute to this field of research. For example, asking women if they do seek out specific gestational weight gain guidance such as online tools, parenting forums or anecdotal advice, will identify if more specific weight gain guidelines should be developed for women in the UK that are simple to understand and follow. This study has also established what information and understanding obese pregnant women have of the risks involved when gaining a large amount of weight over the duration of their pregnancy.

The weighing of pregnant women regularly has been viewed negatively in the past (Warriner 2000); however the reasons for weighing women when pregnant have changed from traditionally detecting babies at risk of being small for dates to assessing levels of obesity and weight gain

We know that pregnancy is a factor when considering weight gain at a point in a woman’s life. It is clearly documented that the more

pregnancies women have, the heavier they will be (Davis et al. 2014). We know this so should our healthcare system be proactively trying to help women and develop strategies to end this inevitable and expected cycle?

There are studies that discuss different psychological characteristics of weight loss maintainers such as flexible cognitive restraint (Sairanen et al. 2014), low levels of disinhibited eating (Sala & Levinson 2017), consistent eating over a long period of time (Vainik et al. 2015) and catching small regains of weight early (O'Reilly et al. 2014). These specific characteristics and how this can influence weight gain could be considered when delivering good evidence based care that has some practical ideas. Having a selection of options within the practitioners' advice toolkit, must present a greater opportunity to find a flexible care pathway for women.

A further recommendation is that midwives consider referral to a nutritionist or a dietician during the early stages of pregnancy. These services appeared to be vastly underused for overweight pregnant women, yet offer valuable individualised support and clear guidance. It may be helpful to find out more about the services offered within their local NHS trust.

Recommendations for future research

Women perceived that their midwives had a sense of discomfort around weight management conversations. It can be challenging for midwives when weighing women for the first time in a pregnancy, to assign a weight category to a woman and tell them something they most likely wouldn't choose to hear.

A consideration for future research could be into the use of the newly launched baby buddy app which has been developed by the Best beginnings project and is being recommended for dissemination to pregnant women by NHS Trusts nationwide. This app has been approved for use by the Department of Health (DoH), the Royal College of Midwives (RCM) and the RCOG. This app provides a guide for pregnancy, birth and parenting and had been designed to work alongside the healthcare professional. This app has the potential to influence pregnant women and provides a platform to deliver public health messages. It is free, reliable and easily available to smartphone users and is expected to be widely used.

Consideration should also be given to the possibility that lack of knowledge about GWG may hinder the ability of women to address these issues during pregnancy. A greater awareness of risks associated with GWG could be associated with added motivation to maintain appropriate GWG in order to improve outcomes for their baby. Is it possible that the increasing prevalence of obesity is changing the community perception of what is normal? Further

research is required to establish more in depth facts about levels of knowledge amongst obese pregnant women with regard to GWG and risk perception, with geographical consideration given to a focus on the NHS in England.

Another consideration for future research could be looking into the incidence of re-emergence of eating disorders whilst pregnant. Upon making the discovery that one of the participants in this study was in fact bulimic a discussion with other members of the diabetic midwifery and perinatal mental health team was prompted. There was an anecdotal response amongst this team that this was not a lone incidence and this had been seen on many occasions. Very little research appears to be present about this phenomenon and with the last Mothers and Babies; Reducing the Risk through Audits and Confidential Enquiries –UK (MBRRACE-UK) report (2015) focussing on the psychiatric causes of maternal deaths, this line of research should be a priority.

Recommendations for future education of midwives

At present it is expected that midwives and healthcare providers are ideally placed to deliver GWG guidance and information but in the time pressed NHS it may be wise to consider alternative methods of conveying good, evidence based information.

Training to help midwives feel confident to deliver good evidenced based information will in turn enable them to deliver information to women with more confidence. Understanding their situation in a non-judgemental way is what women are asking for.

Midwives have the knowledge about increased risks and health implications of obesity in pregnancy but appear hesitant about conveying this message to the women that they care for.

Unfortunately there is little time to explore this phenomenon within this study but responses within the literature would suggest fear of offending or upsetting women because of the sensitivity of the subject is evident (Furness et al. 2011; Macleod et al. 2013). This would appear to be exacerbated when midwives were unable to give consistent and continuous care to women due to time constraints. Is there an innovative format to deliver this information in a non-judgemental way that reflects the methods that women are already utilising and find comfortable using?

Conclusion

Through conducting this research a more in depth knowledge of obese women's views about gestational weight gain whilst they are pregnant has been developed. The women in this study were loud and clear about what care pathways they felt appropriate with the primary focus on honesty. Women don't want to be singled out or shamed because they are obese but they do want quality, evidence based care that is individualised, delivered compassionately with real consideration. There is a space in the care that can be and wants to be filled. Women want this information, they don't need to be sheltered or hidden from it.

This research has demonstrated that monitoring weight in pregnancy should have a place in the routine antenatal check once again. There weren't many who felt entirely comfortable about the prospect of being weighed but the act of ignoring weight until a hospital admission has taken place can be a missed opportunity to make a positive difference to a woman and her family.

The contribution that this research has offered is the delivery of a clear message that women can be empowered with information to enable them to make the right decisions for themselves and the baby they are carrying. The significance of this research I hope will go some way to provide evidence to health care professionals. It is time to stop sweeping this issue under the carpet and be open about discussions about weight. This is a vital issue and women deserve to know that how managing weight well when pregnant can make a real impact on the wellbeing of a future generation.

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Appendices

Appendix 1

Personal field journal entries

Entry 14 – November 2015

Inductions today, met a woman (Emma) who was being induced with her second baby. I spent quite a bit of time with her as I had to hold the transducer (device used to listen to the fetal heart) on whilst carrying out continuous fetal monitoring. The transducer is usually held on with an elasticated strap but in this case a little more pressure needed to be applied to her abdomen as the position of the baby made it difficult to auscultate the fetal heart and her raised BMI exacerbated the situation. Emma apologised on numerous occasions and was clearly embarrassed about presenting her abdomen. A discussion about weight was almost inevitable and initiated by Emma, she was self-deprecating and seemed to have a low self-esteem but wanted to talk about weight management and how she had tried to be healthy but just wasn't sure if she had gone about it the right way during her pregnancy. I was able to reassure her that there was no one way or right way to 'be healthy' and that we (staff) were there to lend our support not to judge. We were able to take turns applying extra pressure to hear baby as our fingers were aching a little and over the 30 minute period that we sat together she said she felt relief that she had actually spoken about her weight honestly and without fear of judgement. She had only put on a minimal amount of weight during her pregnancy and her obvious sense of pride when I was able to congratulate her on achieving this was evident with her smile and change of demeanour.

Anecdotally, I have noticed that there are these typical responses by women to a situation when it is challenging to auscultate the fetal heart;

- 1) Blame the baby, it must be that the baby is being naughty... he/she doesn't like the transducer. Responses like "she always plays up when you try and have a listen" are commonplace.
- 2) Embarrassment and frequent apologies given.
- 3) Matter of fact and quite understanding.

It would be easy to think that the first response seems illogical as women are told during scan appointment that if they have a raised BMI it is harder to see and hear the baby because of extra adipose tissue. I believe that these women should also fall into the second response category as they are aware of the most likely reason for the difficulty but don't really want to feel blamed and guilty. Body shaming is common in modern society (Van Vonderen & Kinnally 2012) and women do not want to relate negative feelings when they should be experiencing a joyful and happy event. I have seen the third response far less frequently and tend to be from women who appear openly confident.

On reflection this has made me consider that shying away from discussions about weight may be having a negative impact on women and we may be doing a disservice to women by avoiding the subject of weight for fear of embarrassment or upset.

Entry 2 – March 2014

Today I met a new baby....wiggly, precious, perfect and born to a mother I met last year on a day that wasn't so filled with joy. This

woman was just remarkable, with today bringing back the memories of the day her first born girl was born still... the day that her tears soaked the shoulders of my uniform and her uncontrollable sobbing seeming to last a lifetime. It was never known why her first precious, perfect but lifeless baby didn't live but I do know that this heartbroken woman felt guilt, complete and utter all-encompassing guilt to add to the depth of her grief. She had read about stillbirth and some of the risk factors associated with this outcome while she was waiting for the drugs that would start her contractions to take effect. The focus for her became her newly acquired knowledge about weight gain and obesity, she told herself that she could have done better, could have eaten well, if she wasn't so big this never would have happened. All the reassurance in the world during these moments didn't seem to make a shred of difference and as I practitioner I felt powerless to help her at that point.

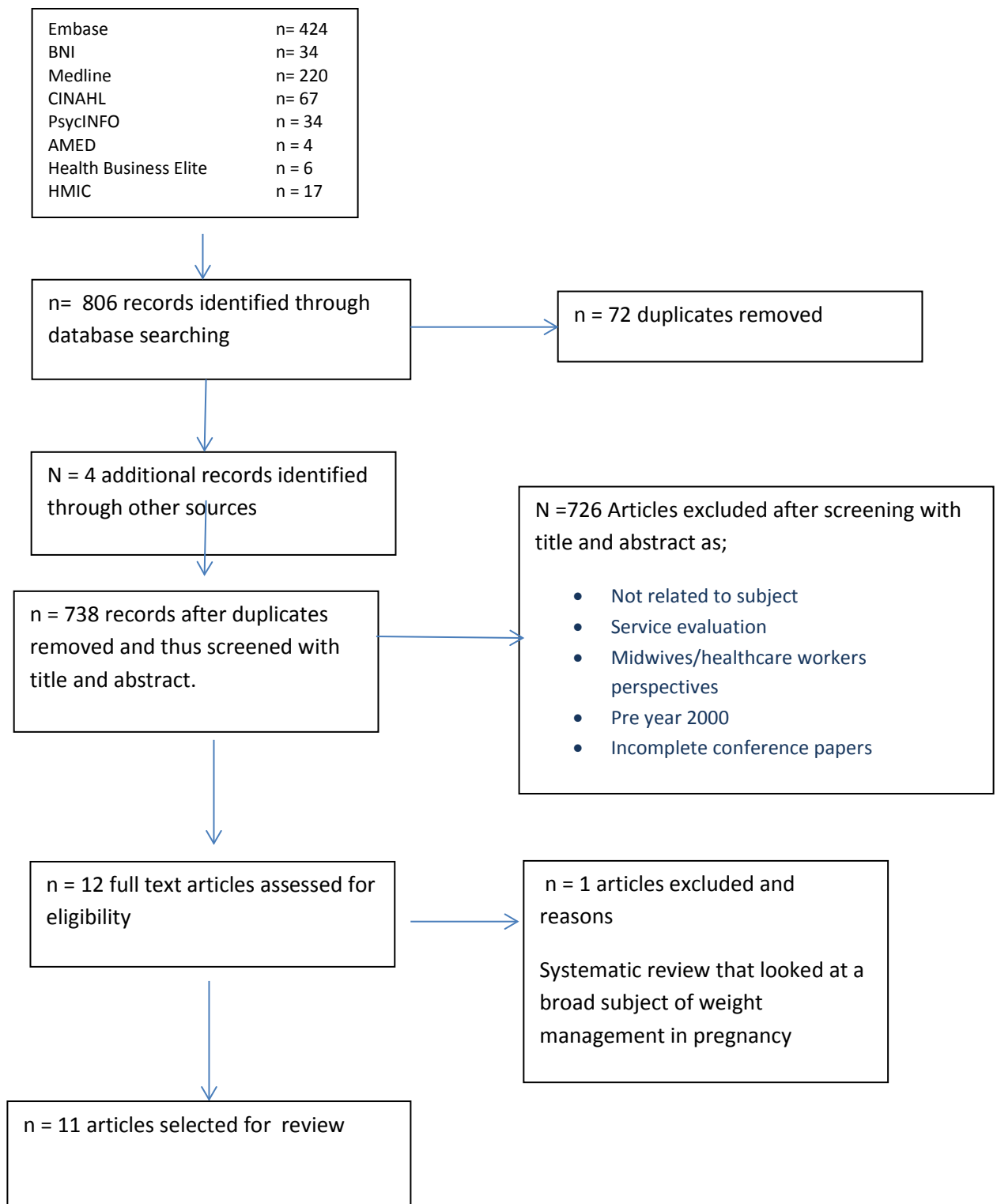
A few months later she was pregnant again, she made contact with me and asked if I could look after her in labour and also if I could give her any advice about being as healthy as possible during this pregnancy. My advice was simple and carefully delivered with due consideration given to her potentially fragile state of mind but also her determination to try and do all she could to hold a healthy baby in her arms. During her pregnancy she maintained her weight, attended some aqua fit classes, and made a real attempt to walk every day. Her motivation was unshakeable.

Today was a triumph; the tears that flowed were mostly those of joy. To see her holding a baby in her arms, alive and rooting for a breastfeed was such a powerful reminder that something as simple

as a little advice can make an enormous difference. Today she felt real pride in herself and it was beaming out of her.

We will never know if her lifestyle was the reason for either of these outcomes but as practitioners we do know that there is a risk factor that can be minimised. It's our responsibility to do what we can to empower women by sharing knowledge, supporting and encouraging them to make healthy choices for them and their babies.

Appendix 2 – Primary search

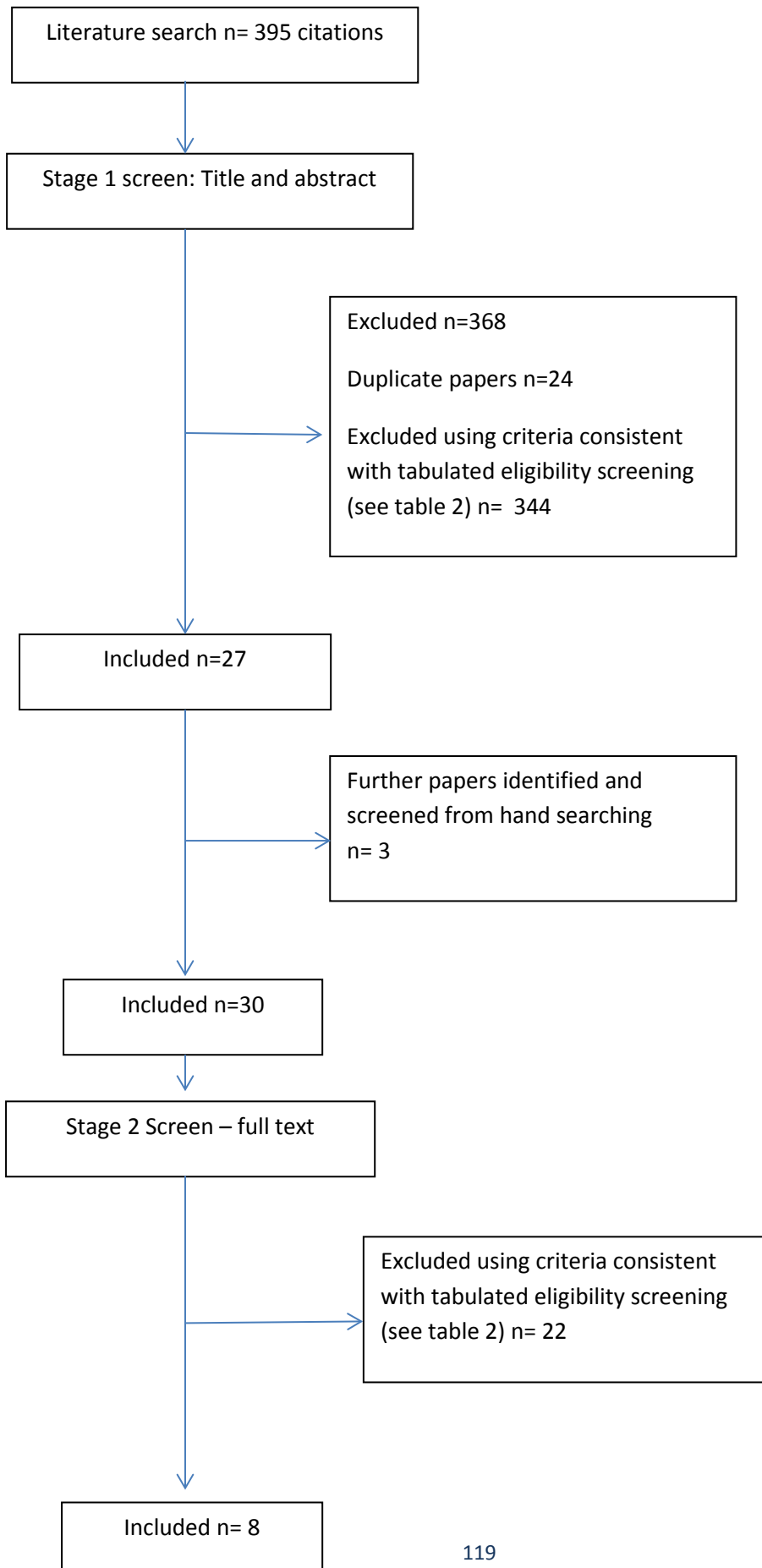


Appendix 3: Search Strategy

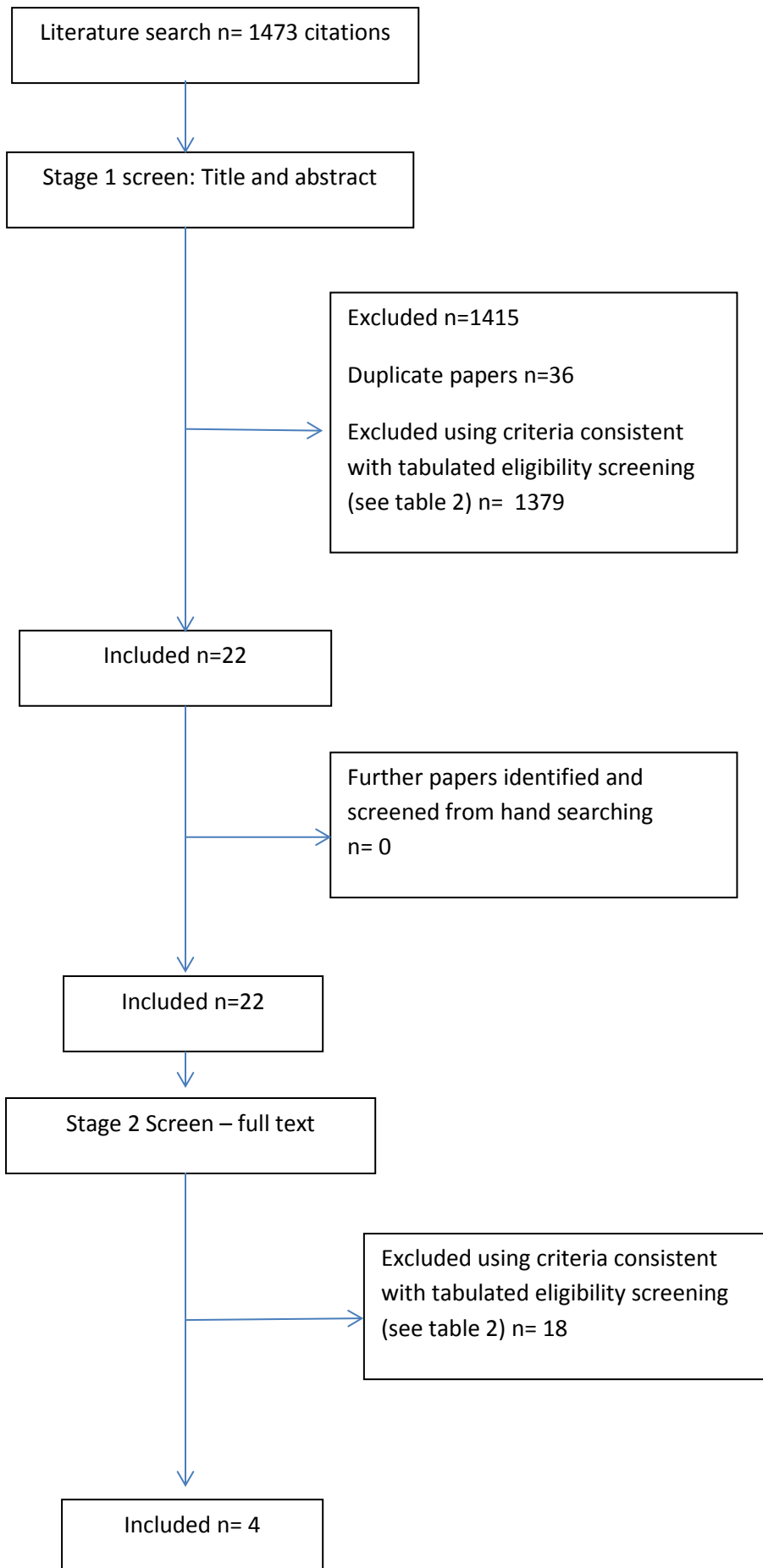
The following databases were searched via NICE Evidence search: AMED, EMBASE, HMIC, BNI, Medline, PsycInfo, CINAHL, HEALTH BUSINESS ELITE. Limitations – Date: 2000 onwards; Language: English abstract; Peer-reviewed.

S1	wom*n	Concept 1, combined and searched with <i>or</i>
S2	female*	
S3	obes*	
S4	BMI	
S5	body mass index	
S6	overweight	Concept 2, combined and searched with <i>or</i>
S7	Gestational weight gain	
S8	Advi*	
S9	Management	
S10	Recommendation*	Concept 3, combined and searched with <i>or</i>
S11	Guideline*	
S12	Pregnan*	
S13	Antenatal	
S14	Gestation*	Concept 4, combined and searched with <i>or</i>
S15	Maternal	
S16	Knowledge	
S17	Understanding	
S18	Information	Concept 5, combined and searched with <i>or</i>
S19	Perspective*	
S20	S1 or S2	
S21	S3 or S4 or S5 or S6 or S7	
S22	S8 or S9 or S10 or S11	
S23	S12 or S13 or S14 or 15	
S24	S16 or S17 or S18 or S19	
S25	S20 and S21 and S22 and S23 and S24	

Appendix 4: Revised search



Appendix 5: New updated and repeated Search (2015-2019)



Appendix 6

QUALITATIVE RESEARCH

(A) Screening Questions

(B) Detailed questions

NAME ARTICLE	Question 1 Was there a clear statement of the aims of the research?		Question 2 Is a qualitative methodology appropriate?		IS WORTH TO CONTINUING?	Question 3 Was the research design appropriate to address the aims of the research?		Question 4 Was the recruitment strategy appropriate to the aims of the research?		Question 5 Was the data collected in a way that addressed the research issue?		Question 6 Has the relationship between researcher and participants been adequately considered?		Question 7 Have ethical issues been taken into consideration?		Question 8 Was the data analysis sufficiently rigorous?		Question 9 Is there a clear statement of findings?		Question 10 How valuable is the research?		TOTAL SCORE
	Score	Description	Score	Description		Score	Description	Score	Description	Score	Description	Score	Description	Score	Description	Score	Description	Score	Description	Score	Description	
Alden et al. 2014. Responses to gestational weight management advice: a thematic analysis of comments by women in online parenting forums.	2		2	Thematic analysis of online forum posts	YES	2		2		2		0		1		1		2		2		16
Olander et al. 2011. The views of pre and post natal women and health professionals regarding gestational weight gain: An exploratory study.	2		2	Focus groups	YES	2		1		2		2		2	Complete anonymity for participants meant no demographic data was collected	2		2		1		18
Furness et al. 2011. Maternal obesity support services: a qualitative study of the perspectives of women and midwives.	2		2	Focus groups	YES	2		2	Both women and midwives in separate focus groups	2		1	It was not clear if the midwives were known to the researcher	2		2	Nvivo	2		2		18
Hestlehurst et al. 2013. Women's perspectives are required to inform the development of maternal obesity services: a qualitative study of obese pregnant women's experiences.	2		2	Interviews	YES	2		2		2		2		2		2		2		2		20
Post 2015 research																						0
Alvona et al. 2018. Weight management during pregnancy: a qualitative thematic analysis on knowledge, perceptions and experiences of overweight and obese women in Singapore.	2		2	Interviews	YES	2		1	Motivated women who approached researchers may have skewed the data	2		2		2		2		2		1	Small sample size	18
Hestlehurst et al. 2017. Lived experiences of routine weight checks among women with obesity: A qualitative phenomenological study	2		2	Interviews	YES	2		2		2		2		2		2		2		1	Lack of ethnic diversity in line with the local population	19
Lavender et al. 2015. Seeing it through their eyes: a qualitative study of the pregnancy experiences of women with a body mass index of 30 or more.	2		2	Focus groups/Interviews	YES	2		1	34/84 participants approached	2		2		2		2		2		1	mainly Pakistani and white participant- fewer Bangladeshi women were represented	18
Padmanabhan et al. 2015. A qualitative study exploring pregnant women's weight related attitudes and beliefs in the UK: the BLOOM study	2		2	Interviews	YES	2		1	Not clear how many women were approached	2		0	researcher had no clinical background	2		2		2		2		17
																						0

Appendix 7

NAME ARTICLE	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 10	Question 11	Question 12	TOTAL SCORE									
	Did the study address a clearly focused question / issue?	Is the research method (study design) appropriate for answering the question?	Is the method of selection of the subjects clearly described?	Could the way the sample was obtained introduce (selection) bias?	Was the sample of subjects representative with regard to the population to which the findings will be referred?	Was the sample size based on pre-study considerations of statistical power?	Was a satisfactory response rate achieved?	Are the measurements (questionnaires) likely to be valid and reliable?	Was the statistical significance assessed?	Are confidence intervals given for the main results?	Could there be confounding factors that haven't been accounted for?	Can the results be applied to your organization?										
	Score	Description	Score	Description	Score	Description	Score	Description	Score	Description	Score	Description										
Thompson et al. 2011. Pregnant women's knowledge of obesity and ideal weight gain in pregnancy, and health behaviours of pregnant women and their partners.	2		2	Convenience	2	interesting choice of women and their partners	2	Was the sample of subjects representative with regard to the population to which the findings will be referred?	0	Not documented	1	A fair number of participants but unsure how many were approached	2	SPSS	2	2	2	2	0	0	2	17
Shub et al. 2013. Pregnant women's knowledge of weight, weight gain, complications of obesity and weight management strategies in pregnancy.	2	2	2	Survey & Int	2		2		0		1		2		1	1	1	1	1	1	17	
Leslie et al. 2013. Prevention and management of excessive gestational weight gain: a survey of overweight and obese pregnant women.	2	2	2	Convenience	2		2	All overweight or obese pregnant women	0		1		2	IBMStats V9	1	1	1	1	1	1	19	
Wilcox et al. 2015. Gestational weight gain information: seeking and sources among pregnant women.	2	2	2	1	Women who were of a healthy weight were more inclined to respond	2			0		1		2	Stata 12	2	2	2	2	0	0	16	

Mrs Carol A Richardson
Post Graduate Researcher/ Registered Midwife
Portsmouth Hospitals NHS Trust/Bournemouth University
St Mary's Health Campus
Milton Road
Portsmouth
PO3 6AD

Email: hra.approval@nhs.net

27 July 2016

Dear Mrs Richardson,

Letter of HRA Approval

Study title:	A Qualitative study of obese pregnant women's understanding of weight gain in pregnancy.
IRAS project ID:	159712
REC reference:	16/SC/0276
Sponsor	Bournemouth University

I am pleased to confirm that HRA Approval has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. Please read *Appendix B* carefully, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The document ‘*After Ethical Review – guidance for sponsors and investigators*’, issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

In addition to the guidance in the above, please note the following:

- HRA Approval applies for the duration of your REC favourable opinion, unless otherwise notified in writing by the HRA.
- Substantial amendments should be submitted directly to the Research Ethics Committee, as detailed in the *After Ethical Review* document. Non-substantial amendments should be submitted for review by the HRA using the form provided on the [HRA website](http://www.hra.nhs.uk), and emailed to hra.amendments@nhs.net.
- The HRA will categorise amendments (substantial and non-substantial) and issue confirmation of continued HRA Approval. Further details can be found on the [HRA website](http://www.hra.nhs.uk).

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at <http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/>.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application

procedure. If you wish to make your views known please email the HRA at hra.approval@nhs.net. Additionally, one of our staff would be happy to call and discuss your experience of HRA Approval.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

Your IRAS project ID is 159712. Please quote this on all correspondence.

Yours sincerely

Miss Lauren Allen
Assessor

Email: hra.approval@nhs.net

Copy to: Dr Fiona Knight, (Sponsor contact)
Mr Graham Halls, Portsmouth Hospitals NHS Trust, (Lead NHS R&D contact)

NIHR CRN Portfolio Applications Team

Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

Document	Version	Date
Interview schedules or topic guides for participants [Topic guide]	01	02 May 2016
Letter from funder		22 April 2016
Letter from sponsor [BU Sponsor letter]	01	02 May 2016
Other [VH CV]	01	20 November 2015
Other [CW CV]	01	08 December 2015
Other [Proof of Identity Insurance by BU]	01	23 June 2016
Other [Panel response letter]	01	20 June 2016
Other [Statement of Activities]	1	22 July 2016
Other [Schedule of Events]	1	27 July 2016
Participant consent form	3	20 June 2016
Participant information sheet (PIS)	10	12 July 2016
REC Application Form [REC_Form_03052016]		03 May 2016
Research protocol or project proposal [Protocol V10]	10	20 June 2016
Summary CV for Chief Investigator (CI) [CR CV]	01	02 May 2016
Summary CV for student [CR CV]	01	02 May 2016
Summary CV for supervisor (student research) [CV EVT]	01	02 May 2016

Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the *participating NHS organisations, capacity and capability and Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections in this appendix.

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study: Dr Fiona Knight (fknight@bournemouth.ac.uk, 01202961208).

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	The Statement of Activities and Schedule of Events will act as the agreement between the sponsor and participating NHS organisation.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the

Section	HRA Assessment Criteria	Compliant with Standards	Comments
			activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	No funding will be provided to the participating NHS organisation.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Yes	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.

There is one site-type. Eligible participants will be approached by midwives at the participating NHS organisation at their 20 week scan. Consent will be taken by the research team when patients attend for a glucose tolerance test at 26-28 weeks of pregnancy. Interviews with participants may take place at the participating NHS site.

The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website.

If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.

Confirmation of Capacity and Capability

This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.

Participating NHS organisations in England **will be expected to formally confirm their capacity and capability to host this research.**

- Following issue of this letter, participating NHS organisations in England may now confirm to the sponsor their capacity and capability to host this research, when ready to do so. How capacity and capability will be confirmed is detailed in the *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* section of this appendix.
- The [Assessing, Arranging, and Confirming](#) document on the HRA website provides further information for the sponsor and NHS organisations on assessing, arranging and confirming capacity and capability.

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).

This is a single NHS site study and the Chief Investigator will act as Principal Investigator, therefore no additional PI will be required at the participating NHS organisation.

If this study is extended to other NHS organisation(s) in England a further assessment of the need for a PI or LC at the additional sites will be made.

GCP training is not a generic training expectation, in line with the [HRA statement on training expectations](#).

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken

No access arrangements are expected as all study activity at the NHS site will be conducted by locally employed staff who have a contractual relationship with the participating NHS organisation.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.

- The applicant has indicated that they intend to apply for inclusion on the NIHR CRN Portfolio.

Participant information sheet

A study of pregnant women's understanding of weight gain in pregnancy.

Congratulations on your pregnancy. During the next months you may be invited may be invited to take part in a research project. Please take time to read the following information carefully and ask if there is anything that is not clear.

The Researcher

My name is Carol Richardson; I am a PhD Student at Bournemouth University and a registered midwife. I am completing a research project on pregnant women's understanding of weight gain in pregnancy.

As you may be aware recent news reports have highlighted the increase in weight in the current UK population compared with previous generations. Pregnant women report that there is a great deal of information and news at the moment about how people in the UK are much heavier now than in previous generations and women report that dealing with their weight during pregnancy is quite challenging, so this study aims to try and develop a deeper understanding of what women's thoughts are about this complex subject.

I hope that by gathering information and listening to women's points of views in regard to weight gain in pregnancy, I will be in a better position to understand more about this issue and go on to share this information in order to improve maternity care in the future.

Who will be invited to take part?

Pregnant women are likely to gain weight during their pregnancy however for this particular study women will be selected based upon their weight category (this was calculated during your 12 week nuchal scan appointment). If you have a higher weight category then you will be invited to take part in the study when you attend your appointment for a glucose tolerance test when you are 26-28 weeks pregnant. . If you are eligible and are happy to participate then your midwife will seek your consent for entry to the study. You do not have to take part in the study, and if you choose not to participate it will not affect your care in any way.

Do I have to take part?

It is up to you to decide whether or not to take part in the study. If you do decide to take part you'll be asked to sign a consent form. You can withdraw from the study without it affecting your care in any way.

What do I have to do?

At your 26-28 week appointment for your glucose tolerance test you will be asked by your midwife if you are interested in taking part in the study. If so, you will then have the opportunity to ask questions directly to the researcher who will be in clinic at the time. If you are happy to go ahead you will be asked to sign a consent form and an appointment will be made with you for an interview when you are 32-35 weeks pregnant to discuss your personal views and opinions.

This will be made at your convenience at the location of your choice. This can be at home, at a local clinic or in the hospital. If you choose to come into the local hospital then tea and refreshments will be provided and any car parking charges will be reimbursed.

The face-to-face interview will be audio recorded (with permission); the recordings will be transcribed and analysed to see what experiences women have in common. The interview should last no longer than one hour and during this time various questions about your understanding of weight gain in pregnancy will be asked. All of the information that is collected during the course of the research and all identities of the participants will be kept strictly confidential in accordance with the Data Protection Act (1998).

What are the possible benefits of taking part?

Your views may help improve the way in which advice and support are offered to pregnant women in the future.

What are the possible disadvantages?

It is possible that this discussion could be difficult or upsetting for you. If you experience feelings of distress you are welcome to leave the interview at any time and access support from your community midwife. If your midwife is not immediately available then please call the number provided on their answer machine, this will give you contact details for a midwife who can support you.

What if there is a problem?

If at any time you have concerns about any aspect of this study, you can speak to me directly. My contact information is at the end of this sheet. Further information is available from my principal research supervisor Professor Edwin van Teijlingen, the Research and Development Officer at Portsmouth Hospitals or the Patient advice and Liaison service (PALS) who can advise you about the complaints procedure. (See details below).

Research funding and what will happen to the results of the research study?

The results from this study will be published in a research thesis and an academic journal and may be presented at conferences. You will never be identified in any report or publication. This research is funded by Bournemouth University and Portsmouth Hospitals NHS Trust.

Who has reviewed the study?

This study has been reviewed by a local and national research ethics service to confirm that the study is being conducted in an appropriate manner, with your health and wellbeing in mind and in a way that reduces any risk of harm to you.

Contact details:

Researcher:

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Research Facilitator:

[Joe Shoebridge](#)
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[Southwick Hill Road](#)
[Cosham](#)
[Portsmouth PO6 3LY](#)

Bournemouth University
Executive Dean

Professor Steven Tee
Royal London House R714,
Christchurch Road,
Bournemouth, BH1 3LT

Patient Advice & Liaison
Service:

Queen Alexandra Hospital
Southwick Hill Road Cosham,
PO6 3LY
Phone: 023 9228 6000 (main
switchboard)

[Thank you for taking the time to read this information sheet](#)

[Version 7 Date: 27/5/16](#)

A study of pregnant women’s understanding of weight gain in pregnancy

Name, position and contact details of researcher:

Carol Richardson RM, Post Graduate researcher, Bournemouth University, School of Health and Social Care, St Mary’s Health Campus, Milton Road, Portsmouth PO3 6AD. Tel: 01202 968322. Email: richardsonc@bournemouth.ac.uk

Name, position and contact details of supervisor:

Professor Edwin van Teijlingen, Bournemouth University, Bournemouth House B112, 19 Christchurch Road, Bournemouth, BH1 3LH. Tel: 01202 961564. Email: evTeijlingen@bournemouth.ac.uk

Please Initial Here

I confirm that I have read and understood the participant information sheet for the above research project and have had the opportunity to ask questions.		
I give my consent to the interview being audio recorded.		
I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason and without there being any negative consequences.		
Should I not wish to answer any particular question(s), I am free to decline.		
I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.		
I give my consent to the use of anonymised and unidentifiable direct quotes.		
I understand that if it is felt that you, your baby or another person is at risk of harm, it may be necessary to inform the relevant authorities of this.		
I agree to take part in the above research project.		

Name of Participant Date Signature

Name of Researcher Date Signature

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the participant information sheet and any other written information provided to the participants. A copy of the signed and dated consent form should be kept with the project’s main documents which must be kept in a secure location. Version 3. Date: 20/6/16

IRAS Project ID: 159712

Appendix 11

Semi structured interview/topic guide V3

This guide has been put together based upon the aims and objectives set out within the study protocol. The venue will be in a place chosen by the participant and audio recorded with permission.

1. Narrative

Could you tell me your story about this pregnancy in relation to how you have coped with your changing body shape and how it made you feel?

2. Weight gain

What were your expectations about changes to your weight in pregnancy?

How much weight gain do you think would be ideal?

Why do you think that?

3. Healthcare professionals advice

Tell me a little about any advice you received about weight gain from a healthcare professional?

If so, can you remember what that advice was?

What did you think about how this advice was given to you? How did it make you feel?

Do you think you were given enough information or support about weight gain in pregnancy?

Did your HCP provide any other nutritional advice?

4. Weight management advice sources

Has anyone other than a healthcare professional had any advice about your weight gain during your pregnancy? If so what has the advice been?

Have you sought out any information yourself about this subject? (e.g.; online, in magazines, books, leaflets, friends and family) If so what have you found? Have you used this information?

5. What advice would women like?

Can you tell me what sort of advice you would have found most helpful? What format? From whom?

Where would you send a loved one say a sister or close friend for advice about her weight in pregnancy if she sought it?

6. How women feel about being weighed?

Do you think it is necessary to be weighed regularly throughout your pregnancy?

Can you tell me why you feel that?

Do you think it could be helpful to monitor your weight gain in pregnancy? If so, why?

7. Final questions/comments

We've reached the end of our interview. Is there anything else you would like to add that we missed out?

Discussion with supervisors regarding nature of questions based on last transcript:

- 1) Try to ensure I stay out of clinical midwife role rather than researcher
- 2) Open more questions, as a few of the question were closed
- 3) Try not to make suggestions ask : can you tell me a bit more
- 4) Make sure probing questions in particular are asked individually
- 5) Speak less as an interviewer
- 6) Discussion about switching from clinical midwife role as for ease historically I have used checklists and used closed questions for ease of working especially on busy MAU days... elaborate and maybe write article later. Challenges with dual roles. Put into discussion chapter.
- 7) Negative hurtful self-talk mentioned within the last transcript – self-loathing? Because of her attitude towards herself some consideration of whether she chose not to seek that information and maybe consideration that her HCP's were aware of this and did not want to distress or upset her any further? Do some women not want to ask, will women who have a more positive self-image and who are larger be more inclined to ask for advice.
- 8) Explore what information women actually get about weight at booking