

**Care of obese women during labour: The
development of a midwifery intervention to
promote normal birth**

Angela Mary Kerrigan

MA, BSc (Hons), RM

Thesis submitted for the degree of Doctor of Philosophy

School of Health Sciences

University of Stirling

December 2017

Abstract

Normal birth, defined as birth without induction of labour, anaesthetic, instruments or caesarean section conveys significant maternal and neonatal benefits. Currently one-fifth of women in the United Kingdom are obese. There is increasing evidence of the detrimental effects obesity has on intrapartum outcomes. There is a lack of research on how to minimise the associated risks of obesity through non-medicalised interventions and how to support obese women to maximise their opportunity for normal birth. This thesis aims to provide evidence to address this gap and develop an evidence-based intervention to promote normal birth.

Using a methodological approach aligned with pragmatism, this research was conducted in four parts and underpinned by the Medical Research Council framework for the development of complex interventions. Part one was a national survey involving 24 maternity units. Part two was a qualitative study of the experiences of 24 health professionals and part three involved 8 obese women. The final part was a multi-disciplinary workshop that used consensus decision-making to design the intervention.

Collectively, the findings suggest that intrapartum care of obese women is medicalised. Health professionals face challenges when caring for obese women but many strive to optimise the potential for normal birth by challenging practice and utilising 'interventions' to promote normality. The findings also demonstrate that obese women have an intrinsic fear of pregnancy and birth, have a desire for normal birth and 'obese pregnancy' presents a window of opportunity for change. The intervention consists of three component parts; an educational aspect (e-learning package), a clinical aspect (intrapartum care pathway) and a leadership aspect (ward champions).

Whilst acknowledging the importance of safety, increasing intervention during labour for obese women may further increase the risk of complications, with detrimental effects. Addressing intrapartum management of obese women through non-medicalised interventions is of paramount importance in order to promote normality, maximise the opportunity for normal birth and reduce the associated morbidities.

Contents

Abstract.....	3
Summary of figures.....	11
Summary of tables.....	12
Summary of appendices.....	13
Acknowledgements.....	15
Declaration.....	17
PhD related publications and presentations 2009–2017.....	19
Personal Statement.....	21
Chapter 1 – Introduction	
1.1 Focus of thesis.....	25
1.2 Obesity.....	26
1.2.1 Rates of obesity.....	26
1.2.2 Obesity as a public health concern.....	27
1.2.3 Obesity and childbearing.....	27
1.3 Normal birth.....	28
1.3.1 Rates of normal birth.....	29
1.3.2 Obesity and normal birth.....	29
1.3.3 Midwives and normal birth.....	30
1.4 Structure of thesis.....	31
Chapter 2 – Literature review	
2.1 Introduction.....	35
2.2 Maternal obesity and childbearing.....	35
2.2.1 Introduction.....	35
2.3 The effect of obesity on pregnancy outcome.....	36
2.3.1 Maternal obesity and the risk of antenatal complications.....	36
2.3.2 Maternal obesity and the risk of stillbirth and neonatal death.....	40

2.3.3 Maternal obesity and recurrent miscarriage.....	42
2.4 Women’s and health professionals’ experiences of obese pregnancy and birth.....	42
2.4.1 Women’s experiences of being obese during pregnancy	42
2.4.2 Health professionals’ views and experiences of obesity in pregnancy.....	45
2.5 Intrapartum effects of obesity.....	48
2.5.1 Introduction	48
2.5.2 Induction of labour.....	49
2.5.3 Delay in the first stage of labour	50
2.5.4 Caesarean section	51
2.5.5 Shoulder dystocia.....	52
2.6 Conclusion.....	53
2.7 Aim of thesis.....	54

Chapter 3 – Methodology

3.1 Introduction.....	59
3.2 Methodology.....	60
3.3 Positivism	61
3.4 Interpretivism.....	62
3.5 Introducing pragmatism	63
3.6 The Medical Research Council framework for developing and evaluating complex interventions.....	64
3.7 Using the MRC framework.....	65
3.8 Methods	66
3.9 Approach to data analysis	67
3.9.1 Framework analysis	68
3.10 The intervention.....	70
3.11 Credibility and trustworthiness	71
3.12 Reflexivity	72
3.12.1 Personal reflexivity	73
3.13 Overarching ethical considerations.....	74
3.14 Conclusion.....	75

Chapter 4 – Study 1: A survey of intrapartum practice for obese women in the UK

4.1 Introduction.....	79
4.2 Aims	79
4.3 Method	80
4.3.1 Study design	80
4.3.2 Setting.....	80
4.3.3 Sample.....	81
4.3.4 The survey	82
4.3.5 Data analysis	82
4.4 Ethical considerations.....	83
4.5 Findings.....	83
4.6 Discussion	86
4.7 Strengths and limitations	88
4.8 Conclusion.....	89

Chapter 5 – Study 2: Health professionals’ experiences of providing care to obese women during labour

5.1 Introduction.....	93
5.2 Aim	93
5.3 Method	94
5.3.1 Study design	94
5.3.2 Setting.....	95
5.3.3 Sample.....	95
5.3.4 Plan of investigation	96
5.3.5 Data collection and analysis	96
5.4 Ethical considerations.....	97
5.5 Findings.....	98
5.5.1 Medicalisation of ‘obese’ birth	103
5.5.1.1 Place of birth	103
5.5.1.2 Negative attitudes of staff	103
5.5.1.3 Challenges monitoring the fetal heart	104
5.5.1.4 Women’s reluctance to mobilise	104
5.5.1.5 Discouragement of waterbirth	105
5.5.2 The promotion of normal ‘obese’ birth	106
5.5.2.1 Antenatal education	106
5.5.2.2 Promotion of normality.....	106
5.5.2.3 Promotion of mobility	106

5.5.3 Complexities and contradictions in health professionals' attitudes and behaviours	107
5.5.3.1 The use of a fetal scalp electrode	107
5.5.3.2 Risk of caesarean section.....	108
5.5.3.3 BMI influencing clinical management.....	109
5.5.3.4 Classification as 'high-risk'	109
5.6 Discussion	110
5.7 Strengths and limitations	114
5.8 Conclusion.....	114

Chapter 6 – Study 3: Obese women's experiences of childbirth

6.1 Introduction.....	119
6.2 Aim	119
6.3 Method	119
6.3.1 Study design	119
6.3.2 Setting.....	120
6.3.3 Sample.....	120
6.3.4 Plan of investigation	121
6.3.5 Data collection	121
6.3.6 Data analysis	122
6.4 Ethical considerations.....	122
6.5 Findings.....	124
6.5.1 Embodiment of obesity.....	129
6.5.1.1 Acute awareness of obesity and the associated risks	129
6.5.1.2 Fluidity of weight and efforts to manage it.....	129
6.5.1.3 Constant battle with weight management	130
6.5.2 Being pregnant and overweight.....	130
6.5.2.1 Thirst for knowledge during pregnancy	130
6.5.2.2 Intrinsic fear for safety and well-being during pregnancy .	132
6.5.2.3 Catalyst for realisation of consequences of being obese .	132
6.5.3 Resource intensive maternity care	133
6.5.3.1 Midwifery support during pregnancy	133
6.5.3.2 Provision of tailored maternity care.....	134
6.5.3.3 Antenatal education	135
6.5.3.4 Caesarean section.....	137

6.5.3.5 Desire for and experience of normal birth	137
6.5.4 Window of opportunity for short-term and potential longer term change.....	139
6.6 Discussion	140
6.6.1 Women’s awareness of obesity.....	140
6.6.2 The desire for information and knowledge.....	141
6.6.3 The notion of segregation.....	141
6.6.4 The disconnect between antenatal preparation and the care received during labour and birth	142
6.6.5 Women’s desire for normal birth.....	143
6.6.6 The window of opportunity for short-term and potential longer term change.....	143
6.7 Strengths and limitations	144
6.8 Conclusion.....	145

Chapter 7 – Intervention development

7.1 Introduction.....	149
7.2 Intervention development	149
7.3 Workshop design and rationale	151
7.4 Method	151
7.4.1 Sample and recruitment	151
7.4.2 Setting.....	152
7.4.3 Structure of the day.....	152
7.5 Findings.....	155
7.5.1 Key discussion at workshop	155
7.5.1.1 Antenatal information.....	155
7.5.1.2 Conflicting advice	155
7.5.1.3 Staff fear.....	156
7.5.1.4 Negative stereotypes of obesity on delivery suite	156
7.5.2 Suggestions for potential intervention package	157
7.5.3 Intervention component consensus decision.....	160
7.6 Benefits and limitations of the selected intervention development approach.	165
7.7 Conclusion.....	166

Chapter 8 – Final discussion and conclusion

8.1 Introduction.....	169
8.2 Aim and objectives of the research.....	169
8.3 Originality of thesis	169
8.4 Key findings.....	170
8.5 Strengths and limitations of the research.....	174
8.6 Final discussion.....	175
8.7 Implications of the research for clinical practice and further research	178
8.8 Final conclusion.....	179
References	183
Appendices	201

Summary of figures

Figure 1 – Key elements of the development and evaluation process	64
Figure 2 – Conceptual framework (Study 2)	100
Figure 3 – Conceptual framework (Study 3)	125

Summary of tables

Table 1 – Stages of intervention development	66
Table 2 – Hospitals included in the survey	84
Table 3 – Participant profile (Study 2)	98
Table 4 – Thematic framework (Study 2).....	101
Table 5 – Participant profile (Study 3)	124
Table 6 – Thematic framework (Study 3).....	126
Table 7 – Overview of intervention workshop.....	154
Table 8 – Potential intervention components.....	159

Summary of appendices

Appendix 1 – Study 1 protocol	203
Appendix 2 – Study 1 proforma	207
Appendix 3 – Study 2 focus group question guide.....	209
Appendix 4 – Study 2 interview schedule	211
Appendix 5 – Covering letter for focus groups.....	213
Appendix 6 – Study 2 focus groups information sheet.....	215
Appendix 7 – Covering letter for interviews	219
Appendix 8 – Study 2 interviews information sheet	221
Appendix 9 – Study 2 protocol	225
Appendix 10 – Study 2 ethical approval letter	235
Appendix 11 – Study 3 protocol	237
Appendix 12 – Study 3 information sheet.....	247
Appendix 13 – Study 3 interview schedule	251
Appendix 14 – Study 3 ethical approval letter	253
Appendix 15 – Intervention workshop summary	257
Appendix 16 – Kerrigan et al 2015 published paper	263

Acknowledgements

Firstly, I would like to express my sincere thanks to my academic supervisory team Professor Helen Cheyne, Dr Edward Duncan and Dr Carol Kingdon for their support and expert guidance throughout this PhD and to Emeritus Professor Kate Niven for her supervision during the early stages of this work. Special thanks to Helen and Kate for the funding provided to enable me to undertake my PhD; I am extremely grateful for the opportunity.

I would like to thank Gillian Smith (Former Director RCM Scotland) for her support and the funding provided that enabled me to present my work both nationally and internationally, during the course of my PhD.

Thanks also go to my friends at NMAHP Research Unit who have supported me through my PhD journey, offering advice and support in various forms. Particular thanks go to Mary Ross-Davie and David Fitzpatrick. I am also grateful for the study time granted throughout the course of my PhD by Heads of Midwifery, Debbie Edwards and Cathy Atherton.

I would like to acknowledge all the midwives, obstetricians, anaesthetists and women who gave up their time to participate in my research.

Finally, thanks must also go to Stephanie Armstrong for proofreading the final thesis and my mum Linda, John Baxter and Grace Edwards for their unwavering support and constant encouragement over the last few years, without which, I could not have completed this PhD.

Declaration

I hereby declare that this thesis reports the results of my own research and I am the author of this thesis, except where otherwise stated.

Signature:

Date:

PhD related publications and presentations 2009-2017

Papers:

Kerrigan, A. M., Kingdon, C. (2010) Maternal obesity and outcomes of pregnancy: A retrospective study. *Midwifery* 26 138-146.

Kerrigan, A., Kingdon, C., Cheyne H. (2015) Obesity and normal birth: A qualitative study of clinician's management of obese pregnant women during labour *BMC Pregnancy & Childbirth* 15: 256.

Book chapter:

Kerrigan, A. (2017) 'Maternal Obesity' In Wightman, H., Jackson, K. (Eds) *Normalising Challenging or Complex Childbirth* London: Open University Press.

Oral presentations:

Maternal Obesity in Pregnancy

Invited speaker. Public Health, Turning Rhetoric into Action. University of Worcester. July 2010.

Maternal Obesity and Pregnancy

Invited speaker. Working Towards Millenium Goal 5. Corniche Hospital, Abu Dhabi. October 2011.

Maternal Obesity and Normal Birth

Paper presented at 'Normal Labour and Birth' 8th Annual Conference. Grange-over-Sands. June 2013.

Maternal Obesity and Normal Birth: Women's Views

Paper presented at ICM 30th Triennial Congress. Midwives: Improving Women's Health Globally. Prague. June 2014.

Maternal Obesity and Normal Birth

Invited speaker. 2nd Abu Dhabi Obstetrics, Gynaecology and Midwifery Congress 2014. Abu Dhabi. September 2014.

Personal statement

My career in Midwifery began in 2002 when I qualified with a First Class Honours degree. Over the last 15 years, I have worked in four different maternity units. Two have been large, tertiary units, with annual birth rates of greater than 7000. More recently, I have worked in smaller units within district general hospitals, with annual birth rates between 2500 and 3500 births per year.

The majority of my clinical experience has been in intrapartum care, working on delivery suites and an alongside midwifery-led unit. I have worked in intrapartum care as both a band 6 midwife and a band 7 delivery suite co-ordinator. From 2005–2014 I also held a variety of secondments as a research Midwife, where I gained extensive research experience working on both large, national quantitative trials and qualitative studies, based locally. My current post is Consultant Midwife with a split remit of both normality and public health.

My passion for normal birth was born from my experience working in intrapartum care for the past 15 years, caring for women during labour and assisting at their birth. I have assisted hundreds of women to maximise their opportunity and satisfy their aspirations for normal birth. This includes women birthing on both the midwifery-led unit and the delivery suite.

For five years I had the role of 'Lead midwife for obesity' in a large maternity unit. This role encompassed several aspects, including writing clinical guidelines for the care of obese pregnant women, delivering training to midwifery colleagues about obesity in pregnancy as part of the mandatory training programme and running the specialist antenatal clinic for obese women with the lead consultant obstetrician on a weekly basis. A large of part of my role was public health education for women with raised BMI above 35, who attended the clinic, focussing on healthy diets and physical activity.

This experience fuelled my interest in obesity in relation to pregnancy and for my dissertation as part of my Masters degree I conducted a research study in order to identify the effect obesity has on pregnancy outcomes. This work identified the effect obesity has on pregnancy outcomes, including several risks during the antenatal period and several more during the intrapartum and immediate postpartum periods. I graduated with an MA in Midwifery Studies in 2008.

The research I conducted that demonstrated the increased risks associated with obesity during the intrapartum period, fuelled my passion to educate obese women about these risks

when they attended the antenatal clinic in order to enable them to consider their wishes for labour and birth and maximise their opportunity to achieve a normal birth. The findings from my research, together with the clinical experience as lead midwife for obesity, and my personal passion to assist obese women to achieve normal birth born from my significant and varied experience working in intrapartum care, led to the development of the work presented in this thesis.

Chapter 1

Introduction

Chapter 1 – Introduction

1.1 Focus of thesis

The aim of this thesis is to describe the development of a midwifery intervention to promote normal birth amongst obese women. There is increasing evidence of the detrimental effects that maternal obesity has on pregnancy outcomes and in particular on intrapartum outcomes. Obese women are more likely than non-obese women to experience delay during the first stage of labour (Zhang et al 2007) and are significantly more likely to have a caesarean section during labour (Chu et al 2007, Kerrigan & Kingdon 2010).

Normal birth is defined as birth without induction of labour, regional or general anaesthetic, the use of instruments, episiotomy or caesarean section (Maternity care working party 2007) and conveys significant benefits for both mothers and babies and a reduction in both maternal and neonatal morbidity and mortality (Downe & Walsh 2007). The rate of obesity amongst pregnant women is increasing, with approximately one-fifth of all pregnant women in the UK currently being classified as obese (Centre for Maternal and Child Enquiry (CMACE) & Royal College of Obstetricians and Gynaecologists (RCOG) 2010). A considerable amount of literature has been published on maternal obesity during pregnancy in recent years, including research on the outcomes of pregnancy for obese women, which will be presented in detail in Chapter 2, and national publications specifically focussed on maternal obesity that provide advice on the clinical management of obesity during pregnancy (CMACE & RCOG 2010, National Institute for Health and Clinical excellence (NICE) 2010). These documents emphasise the need for medical care during pregnancy for obese women, with the primary aim to promote safety because of the increased risk of adverse outcomes, such as maternal hypertension, gestational diabetes, caesarean section and stillbirth (Kumari 2001, Cedergren 2004, Nohr et al 2005, Kerrigan & Kingdon 2010, Scott-Pillai et al 2013). Whilst acknowledging that safety is of paramount importance for all mothers and babies, increasing medical intervention may further increase the risk of complications, which could in turn result in negative outcomes. There is currently a lack of research on how to minimise the risks associated with obesity through non-medicalised interventions and of ways to support obese women to maximise their opportunity for normal birth. This thesis aims to provide some evidence to address this gap and develop an evidence-based midwifery intervention to promote normal birth amongst obese women.

A literature review on interventions during pregnancy and birth for obese women identified the majority of interventions currently focus on the antenatal period and include interventions for weight management during pregnancy, including physical activity programmes and

dietary intake interventions (Hui et al 2006, Claesson et al 2008, Dodd et al 2010, McGiveron et al 2014) with a dearth of literature on intrapartum interventions or midwifery management of obese women during labour. This, therefore, was the gap that I identified on which to base this work.

1.2 Obesity

Obesity means different things in different contexts and cultures. In western cultures, obesity is generally viewed medically, as a disease, and in a social context, as an increasing social trend. Obesity is defined as abnormal or excessive fat accumulation that presents a threat to health and well-being (World Health Organisation (WHO) 2016). Body mass index (BMI) is used to measure obesity and this is defined as the ratio of bodyweight in kilograms, divided by the square of height in metres (WHO 2016). BMI is expressed as a number. A desirable BMI is between 19 and 24.9 and is considered a healthy weight. A BMI between 25 and 29.9 is considered overweight and an obese BMI is above 30 (NICE 2006). Body mass indices above 30 have been further classified, with BMI 30–34.9 defined as obesity level 1, 35–39.9, obesity level 2 and a BMI of 40 or more, being obesity level 3 (NICE 2006).

However, obesity is not only a medical condition. It can be viewed as a growing social trend. Historically, obesity has been viewed as desirable and an indication of wealth. In the more recent past, 'fat' people were regarded as deviant and being thin was a valued condition that was aspired to (Sobal 1995). Sobal (1995) suggests that attitudes of non-obese children and adults towards those who were obese used to be negative and sometimes even discriminatory. Attitudes around being 'fat' have changed in recent years and it has become more socially acceptable. This idea, however, is refuted by Brown (2006) who reported that some nurses' attitudes towards adult patients who were obese remained negative and that obesity was still viewed as socially unattractive, with blame being placed on the individual for their body size.

1.2.1 Rates of obesity

Although obesity means different things in different contexts, it is emerging as one of the greatest health problems in the developed world. Medically, it is viewed as a non-communicable disease that has reached epidemic proportions. The presence of obesity is increasing globally (WHO 2016) and the highest rates are currently in the Pacific Islands (45–75%) and Kuwait (42%) (Central Intelligence Agency 2015). In the United Kingdom (UK) approximately 27% of adults are currently obese (Central Intelligence Agency 2015) with its prevalence having trebled in the UK since the 1980s (Department of Health 2004). Currently,

25% of women in England have a BMI of 30 or greater (Public Health England 2017) with the prevalence increasing in both the general and pregnant population.

1.2.2 Obesity as a public health concern

Obesity is a major public health issue in the developed world and the Chief Medical Officer (Department of Health 2003 p.36) highlighted obesity as 'a health time bomb' and recognised it as a growing challenge for the government in the UK. It is estimated that obesity is responsible for approximately 30,000 premature deaths each year in the UK. The average life expectancy of an obese individual is shortened by 9 years and obesity was estimated to be the cause of approximately 18 million sick days each year in 2001 (National Audit Office 2001). Obesity is considered to be a major public health concern because of its direct contribution to chronic diseases, such as diabetes mellitus, hypertension, high blood cholesterol, coronary heart disease, strokes and cancer (Sheiner et al 2004), with the risk of diabetes mellitus eighty times higher for an obese person than someone of a healthy weight and the risk of cancer five times higher.

1.2.3 Obesity and childbearing

In England, almost one-fifth of women of childbearing age are obese (Health and social care information centre 2014). A national audit of obesity during pregnancy was conducted across the UK by the Centre for Maternal and Child Enquiries (CMACE) between 1 March and 30 April 2009 and found that the UK prevalence of women with a known BMI of $\geq 35\text{kg/m}^2$ at any point in pregnancy was 4.99%. This translates into approximately 38,500 pregnant women each year in the UK who are considered to be morbidly obese (CMACE 2010).

The Confidential Enquiry into Maternal and Child Health (CEMACH 2004), which considered all deaths of women during pregnancy and up to a year following birth, highlighted maternal obesity for the first time and suggested it was associated with a range of risks in maternity care. In subsequent years, the report has placed great emphasis on the effects that maternal obesity can have on pregnancy and childbearing. More than half of all women whose deaths were included in the 2007 report were either overweight or obese, and fifteen percent of the maternal deaths were in women who were morbidly obese, with a BMI of 35 or above (Lewis 2007). Obesity has remained a significant contributor to maternal death, with the prevalence increasing in both the general population and the pregnant population. Women with a high body mass index remain over-represented in maternal deaths (CMACE 2011).

Obese pregnant women have a higher risk of a number of pregnancy complications, including miscarriage, pre-eclampsia, gestational diabetes, fetal macrosomia and stillbirth

(Kumari 2001, Sebire et al 2001, Stephansson et al 2001, Cedergren 2004, Kristensen et al 2005, Nohr et al 2005, Robinson et al 2005, Heude et al 2011, Scott-Pillai et al 2013). These will be presented in detail in the literature review (see Chapter 2). Maternal obesity can also have a direct influence on mode of birth and postnatal morbidity. The rate of induction of labour is reported to be doubled for obese pregnant women, compared to non-obese women (Kiran et al 2005, Denison et al 2008). Delay in the first stage of labour is significantly more common (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010, Bogaerts et al 2013), with the risk ranging from 1.5 times to 3 times more likely. Obese women also have a significantly increased risk of caesarean section of between two-fold to more than three-fold (Crane et al 1997, Kaiser & Kirby 2001, Sheiner et al 2004, Dempsey et al 2005, Kiran et al 2005, Chu et al 2007, Kerrigan & Kingdon 2010, Heude et al 2011) with the most common reason for caesarean section being delay during the first stage of labour, even after augmentation with oxytocin (Vahratian et al, 2004, Zhang et al 2007, Kerrigan & Kingdon 2010). Caesarean section also carries additional risks for obese women and has a considerable impact on postnatal morbidity, with maternal obesity being an independent risk factor for post-caesarean infections (Myles et al 2002).

Because of the increased risk of complications during labour, obese women are more likely to receive medical interventions during the intrapartum period, including augmentation with oxytocin, caesarean birth and general anaesthesia (Knight et al 2010). Whilst acknowledging that safety is of paramount importance, increasing medical intervention during labour for these women may further increase the risk of complications, which could itself have detrimental effects. For example, the use of continuous electronic fetal monitoring has shown an association with an increased rate of both caesarean birth and operative vaginal birth (Thacker et al 2006) and caesarean section subsequently carries an increased risk of postpartum haemorrhage (Sebire et al 2001) and post-operative infection (Myles et al 2002).

The current and steadily increasing rates of obesity amongst women of childbearing age across the UK, means that there are increasing numbers of pregnant women who are exposed to the associated risks of obesity in pregnancy, the increased need for medical intervention during childbirth and the risk of operative birth.

1.3 Normal birth

Normal birth is defined as birth without induction of labour, regional or general anaesthetic, the use of instruments, episiotomy or caesarean section (Maternity care working party 2007). The World Health Organisation defined it as spontaneous in onset, low risk at the start and remaining so throughout labour and birth, where the baby is born spontaneously in a vertex

position between 37 and 42 weeks of pregnancy and following which, both the mother and baby are in good condition (WHO 1999). The Royal College of Midwives (RCM) description of normal birth, as described by Bates (1997) includes labour commencing spontaneously, with spontaneous rupture of the membranes, where mobility is encouraged, food and fluids are permitted, the fetal heart is monitored intermittently and the birth takes place in a calm, gentle and non-threatening environment. In contrast, spontaneous vaginal birth defined by the Society of Obstetricians and Gynaecologists of Canada is 'not assisted by forceps, vacuum or caesarean section and not a malpresentation' (SOGC 2008, p.1163). The definition of what constitutes a normal birth also varies between each country of the UK. In England and Wales the definition of normal birth is birth without induction, caesarean section, instrumental birth or episiotomy, but does include epidurals and other anaesthetic. In Scotland normal birth is defined as a live birth during which the mother was not induced, was given no general or regional anaesthetic and gave birth without having a caesarean section or the use of instruments and without having an episiotomy (RCM 2014). The achievement of normal birth has several advantages for both mother and baby. Normal birth, when compared to caesarean section is associated with significantly lower rates of maternal morbidity and mortality (NICE 2011, Wen et al 2004) and lower neonatal morbidity and mortality rates (MacDorman et al 2008), and also increases maternal and neonatal health and well-being in the postnatal period (Downe & Walsh 2007).

1.3.1 Rates of normal birth

Rates of normal birth vary significantly both globally and nationally. Normal birth rates across the UK also vary from country to country, with the highest rates currently in Wales, with 48% of women achieving a normal birth. Forty-five percent of women achieve a normal birth in England and both Scotland and Northern Ireland have normal birth rates of 35% (RCM 2014). The maternity statistics for England 2014/2015 show an increase in the rates of induction of labour, instrumental birth and caesarean section over the last three years and decreasing rates of spontaneous vaginal birth, which is currently lower than at any other time (Birth Choice UK 2015).

1.3.2 Obesity and normal birth

It could be argued that a contributory factor in the decline in normal birth rates in recent years may be the increasing rates of maternal obesity. As described earlier and as will be presented in greater detail in the following chapter, obese women are at a significantly higher risk of caesarean section with caesarean section rates amongst obese women 2–3 times higher than for women who are not obese. The increasing obesity rates amongst

childbearing women mean that increasing numbers of women face increased risks of intrapartum complications and will be less likely to achieve a normal birth.

When normal birth, as described by the Royal College of Midwives above (Bates 1997), is considered in relation to obesity, it is evident why the numbers of obese women achieving normal birth is significantly lower than non-obese women. The increased rates of induction of labour amongst obese women (Arrowsmith et al 2011), the use of continuous electronic fetal monitoring and obese women birthing in an obstetric environment, as recommended by CMAACE & RCOG (2010), inevitably decreases the numbers of obese women for whom a 'normal birth' is achievable. These practices not only decrease the number of obese women achieving normal birth by definition (Bates 1997), but also contribute to the declining numbers of obese women achieving normal birth because of the potential cascade of medical intervention potentially triggered by interventions like continuous electronic fetal monitoring. In conjunction, the potential for medical intervention because women are in an obstetric birth setting is also increased. Some of these interventions may be necessary and justifiable, but arguably, most may not.

As stated earlier, normal birth has several advantages for both mother and baby, when compared to operative birth, as it can significantly reduce both maternal and neonatal morbidity and mortality, and increase health and well-being in the postnatal period (NICE 2011, MacDorman et al 2008, Downe & Walsh 2007). These advantages are arguably more significant for obese women because operative vaginal birth and caesarean section carry an increased risk of postpartum haemorrhage (Sebire et al 2001) and post-operative infection (Myles et al 2002) for obese women, which could adversely impact on postnatal wellbeing.

1.3.3 Midwives and normal birth

Midwives are highly-skilled, qualified professionals who care for women during pregnancy, childbirth and after the birth (NHS Careers 2010). Typically a midwife works in partnership with women and their families to give support, care and advice during pregnancy, labour and the postnatal period (Nursing and Midwifery Council (NMC) 2009). The achievement of normal birth is the optimum outcome for the majority of women and babies and the promotion of normal birth should be seen as an integral part of the midwife's role in intrapartum care (Crabtree 2004). Downe and Walsh (2007) suggest that if current constructions of birth are reoriented towards one founded in unique normality, the public health consequences could be far reaching. The promotion of normal birth outcomes and the reduction in labour and birth associated morbidity is the main aim of this thesis, with a clear focus on the obese pregnant woman.

1.4. Structure of thesis

The aim of this research was to develop a midwifery intervention to promote normal birth amongst obese women. The research was undertaken as three sequential studies following the framework for developing and testing complex interventions in health care, developed by the Medical Research Council (MRC) (MRC 2006). Complex interventions are defined as interventions with several interacting components that are widely used in the health service and public health practice and have important health consequences (MRC 2006). The process for the development, implementation and evaluation of an intervention has five stages: developing the intervention, piloting, evaluating, implementing and reporting it (MRC 2006). This research focussed on the initial stage of the MRC framework. This development stage involved identifying appropriate theory and the current evidence base to inform the development of the intervention, then integrating the findings to develop and model the intervention. This process is described in detail in Chapter 3 of this thesis.

The structure of this thesis is as follows. In Chapter 2, I review the literature relating to obesity and childbearing and also more specifically in relation to obesity and the direct impact it has on intrapartum care. The literature highlights the detrimental effect maternal obesity has on outcomes of intrapartum care, including the increase in the incidence of delay during the first stage of labour and the increased need for caesarean section. The review of this literature will provide the justification for my work. In Chapter 3 I describe the methodology used. The MRC framework for the development and evaluation of complex interventions forms the basis of this research, which was undertaken in three parts. The methods and rationale for each part is presented separately. Chapters 4, 5, and 6 will then present the methods and findings from the three individual studies, including the findings from a national survey of maternity units, data from health professionals' experiences of providing intrapartum care to obese women and finally, obese women's experiences of labour and birth. Chapter 7 then reports the development of the intervention, in which the findings of the literature review and the findings of the three studies are all integrated. In Chapter 8, the final chapter, I draw together the key findings from all three parts of this research and discuss what this study adds to the evolving body of knowledge in this area, and how the intervention can influence midwifery management of the intrapartum care of obese women in the future and also consider the practice implications for the future.

Chapter 2

Literature review

Chapter 2 – Literature review

2.1 Introduction

The previous chapter described obesity as a major public health issue. It defined obesity in relation to BMI, described the current levels of obesity in the UK and examined the Government position on the subject of obesity. With levels of obesity amongst females rising, and more specifically, obesity among fertile women of childbearing age dramatically increasing, there are serious implications for the way obese women are cared for during pregnancy. In view of this, a literature search was undertaken, which aimed to identify the current literature in relation to maternal obesity and childbearing, including the effect of obesity on antenatal complications, intrapartum outcomes and women's and health professionals' experiences of obese pregnancy and birth. This literature will now be presented and discussed.

2.2 Maternal obesity and childbearing

2.2.1 Introduction

Obesity has been widely researched, with numerous published works and several recent Government documents describing and discussing obesity as a public health issue. This literature demonstrates that obese pregnant women have a higher risk of a number of pregnancy complications, including miscarriage, pre-eclampsia, gestational diabetes, fetal macrosomia and stillbirth (Sebire et al 2001, Cedergren 2004, Kristensen et al 2005). A body of literature also specifically addresses the complications that can occur during the intrapartum period and how maternal obesity has a direct influence on mode of birth and postnatal morbidity (Myles et al 2002, Chu et al 2007, Kerrigan & Kingdon 2010).

The literature review for this study, first undertaken in 2010, aimed to ascertain the effects of maternal obesity on pregnancy outcomes and the effect it can have on labour and birth. Five health care databases, Cinahl, Embase, Medline, PsycINFO and British Nursing Index were searched from 1995 to 2010. The search terms used were, 'obes*' AND 'pregnan*' AND 'outcome' and were specified to be present in the article title. All material had to be written in English. A process of back chaining was employed when relevant research studies were referenced in other texts. From the initial review of the papers that were identified, it became clear that there was a large amount of quantitative studies available, detailing the detrimental effect that maternal obesity can have on pregnancy and the influence it has on adverse outcomes during both the antenatal and intrapartum periods. Qualitative studies were also identified. The qualitative studies focussed on obese pregnant women's experiences of their

care during pregnancy, or health professionals' experiences of caring for obese women during pregnancy and birth.

In 2016, a further literature search was undertaken using the same search terms in order to identify new literature since the previous search in 2010. For the purpose of this chapter, the literature obtained from both literature searches has been combined and categorised into three sections: the effect of maternal obesity on pregnancy outcomes; qualitative studies focussing on obese women's or health professionals' experiences of obese pregnancy; and the intrapartum effects of maternal obesity. Each will be presented in turn, starting with the effect of maternal obesity on pregnancy outcomes.

2.3 The effect of obesity on pregnancy outcome

2.3.1 Maternal obesity and the risk of antenatal complications

Twelve papers focussed on the risk of complications during pregnancy for obese women. The most common complications identified included obese women being at an increased risk of pre-eclampsia, gestational diabetes and fetal macrosomia. (Bianco et al 1998, Roopnarinesingh et al 1999, Kumari 2001, Baeten et al 2001, Sebire et al 2001, Cedergren 2004, Robinson et al 2005, Heude et al 2011, Scott-Pillai et al 2013, Daemers et al 2014, Hancke et al 2015, Verini et al 2016).

Bianco et al (1998) compared the occurrence of pregnancy complications in 613 morbidly obese women, with a BMI over 35 and 11,313 women who were not obese, who had a BMI less than 27. Logistic regression showed that morbidly obese women were significantly more likely to experience pregnancy related complications, including hypertension and diabetes and were more likely to give birth to a large for gestational age baby. A number of potential confounding factors were controlled for during data analysis, including, pre-existing medical conditions, race and parity. Bianco et al. did not examine any data relating to women with a BMI between 27 and 35, therefore it was not possible to determine at what level of obesity pregnancy complications are effected.

Roopnarinesingh et al (1999) used a prospective case control method to examine a number of obstetric hazards of maternal obesity. One hundred and thirty two obese women with a BMI of 30 or above and one hundred and thirty six women, with a BMI between 20 and 29 were recruited to a control group, matched for age, parity, ethnicity and socioeconomic status. All women underwent an antenatal glucose tolerance test in the third trimester and all had blood pressure measured manually throughout pregnancy. The incidence of pregnancy-induced hypertension was significantly higher amongst obese women, but interestingly there

was no statistically significant difference in the incidence of gestational diabetes between the groups. This is contrary to a number of other studies where significantly higher rates of gestational diabetes have been reported (Sebire et al 2001, Kumari 2001, Baeten et al 2001). The study also demonstrated that obese women gave birth to significantly more macrosomic infants. The authors advocate accurate estimation of fetal size in late pregnancy for all obese women to identify macrosomic babies (defined as babies with a birth weight above 4500grammes), enabling a decision to be made on appropriate mode of birth. This recommendation is based on the perceived potential risks of vaginal birth of macrosomic babies, including the increased risk of shoulder dystocia, but no acknowledgment is made of the risks involved with operative birth for obese women.

Kumari (2001) examined adverse pregnancy outcomes of morbidly obese women in Abu Dhabi, United Arab Emirates, where obesity rates have risen dramatically over the last three decades. The study identified one hundred and eighty singleton pregnancies of women who had a BMI of 40 or more in the first trimester and matched them with a control group of women with a normal BMI. Women in the two groups were matched for age and parity. Clear exclusions were set, including the presence of pre-pregnancy hypertension and diabetes mellitus. Analysis of the data identified significantly higher levels of gestational diabetes and pregnancy-induced hypertension in women with a BMI over 40. Significantly higher rates of macrosomia were also seen in this group, which could be explained by the higher rates of gestational diabetes. The control group in this case-control study were well matched for age and parity, with the variation being the BMI at booking. The data for the control group was collected by a senior member of staff on labour ward who was unaware of the emerging data for the group of morbidly obese women. This assisted in minimising any bias in the data. The author fails to acknowledge any limitations with the study, but clear recommendations are made for the care of morbidly obese women, including the provision of prenatal counselling regarding weight reduction and healthy food habits, and support to encourage women to achieve a normal BMI prior to the next pregnancy.

Similar to the above findings, Baeten et al (2001) examined a total of 159,072 singleton births to nulliparous women in the United States of America between 1992 and 1996 and showed significantly higher rates of gestational diabetes, pre-eclampsia, eclampsia, premature labour and fetal macrosomia. The large sample size was a strength of this paper, but the authors also acknowledge that the use of self-reported weight was a potential limitation, as weights tend to be under-estimated and the degree of underestimation may be greater for women of higher weight and BMI.

In their UK-based study, Sebire et al (2001) examined maternal and fetal risks of adverse pregnancy outcomes, in relation to pre-pregnancy maternal BMI. The authors used retrospective data from a validated maternity database system, including all but one maternity unit in a specified area of London. Data included 287,213 completed pregnancies over eight years. Data was compared in three groups: normal weight, moderately obese and very obese, based on BMI calculated at pregnancy booking. The study found that significantly higher rates of gestational diabetes, pre-eclampsia, induction of labour and birth weight was positively associated with increasing maternal BMI, with significant increases evident in moderately obese (BMI 25–30) and severely obese (BMI >30) women. The incidence of large for gestational age babies was almost twice as high for obese women, compared to women of normal weight. Sebire et al (2001) also found that the frequency of both emergency and elective caesarean section was double for very obese women. Intrapartum outcomes will be presented later in this chapter.

Cedergren (2004) used data collected from the Swedish Medical Birth Register and examined pregnancy complications and birth and paediatric outcomes. Cedergren compared morbidly obese, with a BMI over 35, with normal weight women and found a five-fold increase in pre-eclampsia and a three-fold increase in the risk of fetal macrosomia and caesarean births. Cedergren compared data from women whose BMI was greater than 35 at the time of booking, with women whose BMI was normal, below 26. Similar to Bianco et al (1998), this allowed conclusions to be drawn on the risks associated with morbid obesity, as it examined both ends of the spectrum; however, it does not provide any information as to when the risks associated with obesity start to increase as no data was included on BMI between 26 and 35.

Robinson et al (2005) examined several pregnancy outcomes of obese and non-obese women. Data was collected over a fifteen-year period in Canada from a population-based, clinical database and included 142,404 singleton births. During that time the maternal obesity rates of women booking for maternity care increased from 3.2% to 10.2%. General maternal outcomes of pregnancy were statistically analysed and showed obese and severely obese women were at an increased risk of a number of complications of pregnancy, including pregnancy-induced hypertension and antepartum thromboembolism, which increased with increasing maternal weight. Interestingly, contrary to the majority of literature on obesity, Robinson et al (2005) did not classify women in the study using BMI. Data on maternal height was not recorded on the database therefore BMI was not calculable. The classifications were therefore based on maternal weight alone, classifying a weight of 90kg or greater as obese. This limitation is acknowledged within the work and it is suggested that

by using 90kg as a limit for obesity would have minimised the amount of misclassification of obesity.

Heude et al (2011) examined the relationship between pre-pregnancy BMI and maternal weight gain during pregnancy and the effect they had on gestational diabetes, hypertension and birth weight. They examined the pre-pregnancy weight and weight following birth of 1884 mothers and after calculating the BMI and net gestational weight gain and adjusting for maternal age, parity and cigarette consumption, demonstrated a significantly increased risk of gestational diabetes with increasing pre-pregnancy BMI. The risk of pregnancy-induced hypertension increased significantly with increasing gestational weight gain. The risk of having a large for gestational age infant also increased with increasing pre-pregnancy BMI. However, when women with gestational hypertension or diabetes were excluded, women with increased gestational weight gain were still more likely to give birth to a large for gestational age infant. They concluded that high gestational weight gain should not be neglected with regards to risk of large for gestational age infants in women with no other risk factors.

A retrospective study by Scott-Pillai et al (2013) aiming to assess the prevalence of overweight and obesity and the impact of BMI on maternal and neonatal outcomes of pregnancy was conducted in a large tertiary referral unit in Northern Ireland. A total of 30,298 singleton pregnancies were included, between 2004 and 2011. Analysis showed that overweight women and women in BMI class 1 (BMI 30–34.9kg/m²) had a significantly higher risk of hypertensive disorders of pregnancy, gestational diabetes, fetal macrosomia and several intrapartum complications. These risks increased further with increasing BMI, with women in BMI class 3 (BMI >40) at the highest risk.

A Dutch prospective cohort study that examined the impact obesity has on the outcomes of midwife-led pregnancy and birth (Daemers et al 2014) used BMI calculated at the time of booking on 1369 women who were eligible for midwifery-led care (i.e. considered to be healthy women with no additional medical or obstetric risk factors). Compared with normal weight women, women with BMI above 35 had increased rates of referral to obstetric-led care during pregnancy. Obese women were three times more likely to have hypertensive disorders of pregnancy and twice as likely to experience prolonged labour, when compared to women of normal weight. Interestingly, women who were obese and had a midwife-led birth did not experience any increase in adverse outcomes, compared to normal weight women, with the exception of significantly increased rates of babies who were large for gestational age (above 97th centile). This study demonstrates the effectiveness of regular

risk assessment during pregnancy and birth for the safe and appropriate assignment of women to either midwife-led or obstetric-led care.

A recent retrospective study, similar to Sebire et al (2001) and Scott-Pillai et al (2013) used data from 23,729 pregnant women in large maternity unit in Germany (Hancke et al 2015). Similar to Sebire et al (2001) and Scott-Pillai et al (2013), Hancke et al (2015) used data from singleton pregnancies and examined both maternal and neonatal outcomes. Contrary to the other studies, however, Hancke et al (2015) examined only the pregnancies of primigravid women and analysed them in two groups: non-obese (BMI <30) and obese (BMI \geq 30). Some further sub-group analysis was performed according to the three classes of obesity. The findings reflected those of Sebire et al (2001) and Scott-Pillai et al (2013) and demonstrated antenatal complications to be more common amongst obese women, with significantly higher rates of both gestational diabetes and pre-eclampsia amongst obese women, with sub-group analysis demonstrating rates of gestational diabetes increasing with BMI. However, sub-group analysis showed the highest rates of pre-eclampsia were amongst those in obesity level 1 (BMI 30–34.9) and level 2 (BMI 35–39.9). Intrapartum outcomes showed significantly higher rates of emergency caesarean section for obese women, with the highest rates (3 times higher) for women with BMI >35. The risk of pre-term birth, before twenty-eight weeks gestation, was more than double for obese women, compared to non-obese women, and sub-group analysis showed increasing risk as BMI increased, with women with BMI >35, at a risk level, almost three times as high as women of normal weight.

Verini et al (2016) conducted a cross-sectional study of 258 pregnant women and classified them, according to their pre-pregnancy BMI, as either normal weight, overweight or obese. Women who were obese prior to pregnancy, had higher rates of diabetes, but interestingly, gained the least amount of weight during pregnancy and were more physically active throughout pregnancy. When pregnancy outcomes were examined, obese women had significantly higher rates of hypertensive disorders, hyperglycaemic disturbances and large for gestational age infants, which reflect the findings of the other literature presented above.

2.3.2 Maternal obesity and the risk of stillbirth and neonatal death

The literature identified from the searches showed a strong association between maternal obesity in pregnancy and a significantly higher risk of stillbirth and neonatal death. Five papers were identified that demonstrated a link between maternal obesity and stillbirth or neonatal death.

Two of the papers that reported an increased risk of stillbirth and neonatal death associated with maternal obesity (Kristensen et al 2005, Nohr et al 2005) both demonstrated an increased risk of stillbirth amongst women with a BMI over 30. The risk of stillbirth was not consistent, however, with Kristensen et al (2005) reporting the risk of stillbirth to be almost three times as high amongst obese women, compared to women of normal weight; Nohr et al (2005) found a varying risk of fetal death resulting in stillbirth, depending on gestation, reporting a two-fold increase at 20 weeks gestation and an almost five-fold increase at 40 weeks gestation. When comparing the risk of neonatal death, Kristensen et al (2005) reported the risk to be two and half times higher amongst obese women. Kristensen et al (2005) controlled for conditions that may exacerbate the risk of intra-uterine death, including hypertension and diabetes, and found that the risks of stillbirth did not change. Both papers suggest that the increased risk of stillbirth amongst obese women may be attributable to inadequate placental function.

Both Kristensen et al (2005) and Nohr et al (2005) based the calculation of BMI on self-reported pre-pregnancy weight and height. The accuracy of this information could be questioned, with the prevalence of under-estimation of weight increasing with increasing body weight. The use of self-reported weight is common throughout all the literature.

Stephansson et al (2001) reflects the findings of both Kristensen et al (2005) and Nohr et al (2005), demonstrating a significantly higher risk of intrauterine death for obese women. Stephansson et al (2001) report the risk to be double and suggest, like Nohr et al (2005) that the risk of stillbirth increases as pregnancy progresses, with the highest risk of stillbirth being at term for obese women. This was a large prospective case-control study including 1300 women and potential confounding factors, including smoking, maternal age and socioeconomic status were controlled for during the analysis, enabling confidence that the both the data and the subsequent findings were accurate and representative. However, only nulliparous women with a singleton pregnancy were included, therefore the findings can only be interpreted as representative of that population. Stephansson et al (2001) conclude that maternal overweight and obesity at the beginning of pregnancy significantly increase the risk of antepartum stillbirth, with the highest risk being at term but maternal gestational weight gain was not associated with risk.

Cnattingius et al (1998) used birth records from 167,750 Swedish woman to examine the risk of stillbirth, neonatal death and small for gestational age infants amongst obese pregnant women. They demonstrated that the risk of late fetal death, leading to stillbirth increases with increasing maternal BMI, with the risk nearly three-fold amongst women with a BMI over 30.

Finally, as part of the study undertaken by Cedergren (2004) who compared morbidly obese women, with a BMI over 35 with normal weight women, the risk of antepartum stillbirth was reported to be three-times higher for morbidly obese women. Although they do not suggest a reason as to why this may be the case, they conclude that the risk of stillbirth is positively influenced by the degree of obesity.

2.3.3 Maternal obesity and recurrent miscarriage

In their paper investigating the rates of first trimester miscarriage in obese women, compared to women of normal weight, Lashen et al (2004) defined obese as a BMI of 30 or greater. One thousand six hundred and forty four obese women booking their pregnancy at an NHS trust in the UK were recruited and compared with an age-matched control group of pregnant women (3288) with normal BMI (19–24.9). The incidences of first trimester and recurrent miscarriage were analysed statistically and the findings showed a significantly higher incidence of early, late and recurrent miscarriage in obese women compared to normal weight women.

2.4 Women's and health professionals' experiences of obese pregnancy and birth

At the outset of the present study in 2010, a dearth of qualitative literature was identified, with only three qualitative studies identified that focussed on maternal obesity during pregnancy. The most recent search that was conducted in 2016 identified a further thirteen papers that explored either obese women's or health professionals' experiences of obese pregnancy from a qualitative methodology. This may suggest that in recent years, perhaps in response to the growing knowledge that rates of obesity are increasing and it is becoming a significant issue for the maternity services, it has been acknowledged that exploring the experiences of obese women and health professionals in relation to the care of obese pregnant women is imperative to the development of maternity services

2.4.1 Women's experiences of being obese during pregnancy

Eight papers were identified that explored obese women's experiences during pregnancy (Nyman et al 2008, Keely et al 2011, Smith & Lavender 2011, Hildingsson & Thomas 2012, Lindhart et al 2013, Mulherin et al 2013, Kominiarek et al 2015, Knight-Agarwal et al 2016).

Nyman et al (2008) used a phenomenological approach to describe obese women's experiences of their encounters with midwives and obstetricians during pregnancy in Sweden. Ten women with a BMI >30 were interviewed six weeks after giving birth. The women described an awareness of their body size and a constant feeling of guilt. They also

reported a reluctance to expose their bodies, which was not always recognised by health professionals, with some women reporting feeling that they were treated in an offensive manner by midwives. The authors conclude by recommending individualised care for obese women and an honest and respectful approach to health promotion. It could, however, be argued that these recommendations are not only applicable to the obese population, as individualised care is recommended for every pregnant women and midwives should provide care in a respectful manner, regardless of body size, age or social background.

A study conducted in Scotland (UK) by Keely et al (2011) aimed to explore obese women's perceptions of obesity as a risk factor in pregnancy and their experience of maternity care, using semi-structured interviews. Eight women with a BMI >40 were interviewed during the last six weeks of their pregnancy. Women reported being aware of the risks of obesity during pregnancy, but many only became aware of the risks whilst they were pregnant and had been unaware of these risks prior to becoming pregnant. Interestingly, the majority of the women did not associate some of the problems they experienced during pregnancy with their obesity and related it more to being pregnant than being obese, including mobility problems and fatigue in late pregnancy. Their experience of maternity care was positive overall, with none of the women reporting experiencing any negative attitudes from staff. This is in contrast to the findings of Nyman et al (2008). However, some women reported the subject of their weight not being addressed adequately, with referrals being made without explanation of need, meaning that they had to ask why they were necessary, which then initiated a conversation about obesity and implications for pregnancy.

Smith and Lavender (2011) conducted a meta-synthesis of six electronic databases to ascertain the experiences of maternity care of women who had a BMI ≥ 30 . Six papers were synthesised, five of which were conducted in England and one in Sweden. The authors identified eight themes from the studies, but summarised them into three cluster themes: acceptance and inevitability of weight gain during pregnancy, where women reported feeling much happier about being overweight or obese during pregnancy because they felt it was socially acceptable to look fat during pregnancy; depersonalisation of care as a result of medicalisation, where women reported extra monitoring, particularly in relation to fetal growth because of they were overweight or obese at the start of pregnancy; and healthy lifestyle benefits for self and baby. Women were aware of the benefits of adopting a healthy lifestyle during pregnancy and viewed pregnancy as the ideal time to alter their diet and activity levels, in order to benefit both themselves and their baby. The authors conclude that antenatal care should also include advice for women on the benefits of effective postnatal

weight management in order to encourage women to commence subsequent pregnancies at a lower BMI.

Hildingsson and Thomas (2012) not only examined pregnancy and birth outcomes of women with BMI ≥ 30 in three hospitals in north Sweden, but also assessed their experiences of care during pregnancy, labour and the postnatal period, compared to women with BMI ≤ 30 . They included data, which was taken from birth records and questionnaires from 919 women. They reported obese women to have more negative attitudes towards being pregnant and an increased fear of childbirth, when compared to women who were not obese. There was no difference, however, in the satisfaction with their care during the antenatal, intrapartum or postnatal periods, or their birth experience.

Lindhart et al (2013) examined the experiences of women with pre-pregnancy BMI >30 in their encounters with health professionals during pregnancy using in-depth interviews with women in their own homes. Sixteen women in total were recruited. Two main themes were identified: an accusatorial response from health professionals, where women felt they were being blamed for the pregnancy complications they experienced. They also felt they were met with prejudice and felt embarrassed when hospital equipment was too small for them and larger equipment was needed. The second theme was lack of advice and helpful information. The women described the information they receive about being obese during pregnancy as vague and unhelpful, which made them feel anxious about their weight. The women also reported inconsistent information on various aspects of their care and felt that some health professionals treated them with a lack of respect. The authors concluded that further training was needed for health professionals in order to overcome the prejudice associated with obesity and encourage less judgemental behaviour.

Mulherin et al (2013) conducted a study in Queensland, Australia which examined both women's experiences of maternity care, regardless of BMI, and health professionals' perceptions of and attitudes towards providing care to women of differing body sizes. Six hundred and twenty seven women responded to the survey and 248 maternity care providers completed the online survey. Mulherin et al (2013) found that women with higher BMI were more likely to report negative experiences of pregnancy and following birth, compared to women with lower BMI. Maternity care providers reported less positive attitudes towards caring for overweight or obese women and perceived increased BMI to be caused by poor self-management behaviours. The authors suggest that this provides preliminary evidence that weight stigma exists in maternity care in Australia and a need for strategies to recognise and overcome this stigma during midwifery training.

Kominiarek et al (2015) investigated the perceptions of ethnic minority pregnant women and health care providers about obesity and gestational weight gain. Sixteen, non-hispanic black pregnant women with BMI ≥ 30 and nineteen maternity care providers participated in focus groups that aimed to explore gestational weight gain goals, body image, health behaviours and the concept of group antenatal care. Women did not view themselves as overweight or obese and avoided using the term 'obese' when describing themselves. They reported being interested in learning about nutrition and most were motivated to improve their nutrition for the health of their babies. The maternity care providers expressed unease at discussing gestational weight gain and found addressing the subject of obesity particularly challenging. They viewed the concept of group antenatal care as positive because of the social support it would offer women. The authors recommend health professionals should be trained in effective communication skills in order to address the issue of obesity in pregnancy in a sensitive but educationally effective way.

Finally, a recent study by Knight-Agarwal et al (2016) investigated the perspectives of pregnant women with BMI ≥ 30 who were receiving antenatal care. Sixteen pregnant women were interviewed. Women described a long personal history of obesity and, although there was some acknowledgement of the impact it can have on pregnancy, most women were not aware of how obesity could contribute to adverse pregnancy outcomes. Women reported different experiences with health professionals, with some not addressing pre-pregnancy weight or gestational weight gain and its impact on pregnancy at all, with others discussing it at every antenatal appointment. This demonstrated a lack of consistency in practice which could be attributed to a lack of knowledge or a lack of confidence. The advice women received about gestational weight gain was reported to be inconsistent and confusing, and they were unclear about acceptable levels of weight gain. Finally, women reported the biggest motivator to eat well and adopt a healthy lifestyle during pregnancy was the health of their growing baby. Some expressed a desire to minimise gestational weight gain by altering their diet and seeking advice through antenatal classes. The authors concluded that additional support was required in order to assist obese women achieve a healthy pregnancy through recommended nutritional goals and that health professionals need to approach the issue of maternal obesity in an informative and non-judgemental way.

2.4.2 Health professionals' views and experiences of obesity in pregnancy

Seven papers that explored health professionals' views and experiences of caring for obese women during pregnancy and birth were identified (Heselhurst et al 2007, Heselhurst et al

2011, Schmied et al 2011, Wilcox et al 2012, Wilkinson et al 2013, Singleton & Furber 2014, Kerrigan et al 2015).

Heslehurst et al (2007) interviewed thirty-three health care professionals from sixteen maternity units in North East England in order to explore their views on the impact obesity has on maternity care, the facilities required to care for obese women during pregnancy and what services already exist that are specifically tailored for obese women. The common themes included: the specific care requirements of obese pregnant women, i.e. consultant-led care, with antenatal anaesthetic review; the need for and availability of appropriate equipment; complications to providing care; and the implications for future care. The study concluded that maternal obesity has implications for the delivery of maternity care, especially the demand for and cost of resources and the restrictions to accessing care that obesity can cause. The authors acknowledge limitations to this study, including the potential for participant bias, as recruitment was performed by an existing member of staff at each maternity unit and this may have had an influence on recruitment.

A second study by Heslehurst et al (2011) aimed to identify what barriers and facilitators existed for the development of maternal obesity services within maternity care and health professionals' views on how services needed to further develop in order to be more effective when caring for obese pregnant women. Thirty health professionals who have experience of caring for obese women were recruited from ten maternity units in North-East England. The majority of health professionals felt that the safety of the woman and baby was the main priority when providing maternity services for obese women and that services should be tailored to ensure this is the priority. Midwives acknowledged they were not experts in the field and signposting women to services with appropriate expertise was essential. They acknowledged that limited resources impacts on the development of tailored services. Health professionals acknowledged the difficulties they experienced in raising the subject of obesity sensitively with women, but recognised it was their responsibility to do so and considered pregnancy to be an ideal time for behaviour change because of women's motivation to do the best for their baby. The authors suggest that to meet the needs of obese pregnant women there needs to be improvement in communication between hospitals and public health services and that the development of services that engage women to address their obesity are essential.

In New South Wales, Australia, Schmied et al (2011) used focus groups and individual interviews to explore 37 health professionals' experiences and concerns of caring for obese women during pregnancy and birth. They reported 'a creeping normality' to obesity, with it

becoming socially acceptable to be obese because it had become so common. Many health professionals had experienced difficulties communicating with obese women about the health issues it can cause, because of a lack of confidence and an acknowledgment that it might offend. Midwives described challenges they had faced when providing routine care to obese women including the provision of both antenatal care and intrapartum care. They felt that the services available to care for these women had not developed in line with the increasing rate of obesity and many services and facilities were inadequate. The overall conclusions were that further training was needed for health professionals to be able to effectively address the issue with women and current services and facilities required urgent development to meet the needs of this population.

Wilcox et al (2012) conducted individual interviews with 15 midwives in two maternity hospitals in Australia to explore midwives attitudes and views on the assessment and promotion of healthy gestational weight gain and optimal interventions. The midwives reported that gestational weight gain was a low priority when providing antenatal care as they did not routinely weigh women during pregnancy due to a lack of evidence surrounding the practice. They were concerned about the negative effects a discussion about weight and weight gain may have, including causing women anxiety about their weight gain. The majority of the midwives interviewed were not confident to talk about weight and gestational weight gain and therefore avoided discussing it with women. The authors suggest that this study provided evidence of the need for the development of guidelines for the promotion of healthy gestational weight gain.

Wilkinson et al (2013) conducted an online survey to obstetric, midwifery and allied health professionals who worked in a tertiary maternity unit with the aim to assess staff knowledge about and adherence to a guideline detailing best practice for the management of obesity in pregnancy that had recently been published across the state of Queensland, Australia. They requested responses about their knowledge of guideline content, advice given to women, their knowledge about obesity-related pregnancy complications and a number of staff characteristics. Seventy-three staff completed the online survey, with nearly a third of them self-reporting to be overweight or obese themselves. The majority of respondents recognised overweight and obesity to be an important issue during pregnancy, with the majority having some knowledge about the associated risks and complications; only one third were aware of existing guidelines for care. They requested further training in the area of supporting women to achieve healthy gestational weight gain. Interestingly, the BMI of staff was associated with their belief on how influential their advice about gestational weight gain would be, with staff with higher BMIs themselves believing they could influence pregnant

women more easily. The need for further training for staff in this area reflects the conclusions drawn by Schmied et al (2011).

The experiences of midwives caring for obese women in labour was the focus of a study by Singleton and Furber (2014), as they acknowledged that there was lack of evidence available that explored the challenges that midwives face when they provide intrapartum care to obese women. Using in-depth interviews, they interviewed eleven midwives working in a maternity unit in North West England and aimed to explore the experiences of midwives caring for obese women during labour. They described the challenges midwives faced when trying to promote normality in a medicalised environment and in particular, the obstacles to the promotion of normality, including the need for continuous electronic fetal monitoring. Midwives described the challenges they experienced when encouraging obese women mobilise during labour, which they viewed as key in achieving a normal birth. However, the high-risk nature of care precluded mobility, in particular the use of hydrotherapy. Midwives described a sense of helplessness when caring for obese women and the need to involve obstetricians in their care because of the difficulties they faced when performing even the simplest of tasks. Although they did acknowledge there was a need for some medical input in the care, there was a general feeling that obese women's care was over-medicalised. Interestingly, the attitudes towards obese women differed. Some midwives felt embarrassed for the women because of their size and tried to make them feel at ease when they were caring for them; others viewed obesity as self-inflicted and felt they were choosing to put themselves at risk. Finally, the need for specialised equipment was acknowledged by all midwives, but it was preferred to have the necessary equipment in place before the woman arrived so it was not obvious it specialist equipment that was being used because of her BMI. The authors concluded that after balancing the associated risks of obesity, the concept of 'optimal birth' should be advocated rather than striving for normal birth, which may be unachievable.

The final paper identified also aimed to explore practitioners' experiences of and strategies for providing intrapartum care to obese women (Kerrigan et al 2015). This paper was part two of this PhD research programme and will be presented in more detail in Chapter 5 of this thesis.

2.5 Intrapartum effects of obesity

2.5.1 Introduction

The previous sections have presented and discussed the literature in relation to maternal obesity and the risks it presents in relation to complications during the antenatal period. The

qualitative literature that explored obese women's and health professionals' experiences of obese pregnancy and birth has also been presented and discussed. A wealth of literature was also found specifically detailing the complications that can occur in obese women during the intrapartum period and how maternal obesity has a direct influence on mode of birth and postnatal morbidity. These papers will now be presented.

A total of nineteen papers were identified that related to maternal obesity and specific intrapartum outcomes. The most common complications that obese women experience during the intrapartum period are an increased risk of induction of labour (due to prolonged gestation), prolonged first stage of labour requiring augmentation, the need for caesarean section during labour and shoulder dystocia in vaginal birth. Each will be presented in turn below.

2.5.2 Induction of labour

Induction of labour was cited as a common intrapartum complication amongst obese women (Sebire et al 2001, Sheiner et al 2004, Kiran et al 2005, Denison et al 2008, Arrowsmith et al 2011).

In their population-based observational study of 8350 pregnancies, Kiran et al (2005) reported significantly higher rates of prolonged pregnancy, requiring induction of labour amongst obese women with BMI >30 (36%), when compared with women with a BMI 20–30 (25.5%). The need for induction of labour requiring all three methods of induction of labour (prostaglandins, ARM and syntocinon) was also significantly higher (11% vs 5.4%). Kiran et al (2005) suggest that although prolonged pregnancy is significantly more common for obese women, the increased rates of induction of labour could be explained by the increased incidence of other medical conditions, e.g. pre-eclampsia and diabetes.

Although the risk of requiring induction of labour is reported to be almost double for obese women, compared to non-obese women (Sebire et al 2001, Sheiner et al 2004), as presented above, Kiran et al (2005) argued that the increased incidence of pre-eclampsia and gestational diabetes amongst obese women during pregnancy greatly influences the need for induction of labour and therefore would significantly contribute to the increased rates of induction of labour in obese women.

Denison et al (2008) reported significantly increased rates of post-term pregnancy and significantly decreased rates of spontaneous labour at term amongst women with a BMI above 30. They report that the proportion of women with BMI ≥ 35 in the first trimester who

went into spontaneous labour at term to be fifty percent lower when compared to women with a normal BMI in the first trimester. These findings reflect the findings of Kiran et al (2005) and suggest that there are significantly higher rates of induction of labour amongst obese women because of post-term pregnancy.

Finally, in a retrospective study of 29,224 women with singleton pregnancies between 2004 and 2008, Arrowsmith et al (2011) reported that obese women were significantly more likely to experience prolonged pregnancy than women who were not obese, with 30.0% of obese women experiencing prolonged pregnancy, compared to 22.3% of normal weight women. Accounting for potential confounding factors, such as age, race, hypertension and diabetes, women with an obese BMI have significantly increased odds of having a prolonged pregnancy and requiring induction of labour. Arrowsmith et al (2011) also examined rates of induction of labour and reported that as BMI increased, the incidence of induction of labour also increased, with 34.4% of obese women requiring induction of labour, compared to 26.2% of women who were of normal weight. Finally, Arrowsmith et al (2011) examined the differences in mode of birth following induction of labour for prolonged pregnancy, for obese and non-obese women. This included data from 3076 women who were induced beyond 290 days of pregnancy and demonstrated a decrease in normal birth rates, following induction of labour, with increasing BMI. Therefore more obese women experienced emergency caesarean section following induction of labour, with the most common reason for caesarean section being 'unsuccessful induction'.

2.5.3 Delay in the first stage of labour

Delay in the first stage of labour was another common and consistent finding from the literature (Jensen et al 1999, Sheiner et al 2004, Vahratian et al 2004, Dietz et al 2005, Zhang et al 2007, Kerrigan & Kingdon 2010, Bogaerts et al 2013). However, the increased risk of delay during the first stage of labour was not consistent and varied from 1.5 times to 3 times more likely.

Kerrigan and Kingdon (2010), in a retrospective study of 8176 women who gave birth in 2006, reported a significantly higher incidence of delay during the first stage of labour amongst obese women, with a BMI of 30 or greater, with 10.8% of obese women experiencing delay during first stage of labour, which led to emergency caesarean section and only 7% of non-obese women experiencing the same. Interestingly, when the data for length of second stage of labour was examined, the opposite was reported, with fewer obese women (16.2%) experiencing delay during the second stage, when compared to non-obese women (25.4%). These findings reflect those of Jensen et al (1999) who examined data from

4258 women who gave birth in Denmark. They reported that significantly more obese women, with BMI ≥ 30 required augmentation during labour with oxytocin or amniotomy because of failure to progress during the first stage of labour. Interestingly, although Jensen et al (1999) observed a trend towards higher rates of caesarean section because of delay during labour, this did not reach statistical significance.

Vahratian et al (2004) examined how maternal overweight and obesity affected labour progress in nulliparous women. They reported that obese women not only had an increased risk of delay during the first stage of labour that resulted in caesarean section, but they also observed that obese women who achieved a vaginal birth, had significantly slower progress during the first stage of labour and labour lasted significantly longer, in total. The length of labour for obese women was found to be almost two hours longer compared to women of normal weight and the slowest progress was noted before the cervix was 7cms dilated. Zhang et al (2007) supported these findings and suggested that inadequate uterine contractions were the most likely reason for this as the prospective component of this study showed a decrease in the force and frequency of contractions in obese women. Dietz et al (2005) suggested that although the biological pathway through which obesity affects the labour process is not well understood, an increase in pelvic soft tissue may influence labour dystocia. There was, however, no consensus on this within the literature, with Kiran et al (2005) reporting no significant difference in length of first stage of labour observed between obese women and women who were not obese.

2.5.4 Caesarean section

Arguably the most significant of the intrapartum complications associated with maternal obesity is the increased risk of caesarean section. This was a commonly reported finding in a number of papers (Crane et al 1997, Kaiser & Kirby 2001, Sheiner et al, 2004, Dempsey et al 2005, Dietz et al 2005, Kiran et al 2005, Chu et al 2007, Zhang et al 2007, Poobalan et al 2008, Kerrigan & Kingdon 2010, Dignon & Truslove 2013, Avci et al 2015).

The increased risk of caesarean section amongst obese women, compared to non-obese women varied from two-fold to more than three-fold and the reasons for caesarean section varied widely. In their meta-analysis of 33 papers, Chu et al (2007) reported an increase in the incidence of caesarean birth for overweight, obese and severely obese women to be 1.46, 2.05 and 2.89 times higher, respectively. Additionally, Chu et al also examined the risk of caesarean birth in otherwise low-risk obese women, without additional complications and report the risk of caesarean birth for overweight and obese women to be 1.41 and 1.75 times higher, respectively, when compared to normal weight women, without other pregnancy

complications. Therefore, even for obese women with no additional risk factors, the risk of caesarean birth is still significantly higher than for women of normal weight with no additional pregnancy complications. This reflects the findings of Kaiser and Kirby (2001) and Sheiner et al (2004), who controlled for additional risk factors and still reported a significantly increased risk of caesarean birth for obese women when compared to women of normal weight.

The reasons for caesarean section vary widely, including delay during the first stage of labour and failed induction (Kerrigan & Kingdon 2010). The most common reason was cited as delay during the first stage of labour and occurred even after labour was augmented with oxytocin, as discussed above, when the relationship between maternal obesity and delay during the first stage of labour was discussed (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010).

The increased risk of caesarean section is not only significant to the figures on mode of birth, but also has a considerable impact on postnatal morbidity. In a retrospective study of 611 post-operative women, maternal obesity was shown as an independent risk factor for post-caesarean infectious morbidity, regardless of whether the caesarean section was elective or emergency (Myles et al 2002). Interestingly, there was one study that did not show a significantly increased incidence of caesarean section amongst obese women (Jensen et al 1999), however they did demonstrate a trend towards more caesarean sections in overweight and obese women, but this did not reach significance in the population studied.

2.5.5 Shoulder dystocia

The final intrapartum complication that was common within the literature was the increased risk of shoulder dystocia for obese women who gave birth vaginally (Robinson et al 2003, Kiran et al 2005). Kiran et al (2005) reported that obese women were four times more likely to experience shoulder dystocia than women who were not obese. They also reported the risk of fetal macrosomia to be double amongst obese women, which may account for the increased risk of shoulder dystocia. These findings reflect those of Robinson et al (2003), who aimed to examine whether maternal obesity was a reliable predictor of shoulder dystocia. Out of 45,887 singleton vaginal births of infants of 2500 grams or greater, between January 1995 and December 1997, there were 413 cases of shoulder dystocia. The case control study demonstrated that maternal obesity alone was not an independent risk factor for shoulder dystocia, but it was the presence of fetal macrosomia that was the single most powerful indicator.

2.6 Conclusion

This chapter has presented the current literature in relation to obesity and childbearing, with the final section having a specific focus on the effects maternal obesity has on intrapartum outcomes and mode of birth. Although the literature has focussed on obesity, the definitions of obesity and the levels of obesity used in the literature have varied, with some papers focussing on women with BMI greater than 30 and some with BMI greater than 35. Despite this, the literature demonstrates consistent findings about the increased risk of a number of complications during pregnancy, labour and birth and the postnatal period. The risk of these complications occurring rises significantly when maternal BMI is 30 or greater, with the risks increasing significantly with increasing BMI.

The literature has demonstrated the increased risks associated with maternal obesity during pregnancy, including hypertension, gestational diabetes, fetal macrosomia and stillbirth. The literature consistently reported the increased risk of complications during the intrapartum period, in particular the increased need for induction of labour, the increased risk of slower progress during the first stage of labour, the increased risk of caesarean section and increased incidence of shoulder dystocia in obese women who achieve a vaginal birth, of which the single most powerful indicator is fetal macrosomia. The risk of these complications is present for all pregnant women, but is exacerbated by maternal obesity, with obese women at a significantly higher risk of experiencing any combination of these complications during pregnancy, labour and birth.

The findings from the qualitative studies show that health professionals who provide care for obese women during the intrapartum period experience a number of difficulties and face a number of challenges when caring for obese women. These include trying to facilitate normal birth in a medicalised setting, the promotion of mobility in order to maximise the opportunity for normal birth and the sense of helplessness they feel when caring for obese women during labour. Health professionals also described difficulties communicating with obese women because of negative attitudes amongst colleagues and a lack of confidence, with a desire not to offend. Women described a sense of embarrassment, feelings of guilt and a lack of information about the risks associated with obesity. The majority of the qualitative papers identified were published during the course of this research, with only two qualitative papers identified during the original literature search that was conducted in 2010. This suggests that in recent years, it has been recognised that exploring the experiences of obese women and health professionals in relation to the care of obese pregnant women is vital in order to develop appropriate maternity services for this population.

The literature has identified a need for preventative strategies to be developed in order to reduce some of the morbidities associated with obesity and childbirth. Strategies are also required to assist midwives provide intrapartum care that aims to maximise the opportunity for normal birth amongst obese women and to help women have confidence that they can achieve normal birth. Based on the current literature surrounding obesity and intrapartum outcomes and the qualitative literature describing the experiences of health professionals who care for obese women during the intrapartum period, this work aims to address this problem.

2.7 Aim of thesis

The overall aim of this thesis was to develop an intervention that would promote normal birth amongst obese pregnant women. The work was conducted as three separate studies, each with its own aims and objectives.

Study 1 – Telephone survey of current practice for care of obese women across UK.

The aim of the survey was to identify current practice in relation to the care of obese women during labour and to assess the need for an intervention to be developed, to improve the care of obese women during labour. The main objectives were to:

- establish to what extent guidelines for the intrapartum care of obese women were available in maternity hospitals across the UK
- ascertain the content of the local guidance on obesity in pregnancy that are currently in use in maternity hospitals across the UK in relation to promotion of normal birth
- assess the views of midwives on whether an intervention is needed.

Study 2 – Health professionals' experiences of caring for obese women

This study aimed to explore health professionals' experiences of providing intrapartum care to obese pregnant women. The specific objectives were to:

- obtain practitioners' experiences of caring for obese pregnant women
- identify the issues that practitioners face when caring for obese pregnant women
- identify how these issues impact on patient care
- identify possible solutions that could decrease the impact on care.

Study 3 – Obese women's experiences of pregnancy and birth

This study aimed to explore obese women's experiences and views of maternity care. The specific objectives were to:

- explore obese women's experiences of preparation for labour

- explore obese women's experience of their care during labour
- identify what information on labour and birth and the risks of obesity in pregnancy obese women wish to receive
- identify how obese women are currently prepared for labour and how they wish to be prepared for labour and birth in the future
- identify what aspects of maternity care, obese women wish to be improved/changed.

The next chapter will describe how this work was designed to address the overarching aim of the thesis.

Chapter 3

Methodology

Chapter 3 – Methodology

3.1 Introduction

Chapter 2 presented the current evidence surrounding obesity and childbearing, identifying the effects it has on outcomes of pregnancy and during the intrapartum period. One of the most significant detrimental effects is the impact obesity has on the progress of labour and how it can negatively influence mode of birth, leading to a significant increase in the rate of emergency caesarean section amongst obese women. The literature review highlighted a need for strategies to be developed to reduce the morbidities associated with obesity and childbearing and drew attention to a dearth of qualitative literature relating to the experiences of health professionals and obese women in relation to maternal obesity and intrapartum outcomes. This research aims to address this issue by developing an intervention that would promote normal birth amongst obese pregnant women.

This chapter describes the theoretical perspectives that underpin this thesis. The overarching framework used to inform the development, design, methods and implementation is described. It will also describe the various epistemologies and theoretical perspectives that underpin research methodologies and describe the epistemology and methodological approach that was used in this work. The work was conducted as three separate studies, each with its own aim, objectives and methods. The data collection methods used for each individual study are described in detail in the relevant chapters but an overview is provided in section 3.8, with details of data analysis in section 3.9. Ethical considerations that were addressed during the conduct of this research are also described.

As highlighted in Chapter 1, the research was undertaken as a series of studies following the framework for developing and testing complex interventions in health care, developed by the Medical Research Council (MRC 2006). The process for the development, implementation and evaluation of an intervention has five stages: developing the intervention, piloting, evaluating, implementing and reporting it (MRC 2006). This research focussed on the initial stage of the MRC framework, which involved the development of the intervention and started by identifying the current evidence base, then identifying and developing appropriate theory, and finished by integrating the findings and modelling the intervention. The piloting of the intervention will be a future study, as it was outside the scope of this work to do the entire process of developing and piloting an intervention. The research underpinning this thesis comprised of three individual component studies, each with a distinct aim and set of objectives. Each study will be presented in turn in the next three chapters of this thesis.

3.2 Methodology

All research methodologies are underpinned by specific philosophical positions and a clear philosophical justification for a chosen research methodology is important when formulating a research protocol. Crotty (1998, p. 3) describes research method as 'the techniques or procedures used to gather and analyse data related to some research question or hypothesis'. Research methodology has direct links between the method employed and the outcomes of the research and can be described as the process or design behind the choice of a particular research method. The theoretical perspective can be defined as 'the philosophical stance that informs the methodology and provides a context for the process (Crotty 1998, p.3). The final question is that of deciding which epistemology informs the chosen theoretical perspective. Epistemology is the theory of knowledge and is concerned with the question of what counts as valid knowledge (Holloway & Wheeler 2010) and is embedded in theoretical perspectives of research and directly informs appropriate methodology.

Research is directly affected by the social, intellectual and cultural environment in which it is taking place (Kingdon 2005). Epistemology can be described as the basis of how people know what they know (Johnson 2000) and is concerned with how phenomena come to be known (Giacomini 2013). It is often used to describe the theory that underpins research questions and the framework that a researcher may adopt (Denzin & Lincoln 2011). Epistemologies inform theoretical perspectives and research methodologies, so the adoption of an appropriate epistemology is crucial to the research process. Different theoretical perspectives advocate different ways of knowing, or finding truth, and may therefore influence the approach to research. These theoretical perspectives, or paradigms, provide a foundation for research. Kuhn (1970) who first coined the term 'paradigm', used it to mean a specific school of thought, but it has since been broadened to encompass all the beliefs and assumptions associated with one theoretical perspective or stance (Cluett & Bluff 2006a). Smith (1991) suggests a broader definition of paradigms and describes them as different scientific communities, sharing specific beliefs, values and techniques that are used to decide which research questions are interesting and how they can be solved and interpreted. Parahoo (2014) suggests that paradigms influence the types of phenomena that should be researched, the methods which can be used to study them and also the data analysis techniques that can be used to interpret the data. Researchers vary greatly in their epistemological standpoints and these variations influence the research objectives and design and ultimately the research they produce. In relation to research in health care, the paradigmatic positioning of a researcher relates to their understanding of the nature of knowledge, or their epistemological standpoint (Broom & Willis 2007). A range of theoretical

perspectives, or paradigms have evolved, but two of the most widely used are positivism and interpretivism.

3.3 Positivism

Positivism was developed from the view that knowledge is created through the collection of facts about the world and it aims to offer assurance on unambiguous and accurate knowledge (Crotty 1998). Positivism is based on the conviction that quantitative methods of science are necessary to answer questions related to the social sciences. Central to positivism is the notion of the existence of a 'real' world and that reality is concrete and constant and objectivity is achievable (Broom & Willis 2007). Furthermore, positivism is based on the belief that researchers need to search for facts about the world, using methods that void human bias (Guba & Lincoln 2005), or observable or directly measurable phenomena that cannot be influenced by human interaction and therefore must be treated as fact.

Positivists have confidence in the notion of cause and effect (Parahoo 2014) and therefore much of the work that is done within the positivist framework uses experimental designs, for example, randomised controlled trials, testing theories and hypotheses (Broom & Willis 2007). A hypothesis is often established before the research begins and aims to test the theory (Holloway & Wheeler 2010), using a mathematical approach to interpret the data (Parahoo 2014). These types of design focus on establishing objective scientific facts through scientific method and quantification. This reflects 'logical positivism' which is based on the principle of verificationism: no statement can be said to be true unless it can be tested and verified. Verification looks for proof in statements to make them meaningful (Crotty 1998).

Although positivism and positivist approaches to research claim to provide concrete facts about the world through the generation of accurate and unambiguous knowledge, they have been criticised for solely focussing on what people do and failing to take into account the complexity of understanding why people behave the way they do and how this influences human society and life (Smith 1998). Positivists aim to collect facts and generate unambiguous and accurate knowledge. They reduce the complexity of the phenomena that they study, by using research methods that impose structure and control. Regardless of the method, all participants follow the same procedure and receive the same information about the study, aiming to ensure that the data is comparable and the research could be replicated. It could therefore be argued that positivist research designs do not pay sufficient

attention to a person's lived experience and how this can affect what they do and how they think (Bryman 2012), ultimately ignoring the influence of social context on human behaviour.

3.4 Interpretivism

Interpretivism has been proposed as an alternative to positivism. The interpretive model of research has roots in philosophy and human sciences and has a long history, with roots as far back as the nineteenth century (Holloway & Wheeler 2010). Emerging in the social sciences in the 1960s (Broom & Willis 2007), interpretive approaches were developed from the critique of positivism, with an aim to understand human action (Bryman 2012). Interpretive researchers view research as more complex and less straight forward than researchers who take a positivist perspective and believe that experiences of people are context bound and encompass the social, cultural and institutional situation of the research participants, as this can influence people's experience and how they interpret and describe them (Bryman 2012). They also acknowledge that the relationship between the researcher and the participants may affect the data (Kingdon 2009) and that preconceptions must be acknowledged and 'bracketed', in order to prevent them influencing the research; or they should be openly acknowledged and discussed in relation to their implications on the interpretation of the data (Parahoo 2014). Bryman (2012) acknowledges that interpretive approaches to research allow for varying degrees of subjectivity within research studies, both in the general conduct of the research and the analysis and interpretation of the data.

Interpretivist approaches to research are closely aligned to qualitative methods, such as in-depth interviews, focus groups and observational techniques (Broom & Willis 2007). They seek to understand people's lived experiences and interpret their decision-making processes. Qualitative approaches, such as interviews and observational methods enable the researcher to reflect on meanings, the social and cultural influences of individual experience and the relationship between the researcher and the participant and what influence that has on the responses (Rubin & Rubin 2005). Rather than observe and measure patterns of groups, as in quantitative research methods, qualitative methods seek to understand an individual's experience of social interactions and social and cultural processes. Data is collected from and about everyday life situations with the focus on subjective meaning and interpretation that may uncover the complexity of social processes (Strauss & Corbin 1998).

It is, however, important to acknowledge some of the challenges of interpretivist approaches. It is difficult to generalise the findings of the qualitative research because of the generally small number of participants. The aim to obtain in-depth data from a small number of

participants, in order to understand experiences, makes generalising the findings to wider populations almost impossible (Bryman 2012). Some argue that elements of bias cannot be ruled out, because of the sampling methods employed, which often include convenience sampling in order to include participants who have experienced the phenomena that is the focus of the research (Bryman 2012). Finally, it is important to acknowledge the relationship between the researcher and the participant, with complete objectivity impossible to achieve (Holloway & Wheeler 2010). 'Reflexivity' is an essential part of the researcher's role and involves the acknowledgement of how personal beliefs and values can influence research findings (Kingdon 2005) and researchers must acknowledge their own position in the research and how this may influence the data collection and interpretation. Reflexivity will be discussed in further detail later in this chapter.

3.5 Introducing pragmatism

Pragmatism represents an alternative theoretical perspective to positivism and interpretivism. Pragmatism originated in America and was introduced by Charles Peirce and William James in the nineteenth and early twentieth centuries (Holloway & Wheeler 2010). Pragmatism emphasises the role of the researcher in the research process and suggests they play a key part in the production of knowledge and in the response to practical problems, believing the researcher's role to be creative as opposed to biased or flawed (Delanty & Strydom 2003). Pragmatists believe that knowledge is socially created in order to solve problems and is developed through interpretations and discussion (Delanty & Strydom 2003) and therefore problem-solving in everyday life is advocated as a way of finding meaning. Pragmatist researchers focus on the research questions and decide which methods are best used to answer these. Pragmatism is a theoretical perspective that challenges both positivism and interpretivism.

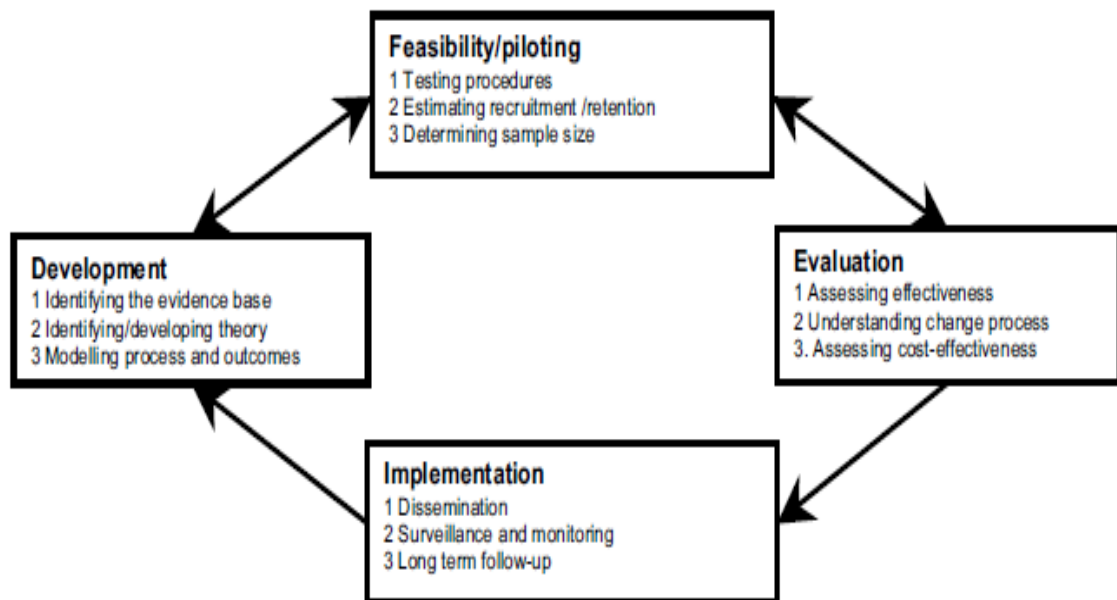
All research methodologies are underpinned by specific philosophical positions and a clear philosophical justification for a chosen research methodology is important when formulating a research protocol. In this thesis, pragmatism underpins the overarching MRC framework. The aim of this study was to develop an intervention that would promote normal birth amongst obese pregnant women. The MRC framework for developing and evaluating complex interventions (MRC 2006) was used as the framework for the development of the intervention. In view of the applied nature of this research and the integration of knowledge into the intervention, pragmatism was used as the underpinning epistemology. The MRC framework formed the basis of the work and focussed on the initial stage of the framework, the development stage. This involved identifying the current evidence base, identifying and

developing appropriate theory and then integrating the findings and modelling the outcome, in order to address the research aim.

3.6 The Medical Research Council framework for developing and evaluating complex interventions

The MRC framework for developing and evaluating complex interventions (MRC 2006) provided the overarching structure of this thesis. Complex interventions are widely used in health care (MRC 2006). It is important to recognise that the development of a complex intervention is not a linear process but has flexibility and may require the previous stage to be re-visited before proceeding. It should also be recognised that the development and implementation stages of the process are of equal importance as the evaluation stage.

Figure 1 Key elements of the development and evaluation process



Source: MRC Framework for the development of complex interventions (MRC 2006)

Complex interventions have a number of interacting components and there are several levels of complexity. The complexity of an intervention is determined by: the number of groups targeted by the intervention, the number and variability of the outcomes of the intervention, the number of and interactions between components within the experimental and control interventions and in the evaluation, the number and difficulty of behaviours required by those delivering the intervention (MRC 2006). MRC (2006) suggest that a key question in the evaluation of a complex intervention is to consider the practical effectiveness and whether it works in everyday practice.

As far as can be ascertained this is the first time a complex intervention based on the MRC framework has been developed in relation to the care of obese women during labour and birth. It has enabled the evidence on obesity and intrapartum outcomes and data from health professionals' and obese women's experiences of intrapartum care to be used to develop an intervention that will promote normal birth for obese women and aim to reduce the associated risks and morbidities.

The process for the development, implementation and evaluation of an intervention has five stages: developing the intervention, piloting, evaluating, implementing and reporting (MRC 2006). Although this process has a natural progression from development to reporting, it is important to recognise that it is not always a linear process and it may be necessary to return to the previous stage in order to improve or modify it as the intervention develops. Before undertaking an evaluation, the intervention should be developed to the point where it can be reasonably expected to have a worthwhile effect. The MRC (2006) states that developing an intervention involves firstly identifying the evidence base through a thorough and systematic review of the literature that must be kept up to date as the intervention development progresses. Understanding the likely process of change that will result from the intervention is an essential aspect of the development as this may help model the intervention and address some of the practicalities which will become relevant in the implementation stage, including whether it would be possible to implement such an intervention, who would be best to implement it, who would be the target population and whether there would be any potential obstacles or barriers. Finally, the target population for the intervention and those involved in the implementation should be involved in these early development stages (MRC 2006).

Drawing on the MRC framework, this work involved identifying the current evidence base, identifying and developing appropriate theory and then integrating the findings and modelling the outcome, in order to address the research aim. The overall aim of this thesis was to develop an intervention that would promote normal birth amongst obese pregnant women. The work was conducted as three separate studies, each with its own aims and objectives. The next section aligns the use of the MRC framework with the methodology that was used for this work.

3.7 Using the MRC framework

This research focussed on the initial stage of the MRC framework, which involved the development of the intervention. It started by identifying the current evidence base through a

thorough and systematic literature search. The research was then conducted as three separate studies, in order to identify and develop appropriate theory. It finished by integrating the research findings and modelling the intervention. See Table 1 below.

Table 1. Stages of intervention development

	MRC framework stage	Paradigm	Method
Literature review	Development – identify evidence base	Pragmatism	Literature search
Study 1 Identify current practice in relation to the care of obese women during labour and assess the need for an intervention to improve the care of obese women during labour.	Development – develop theory	Pragmatism	Survey
Study 2 Explore practitioners' experiences of providing intrapartum care to obese pregnant women during labour.	Development – develop theory	Pragmatism	Focus groups and individual interviews
Study 3 Explore obese women's experiences and views of maternity care.	Development – develop theory	Pragmatism	Focus groups and individual interviews
Intervention development Reach a consensus on a suitable intervention to educate health professionals, improve knowledge around obesity and pregnancy, and instil confidence to challenge current intrapartum practice.	Development – modelling process and outcomes	Pragmatism	Multi-disciplinary workshop

3.8 Methods

Study one used a quantitative non-experimental methodology and a telephone survey was conducted, using stratified sampling. Data were analysed using descriptive statistics and document analysis. Studies two and three used a qualitative methodology using focus

groups and individual interviews and employed purposive sampling to recruit health professionals with experience of caring for obese pregnant women and obese women who had recently given birth to participate. Data were analysed using a framework approach (Ritchie & Spencer 1994). The qualitative work that was carried out during this work involved both health professionals involved in the care of obese women, as they will be implementing the intervention, and also obese women themselves, as the target population. Each of the studies are reported in separate chapters later in this thesis, which describe in detail the specific method used for each study.

The findings from the telephone survey informed the development of study two, where health professionals' experiences of caring for obese women were explored. The findings from the telephone survey informed the interview schedules that were used. These can be seen in appendices 3 and 4. The development of study 3, in which obese women were interviewed about their experiences of intrapartum care and birth, was guided by the findings of Study 2, with some aspects being further explored with obese women. The findings from all three studies were utilised during the development stage, where they were used to design the intervention. This was done through a multi-disciplinary consensus decision-making process, where the findings from all parts of the research programme were presented and following discussion, a mutually agreed consensus on the most appropriate intervention was sought. This process is presented in detail in Chapter 7 of this thesis.

3.9 Approach to data analysis

Research data alone does not answer research questions. Following collection, data must be analysed to make sense of it and the findings presented to the audience in a logical, understandable way (Parahoo 2014). It is imperative that data analysis is considered at the planning stage of any research project and the approach used will not only be influenced by the research method but also by type of data obtained (Wagstaff 2006). Different epistemologies advocate different techniques in interpreting data.

The analysis of data in quantitative studies from a positivist perspective usually takes place after data collection has ended and involves descriptive, correlational or experimental techniques. This is influenced by the research questions, the research objectives and the type of data that has been collected (Parahoo 2014). Computerised statistical packages are widely used in the analysis of quantitative data, although the researcher must prepare or code the data prior to using a computerised package, in order to give it a meaning (Wagstaff 2006).

The analysis of qualitative data obtained from an interpretivist approach demands a different approach in order to generate meaning and knowledge production. Contrary to the analysis of quantitative data, the process of qualitative data analysis commences during data collection, with themes becoming apparent during the collection, which may then be used to influence future data collection (Parahoo 2014). This allows the researcher to refine questions or pursue emerging areas of inquiry in greater depth as the data collection continues (Pope et al 2006). Carter (2004) suggests that the analysis of qualitative data is not something you 'do' to the data but a reflective process that the researcher does 'with' the data. It is an iterative process, meaning it is not just performed once, but the researcher returns to it and reconsiders and reflects upon it.

In contrast to quantitative analysis, qualitative analysis seldom involves numerical analysis and focuses on preserving the data in textual form, interpreting it to generate categories and theoretical explanations of phenomena (Pope et al 2006). Qualitative data analysis can be conducted with computerised analysis packages. However, they do not analyse data for the researcher and provide outcomes, but act as a way of organising and managing the vast amount of data that is generated from qualitative enquiry. Pope et al (2006) suggest there are three broad approaches to qualitative data analysis: thematic analysis, grounded theory and the framework approach.

The MRC framework does not prescribe the research methods that should be used to generate the theory on which the intervention is based. As described earlier, pragmatism underpins this thesis and the overarching MRC framework. Data was collected using a combination of techniques, including both qualitative and quantitative methods. Following this, data analysis was also undertaken using a combination of techniques.

3.9.1 Framework analysis

The framework approach was developed by the National Centre for Social Research in the United Kingdom and is a more deductive form of analysis (Spencer et al 2014). The framework approach (Ritchie & Spencer 1994) is especially suited to applied research which has clear objectives at the outset. This method of analysis is particularly appropriate for this research, as it was developed as an expedited pragmatic approach for an applied research study. Framework analysis is based on the original accounts obtained from the data collection; it does, however, start deductively from the original aims set at the commencement of the study (Pope et al 2006). It is a systematic, transparent process which can be assessed and followed by people outside of the research process and could therefore, arguably be replicated (Pope et al 2006). Prior to commencing data analysis using

a framework approach, it is important to identify any 'a priori' or pre-conceived themes, as these may influence the analysis and findings.

Framework analysis involves a five stage process of familiarisation, identification of a thematic framework, indexing, charting and finally, mapping and interpretation (Spencer et al 2014). Familiarisation involves the researcher immersing themselves in the raw data and reading interview or focus groups transcripts several times. This enables recurrent themes to be identified. A thematic framework is then created, where the main themes and sub-themes are sorted into a detailed framework. This is performed using any a priori themes that had been previously identified and acknowledged, and the original aims and objectives of the research. The framework produced provides a detailed index from which the data can be labelled. The thematic framework is then applied to the data and the data is indexed according to codes used in the framework. Once the data has been indexed, or labelled with the codes from the framework, it is then charted. Charting involves rearranging the data according to the part of the framework that they relate to. This creates a series of charts, each one linked to an original theme that was identified from the data during the familiarisation process. Data is extracted from the original text and synthesised during the process of charting, preventing large amounts of verbatim text being inserted into the charts. The final stage is mapping and interpretation: the charts are used to define concepts, create typologies and identify associations between the themes which are then used to provide explanations for the findings.

The data obtained during the telephone survey in part one of this work was analysed using descriptive statistics. The data from the completed questionnaires was coded numerically and inputted into SPSS, a widely used statistical package in the social sciences. Coding is the process of labelling data in order to classify it to allow it to be analysed (Cluett & Bluff 2006b). The data was then analysed using descriptive statistics, to analyse frequencies within the data. Document analysis was carried out on the guidelines that were received as part of the survey. Document analysis is a systematic procedure for reviewing and evaluating documents, in order for it to be interpreted and meaning generated (Bowen 2009). Similar to other qualitative analysis methods, document analysis involves the examination of the data and the interpretation of it, in order to draw meaning and understanding (Rapley 2007). Bowen (2009) suggests that documents may be used in research for a number reasons. They potentially have a number of uses including a method of tracking change and development, verification of findings by analysing several drafts of the same document, as a means of triangulation, and to provide data on the context within which the participants of the research work or live. He also suggests that documents may be

used in order to develop questions that need to be addressed as part of the research and they can also provide supplementary data and add to the knowledge base. It was for these latter two reasons that the clinical guidelines were collected and document analysis performed. This process is described in greater detail in Chapter 4. In this research, the documents provided supplementary data about current practice in relation to the management of obese pregnant women and were used, along with the data obtained during the telephone survey, to inform the next stage of the work and generate some of the focus group and interview questions for the health professionals.

3.10 The intervention

The final part of the work was the development of an intervention that would promote normal birth for obese women. The intervention was put together in accordance with MRC framework for the development of complex interventions (MRC 2006). It was developed using a combination of theoretical approaches to developing complex interventions. It used a methods-based approach using intervention mapping, which combined pre-existing evidence and the new theory and evidence that was generated during the course of the three research studies: a paradigm-based approach, using co-construction, where health professionals participated in the research and the intervention development stages and service users in the research. Service users had agreed to attend the intervention development workshop but were unable to attend on the day. Involving staff and recent maternity service users in the research allowed the intervention to directly reflect the needs of both health care professionals and obese pregnant women.

A multi-disciplinary workshop was held with the aim of reaching a consensus on a suitable and acceptable intervention that could be implemented into maternity care. The purpose of the intervention would be to educate health professionals and improve knowledge around obesity and pregnancy; instil confidence in health professionals to challenge current intrapartum practice; utilise alternative techniques and practices to increase 'normality'; and maximise the opportunity for normal birth for women who are obese.

There is little guidance about how best to develop complex interventions in order to reduce the gap between evidence and its translation and application into practice. Currently there is no agreed 'best way', although research is currently underway to address this. The aim of the study is to produce guidance on how to develop complex interventions in order to improve health or health care outcomes. (O'Cathain et al 2017). Colleagues at the University of Stirling have successfully developed an approach to designing interventions that takes a theory-based co-construction approach to maximise participants' engagement in the

intervention development process, while basing the content of the intervention on data that has already been gathered (Duncan & Fitzpatrick 2016). The technique involved meeting with clinicians face-to-face, in order to present findings from the preceding research and use the data to inform the production of the intervention, following consensus decisions from health professionals from a variety of disciplines. This approach was replicated as required structure within the intervention design workshop in order to maximise productivity. The multi-disciplinary intervention development workshop is presented in its entirety in Chapter 7 of this thesis.

3.11 Credibility and trustworthiness

All research is open to examination and criticism and within health care research it is important to demonstrate that research is credible and of good quality. Holloway and Wheeler (2010) suggest that in order to demonstrate this in quantitative research, a number of key matters are commonly addressed. These include reliability, which refers to reliability of the research instrument and to what extent the study is able to be reproduced; validity, which is seen as the extent to which a research instrument measures what it is supposed to measure; and generalisability, where the findings of the research can be applied to other settings and populations.

Qualitative researchers acknowledge that there is a need for standards by which high quality research is distinguished from research of poor quality, but they also argue that it is not possible to demonstrate this using the same criteria as quantitative methods (Smith 2004). Qualitative researchers, therefore, use different terms to address issues of reliability and validity, such as dependability, credibility and transferability (Lincoln & Guba 1985). In qualitative research, dependability describes the degree to which the methods and decisions made during the course of the research are trustworthy. This enables the reader of the research to evaluate the adequacy of the analysis by following the decision-making process of the researcher (Holloway & Wheeler 2010). In contrast to the notion of validity that refers to the extent to which the findings reflect the purpose of the study and its generalisability to the wider population in quantitative research, validity in qualitative research is much more difficult to apply and the notion of credibility refers to the extent that the interpretation of the data and the findings of the study is a true reflection of the experiences of the participants. Generalisability is difficult, if not impossible, to achieve with qualitative research and therefore the notion of transferability is used as an alternative. This refers to what extent the findings are transferable to other situations or participant groups with similar characteristics (Lincoln & Guba 1985).

Finally, an essential aspect of any qualitative research is trustworthiness and refers to the accuracy and honesty of the data (Robinson 2006) and significantly influences the credibility of the findings. Trustworthiness can be achieved in a number of ways. The initial data analysis was performed by two researchers, including one of the academic supervisors. This helped to ensure the credibility and trustworthiness of the analysis, as multiple researchers add to the strength of interpretations (Stiles 1993). The process of member checking is a technique that can add to the trustworthiness of the data. Member checking involves returning to the participants with the data and interpretations drawn from it in order for them to confirm the credibility of the information and narrative account (Creswell & Miller 2000). This was performed during the focus groups and interviews that were carried out during the qualitative aspects of this work, in order to ensure a true reflection of the experiences of both the health professionals and the women was obtained. Bracketing, whereby the researcher acknowledges their own beliefs and opinions on the subject prior to data collection, also contributes to trustworthiness of qualitative research. Bracketing minimises the influence of the researcher on the data that is collected or its analysis (Robinson 2006), therefore minimising bias in the results and ensuring a reliable interpretation. This technique was also used during the course of this research. Having a significant amount of personal experience of caring for obese pregnant women, it was essential that these experiences and personal beliefs were acknowledged. This was done privately prior to the commencement of the research as a whole and repeated before each study was conducted, in order to ensure that the data collected was not influenced by personal experience or opinions of current practices. In accordance with the pragmatist approach, this thesis addresses the concept of honesty by acknowledging the role of the researcher in the research process.

3.12 Reflexivity

Reflexivity is a process of self-awareness within research, in order to illustrate trustworthiness. It involves the acknowledgement of how personal beliefs and values can influence research findings (Kingdon 2005). Reflexivity is where the researcher positions themselves within that piece of research. They need to be conscious of the biases, values and experience that they bring to the research and consider the way in which these could affect the research (Creswell 2012). Mays and Pope (2006) suggest that the researcher must acknowledge any prior assumptions and experience, which may have influenced the research enquiry and the data collected. Creswell (2012) describes two stages of reflexivity: The first where the researcher considers past experiences from education, family dynamics and anything else pertinent that may influence the research and the second following the conclusion of the research, where the researcher is self-critical about how these past experiences have influenced the study process, including the findings and the conclusions

and interpretations drawn. In order for this to be performed effectively, Finlay (2002) suggests starting the process of reflexivity at the outset of the research project and breaking the process into stages of pre-research, data collection and data analysis, and considering each in turn.

Reflexivity is predominantly associated with qualitative research. Although this research programme was positioned from a pragmatic perspective, however, being based on the MRC framework for developing and evaluating complex interventions, it involved a significant amount of qualitative research during the identification and development of appropriate theory, therefore reflexivity was essential part of the research process.

3.12.1 Personal reflexivity

Previous research undertaken as part of my Master's degree examined the outcomes of pregnancy for obese women and established strong links between obesity and adverse outcomes of intrapartum care, including a significantly higher rate of emergency caesarean section. This had an influence on the decision to pursue further research in this area. In addition to that, being a midwife working in the clinical area, with significant and recent experience of caring for obese women during labour and observing first-hand the complications experienced, also greatly influenced both the interest in the subject of obesity and normal birth and the motivation to conduct further research into the subject.

Reflection and consideration was given to the language used when communicating with obese women, in both verbal and written formats. Experience caring for obese women allowed an understanding of what was acceptable and preferable to obese women themselves and the approach to the research and the language used was chosen based on this. The aim throughout was to minimise stereotyping and prevent any negativity that may have been a barrier to participation.

Working in a clinical role in a hospital allowed familiarity with the care systems for obese women during pregnancy and an awareness that clinical guidelines for the management of their care were necessary. Awareness and personal experience of the challenges faced when providing care to obese women allowed knowledge of and empathy for these when conducting the qualitative research that explored health professionals own experiences of caring for obese women during labour and birth. This was also acknowledged during the data analysis stage, when care was taken not to allow personal experiences to influence the themes that came out of the data during the framework analysis process.

The final direct influence on this work that should be acknowledged is how being a practising midwife helped to shape the overall focus of this work. A personal passion for both intrapartum care and the promotion of normal birth and motivation to support obese women to optimise their chances of achieving normal birth also had a significant influence on the decision to focus the research in this area. Conducting research that aimed to develop an intervention that would promote normal birth amongst obese women, not only added to the existing body of knowledge on this subject, but also helped satisfy personal interests and motivations.

3.13 Overarching ethical considerations

Ethical codes of practice that govern health care research have developed over recent decades and include the Nuremberg Code and the Declaration Helsinki (World Medical Association 2000). They were developed in response to unacceptable historical practices, whereby various forms of experimentation were being conducted on vulnerable and defenceless people, with no regard for their human rights (Manning 2004). Beauchamp and Childress (2001) describe an approach to health care ethics based on four moral principles and have had a significant influence on health care ethics; beneficence, which focuses on an obligation to do good to others; non-maleficence, which prohibits harm to be done, although it should be acknowledged that in health care research, it is acceptable to acknowledge potential adverse effects of some research interventions, as long as they are recognised and communicated to the participants at the outset of the research; respect for autonomy, which allows potential research participants to decide for themselves, if they wish to participate; and justice, which focuses on equality, equity and fairness in treatments and the sharing of the benefits and disadvantages of care or research.

When designing a research protocol in health care, it is imperative that it is methodologically sound and will generate valid and valuable knowledge, as the findings have the potential to influence future health care practices or treatments. Manning (2004) suggests that the three main ethical issues that need to be addressed when designing a research protocol are the prevention of harm, whereby the research participant will not be exposed to any level of harm through their participation. This includes both physical and psychological harm. The second ethical consideration is consent to participate. Research participants should provide informed consent to participant, which can only be achieved through communication of all information pertaining to their participation in the research, allowing sufficient time for consideration and understanding of the information and the freedom to decide whether or not they wish to participate. The final issue is that of confidentiality, whereby the participants are assured that the information they provide during the research will remain protected and

be used for the purposes of the research only. Researchers have an obligation to protect personal data provided during the course of research and to take reasonable steps to ensure anonymity when research findings are reported.

It is mandatory that research projects that are to be carried out in NHS settings are submitted to local ethics committees for approval, prior to commencement. Ethics committees have a dual remit of protecting the rights of research participants and ensuring ethically sound research is conducted (Manning 2004). The overarching ethical issues relating to this research programme reflect those stated above and included informed consent and confidentiality and anonymity of data. The ethical issues were acknowledged in the design stage of each part of this work and were addressed when the protocols were developed. Ethical approval was then sought and approval gained prior to commencing each part of the research programme. These will be presented and discussed in detail in the relevant chapters when each part of the research programme is presented in its entirety.

3.14 Conclusion

This chapter has clearly defined the overall aim of this research programme and presented the research methodology used. It has presented and discussed the main theoretical perspectives that exist in relation to health care research and given a clear rationale for the chosen theoretical perspective: pragmatism. It has also presented the MRC framework for the development and evaluation of complex interventions, which formed the basis of this work, and the rationale for the approach to data analysis, including both the analysis of quantitative data collected during the telephone survey and the qualitative data, collected during the focus groups and interviews with health professionals and recent maternity service users. The chapter has concluded with a brief overview of the intervention development method and rationale.

The next chapter will present Study 1 of this work, which was a telephone survey of hospitals across the UK, that aimed to identify current practice in relation to the care of obese woman during labour and to assess the need for an intervention to be developed, in order to influence the midwifery care and management of obese women during labour.

Chapter 4

Study 1

Chapter 4 – Study 1: A survey of intrapartum practice for obese women in the UK

4.1 Introduction

In the previous chapter, the overarching methodology that was used for the PhD was presented describing the theoretical perspectives and the way in which the MRC guidance was used as a framework to guide the development of an intervention to promote normal birth amongst obese pregnant women. The first phase of the MRC framework focuses on the development of the intervention and includes identifying the evidence base, identifying and developing theory and modelling the intervention. This chapter presents the findings of a telephone survey of current practice in the care of obese women during labour and an analysis of local guidelines on the management of obesity in pregnancy that were collected from across the United Kingdom as part of the survey that was undertaken to assess the need for the planned intervention. The survey was undertaken as part of the development stage of the intervention, using the MRC framework as guidance and involved identifying current practice in relation to the care of obese women during labour and establishing a need for an intervention, in order to identify both the current evidence base and appropriate theory, on which to base the intervention.

4.2 Aims

The aims of the study were to:

- identify current practice in relation to the care of obese woman during labour
- assess the need for an intervention to improve the care of obese women during labour.

The main objectives were to:

- establish to what extent guidelines for the intrapartum care of obese women were available in maternity hospitals across the UK and;
- ascertain the content of the local guidance on obesity in pregnancy that is currently in use in maternity hospitals across the UK in relation to the promotion of normal birth.

4.3 Method

4.3.1 Study design

A survey method was used. A telephone survey of practice in relation to the care of obese pregnant women during labour was undertaken in maternity hospitals across the UK. Wagstaff (2006) suggests that surveys are normally conducted in order to collect information about a defined population. Using a survey method enabled structured descriptive data to be obtained and a large number of hospitals to be included. Wagstaff (2006) does, however, state that a survey should only be used when the target population is clearly defined, is easily identified and the majority of respondents are able to answer the questions that are asked. This was the case with this survey, as the context was hospitals that provided maternity care for obese women and the participants were health professionals who were selected because they would be familiar with the local policies and guidelines and therefore be able to answer the survey questions. A telephone survey was chosen as it was considered more likely to achieve a higher response rate, compared to a postal or face-to-face survey; it was less time consuming, avoiding the need for extensive travel. The research protocol can be seen in Appendix 1.

4.3.2 Setting

The setting for the survey was NHS maternity hospitals who provide care to obese women during pregnancy. The survey included 41 hospitals. Across the four countries of the UK there are a total of 31 strategic health authorities (SHA) and health boards (10 SHA in England, 14 health boards in Scotland, 3 health boards in Wales, 4 health boards in Northern Ireland), each with a number of maternity units within them.

Intrapartum care in the UK is provided through a network of birth settings which are either consultant-led or midwifery-led. Birth settings are categorised according to the facilities available and the medical and maternity staff who staff them. Women are able to choose which birth setting they wish to birth in, depending on their care needs and preferences. In a consultant-led setting, a labour ward or delivery suite has medical facilities and medical staff available, as well as midwives. Labour wards are based within hospitals. Midwifery-led units (or birth centres) focus on birth without medical intervention and are designed to be more homely than a hospital labour ward. Some midwifery-led units are based within a hospital but are separate from the labour ward. Some midwifery-led units are located away from hospitals in purpose-built units (Which Birth Choice 2017). All midwifery-led units are staffed and managed by midwives. A woman requiring medical input during birth is usually transferred to a consultant-led setting.

Obesity during pregnancy is associated with a number of increased risks, both during pregnancy and birth, as presented in Chapter 2. Obese women are therefore encouraged to give birth in consultant-led birth settings (CMACE & RCOG 2010). Therefore the setting for this study was predominantly consultant-led units; however, some also contained alongside Midwifery-led units (MLU). Freestanding midwifery-led units (FMU) were not included in the survey as they do not routinely provide intrapartum care to obese pregnant women with BMI greater than 35 (CMACE & RCOG 2010).

4.3.3 Sample

A sample is defined by Cluett and Bluff (2006b) as a group of individuals selected from a target population, as being representative of that population. Stratified sampling is a method of sampling from a population, whereby the sample is divided into groups, known as strata. It aims to ensure representation from all strata in the sample as a whole (Cluett & Bluff 2006b). Stratified purposive sampling was used for this survey and the sample was stratified by Strategic Health Authority or Health Board to ensure representation from all geographical and organisational areas across the four countries of the UK. All units selected had to provide intrapartum care to obese women. The majority (22) of the maternity units that were included in the survey were consultant-led units (CU); nine also contained alongside midwifery-led units (MLU). The consultant-led units included tertiary units and district general hospitals (DGH). However, in order to include at least one unit from each area, two GP units (GPU) were also included. These were based in very remote health boards in Scotland and were the only maternity units within these boards; they were included in the survey to ensure representation from all the Health Boards in Scotland. These units provide intrapartum care to obese women and transfer to mainland Scotland if needed.

The strategic health authorities in England are larger than those in Scotland, Wales and Northern Ireland and contain a larger number of maternity units in each. For this reason, one maternity unit was selected from each NHS Board in Scotland, Wales and Northern Ireland, and two maternity units from each strategic health authority in England were sampled. Purposive sampling was used to identify one large maternity unit and one smaller maternity unit. The inclusion criteria were hospitals that provided maternity care to obese women and consented to participate in the survey over the telephone when contact was made.

A total of 41 hospitals were sampled as follows:

- 1 hospital from each of the 14 health boards in Scotland
- 2 hospitals from each of the 10 SHA in England
- 1 hospital from each of the 3 health boards in Wales

1 hospital from each of the 4 health boards in Northern Ireland

4.3.4 The survey

A short questionnaire was developed, using structured questions with some closed and open questions, interrogating the intrapartum care of obese women. Structured questions were used as they allow a large amount of consistent data to be collected, with a minimum amount of time and expense (Wagstaff 2006). The survey included questions about current practice, current hospital guidelines and whether a specific intrapartum guideline for care of obese women was considered useful. A copy of the current hospital guideline was also requested.

The survey questions were:

- 1) Do you have guidelines on intrapartum care of obese women?
- 2) How long have you had them? (if applicable)
- 3) Do you feel there is a need for an intrapartum guideline?
- 4) If yes to question 1, can I have a copy?

The answers to the questions were documented on a one-page proforma and subsequently analysed, as described below. A copy of the questionnaire can be seen in Appendix 2.

An initial telephone call to each selected maternity unit was made in order to identify a named person who was appropriate to contact for the survey. This was either the delivery suite manager or a consultant midwife who had a remit for intrapartum care. And who was able to participate on behalf of the hospital. If this initial call was inconvenient, a second telephone call was then made to undertake the survey at a convenient time for the respondent.

4.3.5 Data analysis

The data from the completed questionnaires was coded numerically and inputted into SPSS (version 17), a widely used statistical package in the social sciences. Coding is the process of labelling data in order to classify it to allow it to be analysed (Cluett & Bluff 2006b). The data was then analysed using descriptive statistics, to analyse frequencies within the data. Document analysis was carried out on the guidelines that were received following the survey. This involved systematically reviewing each guideline by reading it and identifying the main aspects of care for obese women during the intrapartum period. Each guideline was then compared with the others in order to identify similarities and differences in care.

4.4 Ethical considerations

Ethical opinion was sought from the National Research Ethics Committee (Scotland) and advice sought from the committee co-ordinator. The advice was that a formal application for ethical approval was not required for the survey, as staff surveys that measure a current service are considered as service evaluation by the Health Research Authority (<http://www.hra-decisiontools.org.uk/research/glossary.html>). The University of Stirling departmental ethics committee was also approached for advice, prior to commencing the work and it was agreed that formal ethical approval was not required. Although the advice was that ethical approval was not required in order to conduct the survey, a number of common ethical issues were considered when planning the survey and were addressed in undertaking the survey.

The main ethical issues were consent to participate and the anonymity of each hospital. Although formal ethical approval was not required, the principal of informed consent to participate was considered to be important and therefore informed consent was sought from the midwife responding on behalf of the hospital, prior to participation. After a brief explanation of the study, detailing the background and purpose of the study, verbal consent was gained over the telephone. In order to ensure anonymity of the hospitals that participated, all hospitals were allocated a number, rather than their name, with only brief details included in the results to describe the sample, i.e. the type of maternity hospital and the number of births per annum. Only the researcher (AK) had access to the list of hospitals that participated. To maintain confidentiality, all computers used during the research study were password protected. No data was stored on compact discs or on USB pens, as there was potential for loss of such devices.

4.5 Findings

From the initial, planned sample of 41 hospitals, a total of 30 hospitals were contacted initially (73%). Contact was not able to be made in the remaining 11 hospitals because the relevant personnel were unavailable after multiple attempts to contact them. Initial contact was made with relevant contacts in all 30 of the other hospitals, but a request was made that the survey be conducted at an alternative time due to current workload in 6 hospitals. Further attempts to contact the named personnel failed and therefore 24 survey questionnaires were completed in full (58%).

The hospitals included 9 tertiary units, 13 district general hospitals, all with consultant-led birth settings and 2 GP units. The birth rates ranged from 130–8500 births per year. Table 2 describes the hospitals included in the survey.

Table 2. Hospitals included in the survey

Site no.	Type of maternity unit	No. of birth per year	Type of hospital	Guideline available	Midwifery care in labour included in the guideline
1	CU & MLU	8500	Tertiary unit	Y	N
2	CU	2100	DGH	Y	N
3	CU	6500	Tertiary unit	Y	Y
6	CU	2200	DGH	Y	N
7	CU & MLU	4600	Tertiary unit	N	N/A
8	CU	6800	Tertiary unit	Y	N
9	CU & MLU	2500	DGH	Y	N
11	CU & MLU	5800	DGH	Y	N
13	CU & MLU	6900`	Tertiary unit	Y	N
15	CU	2300	DGH	N	N/A
16	CU & MLU	8400	Tertiary unit	Y	N
18	CU	5000	Tertiary unit	N	N/A
21	CU	3500	DGH	N	N/A
22	CU	1500	DGH	Y	N
23	CU	1500	DGH	N	N/A
24	CU & MLU	4000	DGH	Y	N
26	CU & MLU	5600	Tertiary unit	N	N/A
27	CU & MLU	4700	DGH	Y	N
28	CU	2500	DGH	N	N/A
29	CU & MLU	5000	Tertiary unit	Y	Y
32	GPU	150	GPU	N	N/A
33	GPU	130	GPU	Y	N
34	CU	250	DGH	Y	N
35	CU	2500	DGH	N	N/A

Key: CU= Consultant-led unit

MLU = Midwifery-led unit

GPU = GP unit

The survey found that the majority of surveyed hospitals (67%, n=16) had clinical guidelines for the obstetric management of obese women during pregnancy, labour and the postnatal

period. Of the 8 hospitals (33%) that did not have guidelines for the management of obese women, 4 (50%) were in the process of developing them at the time of the survey. Only two of the existing guidelines, however, made any reference to guidance for midwifery care during labour.

The majority of hospital respondents (71%, n=17) felt that an intrapartum guideline for the care of obese women that included midwifery care was necessary, while 29% of respondents (n=7) felt that this was not appropriate. Respondents commented that they felt that the care provided for obese women should be the same as for any other pregnant woman, with midwives striving to provide high-quality one-to-one care during labour. Overall, the survey indicated support from practitioners for the development of an intrapartum guideline or intervention that would influence midwifery care and have the potential to increase normal birth rates amongst obese women (71%). All of the hospitals that had clinical guidelines at the time of the survey (n=16) were requested to forward a copy for documentary analysis. A total of 9 guidelines were received (56%). Three hospitals did not have their guidelines in electronic format and therefore did not send copies.

All the guidelines that were received encompassed the management of obese women throughout pregnancy, the intrapartum period and postnatally. Each guideline contained a section that focussed on care during labour and birth. Analysis of the content of the guidelines showed that the majority of the content on intrapartum care guidance focussed on obstetric care, as was described by the survey respondents. All of the guidelines stated that birth should take place in the consultant-led unit, the anaesthetist should be informed on arrival to the delivery suite and the women should have an intravenous cannula sited and venous blood samples obtained. Fetal monitoring was included in all the guidelines, with all stating that continuous electronic monitoring was recommended for obese women; however, two guidelines only stated this as necessary for women with BMI ≥ 40 . Three guidelines recommended siting epidural anaesthesia early in labour and three guidelines referred directly to the increased risk of shoulder dystocia. Two of the three elaborated on this, stating that midwives should be aware of the shoulder dystocia guideline when caring for obese women and that adopting the McRobert's position prophylactically may be beneficial to the safe delivery of the baby. McRobert's position is the position adopted during a shoulder dystocia obstetric emergency, whereby the back of the bed is laid flat and the woman is assisted to bend her legs at the knees and draw them up as close to her chin as possible. This is performed in order to widen the pelvic outlet and allow the trapped anterior shoulder to release and be born. Although obese women are at increased risk of postpartum

haemorrhage, only two guidelines made reference to the management of the third stage of labour, where it was recommended that it should be actively managed.

Only three of the guidelines made any direct reference to normal birth. One of these recommended that normal birth be encouraged, in the absence of any other obstetric risk factors, but did not give specific detail as to how this could be achieved, and two recommended mobilisation during labour. Interestingly, the reason given for this recommendation in one of the guidelines was to prevent deep vein thrombosis, with no reference made to the benefits of mobility during labour and birth. No other references to normal birth or midwifery care during labour were made in any of the guidelines analysed.

4.6 Discussion

The findings from the telephone survey demonstrated that the majority of hospitals surveyed did have clinical guidelines for the management of obese women. All the guidelines included detail on the medical management of obese women during labour and birth. Obesity is a significant contributor to complications in pregnancy and women with a high BMI remain over-represented in all maternal deaths (Lewis 2007, CMACE 2011). In recent years, much focus has been placed on developing detailed guidelines for the care of these women during pregnancy. Joint guidance published in 2010 (CMACE & RCOG 2010) suggests that all NHS hospitals providing care to obese pregnant women should have 'clear policies and guidelines available' (CMACE & RCOG 2010, p.5). This national guidance has been the driver for the development of local guidelines and policies in order to address the risks associated with obesity during childbearing.

It is evident, however, that the majority of the guidelines were heavily focussed on the obstetric management of obese women, with only three guidelines including direct reference to specific aspects of midwifery care, for example, the promotion of mobility during labour, the use of hydrotherapy or continuous midwifery support during labour. The guidelines stated that birth should take place on the consultant-led unit, the anaesthetist should be informed on arrival to the labour ward, women should have a venous cannula sited and electronic fetal monitoring during labour should be continuous. These reflect the national joint guidance published in 2010 (CMACE & RCOG 2010). However, the three guidelines that recommended siting epidural anaesthesia early in labour do not reflect the national joint guidance. The joint guidance states only that the duty anaesthetist should be informed on admission and a senior Registrar be involved in the care of women with a BMI over forty, who require anaesthesia. Similarly, the joint national guidance does not make any direct recommendations about the management of shoulder dystocia. It states only that during the

antenatal period, obese women should have an informed discussion about the associated risks of obesity and possible complications during labour. This would include discussion about the increased risk of shoulder dystocia as it has been demonstrated to have a strong association with maternal obesity. Shoulder dystocia can cause short term morbidity for both the mother and the neonate. For the mother, the risks include significant perineal trauma and/or postpartum haemorrhage and for the neonate, brachial plexus injuries or fractures and, in extreme cases, brain damage due to a lack of oxygen because of the complication of shoulder dystocia at the time of birth (RCOG 2013). Two of the guidelines stated that the McRobert's position should be adopted prophylactically. However, it could be argued that the adoption of the McRobert's position could be detrimental to the process of normal birth, as in order to adopt McRobert's, the woman needs to be lying flat on her back, which would assume that the woman may already be in a semi-recumbent position and, if not, she would have to adjust her position to be so. This would obviously now mean though that the woman cannot adopt an upright position – the optimal position for normal birth and the position more likely to minimise the risk of shoulder dystocia.

As reported earlier, only three guidelines made any direct reference to normal birth. One guideline recommended the encouragement of normal birth, in the absence of any other obstetric risk factors, but did not provide any detail or examples of how this could be achieved. This reflects the national guidance which states that induction of labour should only be carried out when other obstetric or medical indications are evident. It also recommends that women who have a BMI over 40 should receive continuous midwifery care during established labour. It could be argued that this recommendation was not included in the local clinical guidelines from the various hospitals as this is recommended for all women in labour and should be provided anyway (NICE 2007). Further questioning during the telephone survey revealed that 29% of survey respondents felt that the inclusion of specific aspects of midwifery care was not appropriate or necessary to be explicitly included in a clinical guideline as the care provided for obese women should be the same as for all other pregnant women, with midwives striving to provide high-quality one-to-one care during labour. Conversely, it could be argued that women who are deemed to be 'high-risk' require an enhanced level of midwifery care, as the risk of poorer outcomes is higher and therefore aspects of midwifery care that could maximise the chance of normal birth for obese women should be explicitly documented in local clinical guidelines.

Although the majority of the content of the local clinical guidelines reflect the national guidance on the care of obese women (CMACE & RCOG 2010), the focus is on the obstetric or medicalised management of obese women during labour and birth, with minimal focus on

normal birth and no reference made to any aspects of midwifery care at all. Obese women are at significantly higher risk of complications during labour and birth, with the rates of delay during the first stage of labour and caesarean section significantly higher. The inclusion of aspects of midwifery care and details of how normal birth could be promoted for this population in the clinical guidelines would allow midwives to challenge some aspects of the medicalised care and enable midwives to promote practices that would maximise the opportunity for normal birth for obese women.

Overall the telephone survey demonstrated support from the majority of respondents for the development of an intrapartum intervention that would influence midwifery care and may influence normal birth rates amongst obese women, as they felt that guidance on midwifery care of obese women during labour was lacking in local guidelines.

4.7 Strengths and limitations

The planned sample for the survey included maternity units from all Strategic Health Authorities and Health Boards across the UK; however, the results are not able to be generalised to every maternity unit in the UK as not all maternity units responded to the survey. This was because the relevant personnel were unavailable following multiple attempts to contact them and some maternity units requested the survey be conducted at an alternative time due to current workload, but further attempts to contact the named personnel failed. This meant a smaller sample than initially anticipated was included in the study and therefore the findings are only representative of the units that participated in the survey. Unfortunately, only a small number of local clinical guidelines were received, for several reasons, including lack of availability of electronic guidelines and failure of the maternity unit representative to send them following the telephone call. Although the majority of the guidelines received had similar content, it is not possible to say that the content of local clinical guidelines could be generalised to all maternity units in the UK, as some aspects of care may vary.

A particular strength of this study was that it involved both a short questionnaire that was completed verbally over the telephone and also the request for a copy of the clinical guidelines to be sent following completion of the questionnaire. Analysis of guidelines allowed for further detail to be ascertained about the local practices for the care of obese women and provided more in-depth information that enhanced the information obtained from the telephone questionnaire.

4.8 Conclusion

This chapter has presented the findings from the first part of this research programme. It has demonstrated that following the publication of the joint, national guidance on the care of pregnant women with obesity (CMACE & RCOG 2010), the majority of hospitals do have local clinical guidelines on the obstetric management of obese pregnant women. The survey did, however, demonstrate that the guidelines focus on the obstetric care of such women, with only the minority giving any reference to any aspects of midwifery care. Overall, the survey indicated support from the majority of respondents for the development of an intervention that may influence normal birth rates amongst obese women in the future.

The next chapter will present Study 2 which aimed to explore health professionals' experiences of caring for obese women during the intrapartum period.

Chapter 5

Study 2

Chapter 5 – Study 2: Health professionals’ experiences of providing care to obese women during labour

5.1 Introduction

This chapter presents the findings of Study 2 which focuses on health professionals’ experiences of providing care to obese pregnant women. As presented in Chapter 3, the MRC framework for developing and evaluating complex interventions (MRC 2006) provided the overarching structure of this thesis. The developmental stage of an intervention should include identifying and developing appropriate theory on which to base the intervention (MRC 2006) and it is recommended that the target population and those involved in the implementation of the intervention should be involved in the developmental stage (MRC 2006). Therefore, health professionals who regularly provide care to obese women during labour and birth were the target population for this study, as they would be one of the target populations for the intervention (the other being obese pregnant women) and also be involved in the implementation into practice, following development. This study aimed to generate part of the evidence required to inform the development of the intervention.

The research methods used will be presented, including the study design and the ethical considerations, and the findings then will be presented in themes, addressing the study aims and objectives below.

5.2 Aim

The study aimed to explore practitioners’ experiences of providing intrapartum care to obese pregnant women during labour. The specific objectives were to:

- obtain practitioners’ experiences of caring for obese pregnant women during labour
- identify issues that practitioners face when caring for obese pregnant women during labour
- identify how these issues impact on obese women’s care
- identify possible solutions that could decrease the impact on care.

5.3 Method

5.3.1 Study design

The study used a qualitative methodology. Focus groups and individual interviews were conducted with health professionals who provided antenatal and/or intrapartum care to obese women, including midwives, obstetricians and anaesthetists. Focus groups were conducted with midwives and semi-structured individual interviews were conducted with obstetricians, anaesthetists and a small number of midwives who were unable to attend a focus group, but wanted to participate. Focus groups capitalise on communication between participants in the generation of data and are commonly used to gain insights into experiences and to explore attitudes (Kitzinger 2006). Parahoo (2014) suggests that focus groups are used when researchers want to gain differing perspectives on a subject or phenomenon. Focus groups allow ideas to be explored and elaborated on within the group, which would not occur when interviewing an individual (Cleary et al 2014). Kitzinger (2006) also suggests that focus groups allow participants to explore their own views and gain clarity of alternative views, through the group discussion that takes place. This process would not take place in one-to-one interviews, where only the individual's views are explored. Additionally, focus groups allow the rapid assessment of group perspectives, through the debate with other participants in the group, which may not be developed through individual interviews (Walsh & Baker 2004, Kitzinger 2006). Focus groups were chosen as they would allow midwives' experiences of caring for obese women to be explored, whilst allowing discussion and debate between the midwives and allowing the participants to compare and contrast their own experiences. Parahoo (2014) states one of the disadvantages of focus groups, is that dominant personalities can monopolise the discussion and so attention was paid during the focus groups to ensure that all participants had the opportunity to contribute and individual opinions and experiences were invited from individuals if it was noticed that they had not contributed for some time during the focus group. The focus group discussions were guided by a list of open-ended questions. These can be seen in Appendix 3.

Semi-structured, individual interviews were conducted with obstetricians and anaesthetists, as they generally work individually and it was thought that it would be easier to arrange an interview at a date and time convenient to them, as workload may not allow them to attend a focus group. Interviews in research have been described as conversations with a purpose (Maykut & Morehouse 1994). Semi-structured interviews are based on a loose structure that guides the conversation and consists of a series of open-ended questions (Walsh & Baker 2004). This is known as an interview schedule. The interview schedule for this study can be seen in Appendix 4. Semi-structured interviews allow the interviewer to pursue an area of enquiry in more detail, probing the participant for further information if necessary (Walsh &

Baker 2004). Robinson (2006) suggests that they are valuable as they can facilitate the exploration of thoughts, feelings and experiences of the participant through the conversation. Semi-structured, individual interviews were therefore chosen, as they allowed health professionals' experiences of providing intrapartum care to obese women to be explored and allowed discussion about the challenges that are faced and the impact these could have on the care provided.

5.3.2 Setting

The study was carried out in two National Health Service Hospitals who had previously taken part in the survey in Study 1 and had expressed willingness to participate in the next stages of the research. One hospital was chosen from the survey from England, a large tertiary unit, with an annual birth rate of approximately 8000, with 18% of women receiving maternity care having a BMI of 30 or greater. The second hospital was in Scotland and was a district general hospital with an annual birth rate of 5000 births and an obesity rate of 24%. These two hospitals were chosen because they both served a large obese population and so had considerable experience of caring for obese women. The local guidance for the care of obese women was similar at both hospitals.

5.3.3 Sample

A sample can be defined as a group or proportion of a population (Parahoo 2014). Morgan (2004) suggests that sample selection is crucial to the success of any research, as an inappropriate sample selection can have adverse effects on the outcome. A number of sampling strategies exist in qualitative research, including purposive, convenience and snowball (Morgan 2004). Purposive sampling is used predominantly within qualitative research (Parahoo 2014) and allows the researcher to select the people who have the experience or knowledge that relates to the focus of the research (Morgan 2004) and therefore participants should be able to provide data that is rich and focussed on the research question, allowing the researcher to gain an accurate account of the phenomenon (Walsh & Downe 2006). Kitzinger (2006) suggests that the majority of studies involving focus groups use purposive sampling. As the aim of this study was to explore practitioners' experiences of providing intrapartum care to obese pregnant women purposive sampling was used for this study in order to ensure health professionals with recent experience of caring for obese women during labour and birth participated. The inclusion criteria were health professionals who currently provide care to obese women during labour and birth, gave consent to participate and were English speaking. Anyone who did not consent to participate was excluded. Cleary et al (2014) suggest that when using focus groups to gather data, the phenomenon being researched should determine the number of participants in

each focus group, with the research question indicating the number of focus groups needed. The average number of focus groups needed is documented as between three and five (Twohig & Putnam 2002), although it is argued that this may be a rule of thumb that has not been rigorously questioned (Cleary et al 2014). The planned sample was for twenty midwives to participate in one of four focus groups and six obstetricians and anaesthetists to be included in the study.

5.3.4 Plan of investigation

All midwives who provided antenatal and/or intrapartum care to obese women were invited to attend one of two focus groups at their hospital. Each midwife was sent an information pack about the research by a named contact person, independent of the research. The information pack contained a covering letter (Appendix 5), an information sheet (Appendix 6), a choice of two dates for the focus group and a reply slip, having asked to indicate whether or not they were willing to participate using a reply slip. A stamped-addressed envelope was provided. Midwives who indicated they were willing to participate were then contacted by the researcher (AK) and a date confirmed to attend the focus group. Midwives who were unable to attend the focus groups, but wished to participate, were interviewed individually.

Each consultant obstetrician and consultant anaesthetist employed at the hospital was invited to participate. A research information pack was sent to each consultant, containing a covering letter (Appendix 7) and an information sheet (Appendix 8). This letter was then followed up with a telephone call within two weeks of the research pack being sent out in order to ascertain if they wished to participate. If so, a mutually convenient time for an interview was arranged. All the focus groups and interviews were conducted in the hospitals where the health professionals worked, as this was the most convenient place for all participants. An explanation of the study was provided at the start of each focus group and interview, and participants were asked to sign a consent form.

5.3.5 Data collection and analysis

All the focus groups and individual interviews were audio-recorded, with consent of the participants and they were transcribed verbatim by a professional transcription service. Transcripts were checked for accuracy against the audio recordings, prior to the commencement of formal data analysis. All data from this study was analysed using a framework approach (Ritchie & Spencer 1994), as described in Chapter 3. Data analysis was commenced as soon as the initial data had been collected and used as a guide, with any emerging themes explored in greater detail in subsequent focus groups and interviews

(Robinson 2006). The transcripts were read several times and coded, and then the codes together with a list of pre-identified themes were applied to the data to form an index. This was later organised into charts and interpreted and mapped identifying commonalities and associations between the data in different themes (Pope et al 2006). (The full research protocol can be seen in Appendix 9).

5.4 Ethical considerations

An application was made for ethical approval, prior to commencing the research and approval was gained from the Health Research Authority, National Research Ethics Service Committee (12/NW/0280). This can be seen in Appendix 10.

The main ethical issues for this study were informed consent, including consent for audio recording, participant confidentiality and anonymity of data. Informed consent in research involves the clear communication of relevant information pertaining to the research and the freedom of the potential participant to decide if they wish to participate or not (Beauchamp & Childress 2001). Manning (2004) suggests that consent to participate in a research study should not simply be a task to complete but should be viewed as a process throughout the life of the study and participants should be able to withdraw at any time. He suggests that potential participants need to be afforded adequate time to read information pertaining to the research and to come to a decision as to whether they wish to participate or not (Manning 2004). All potential participants were provided with written information describing full details about the research and given at least 24 hours in order to consider whether or not to participate. Written consent was obtained prior to the focus group discussions, detailing the importance of confidentiality, anonymity of data and ensuring consent for audio recording the discussions. Each participant was given a copy of the consent form to keep and one was retain in the research file. All participants were informed that they were free to withdraw from the research at any time, should they wish to.

Manning (2004) suggest that confidentiality and anonymity can be more difficult to maintain in qualitative research than quantitative research. This is because the smaller number of participants can present more potential for individuals, populations or locations to be identifiable. As such, Manning (2004) recommends the use of pseudonyms when publishing data, particularly when using verbatim transcripts. Kitzinger (2006) suggests that when conducting focus groups, the confidentiality of the research data could be potentially compromised because of the presence of the other research participants and recommends extra care be taken with regards to maintaining confidentiality. Ground rules were agreed at the start of each focus group regarding each participant's responsibility to maintain the

confidentiality of information discussed during the group and agreeing that it should only be used for the purpose of the research. In order to ensure anonymity, both the data collected during the focus groups and interviews was anonymised during transcription and all names and/or locations allocated a pseudonym. Data was collected by the named researcher only (AK) and analysis was carried out by the named researcher (AK) and one other person (HC). To maintain confidentiality, all data, both written and audio recorded was stored in a locked cupboard, in a locked office. Audio recordings were kept until analysis was complete and then destroyed. All other data will be destroyed after 10 years, in accordance with University of Stirling governance procedures. All computers used during the research study were password protected. No data was stored on compact discs or on USB pens, as there was potential for loss of such devices.

5.5 Findings

A total of twenty four health professionals participated across the two hospitals. Six Consultant Obstetricians and two Consultant Anaesthetists were interviewed individually. A total of sixteen midwives participated in either a focus group or an individual interview, all of whom were regularly providing intrapartum care to obese women. See Table 3 below.

Table 3. Participant profile (Study 2)

	England	Scotland
Obstetrician	3	3
Anaesthetist	1	1
Midwife	10	6
Focus Group 1	3 midwives	-
Focus Group 2	4 midwives	-
Focus Group 3	-	4 midwives
Focus Group 4	-	2 midwives
Interviews	3 midwives	-

Table 4 shows the thematic framework of the findings. The overall interpretation 'Different approaches to obese birth offer opportunities to promote normal birth' was underpinned by three key emergent themes: medicalisation of obese birth; promotion of normal obese birth; and the complexities and contradictions in staff attitudes and behaviours. These three themes and their sub-themes are presented in Table 4, with examples of some of the codes used during the analysis and some excerpts from the data.

The relationships between emergent themes (and sub-themes) are shown in Figure 2. The lines depicting causation were informed by what is known in existing literature, with the final iteration originating directly from the data. These led to the overarching conceptual framework comprising two key propositions. First, the routine stereotyping of women categorised as obese leads to fatalistic staff attitudes and a pre-emptive medicalisation of birth as abnormal. Secondly, the care of women categorised as obese can be facilitative and adaptive to promote normal birth whilst negotiating known increased risks. These two propositions co-exist and are held in tension, but at the same time are not mutually exclusive, or associated with a particular professional group, leading to an element of fluidity. Moreover, as evident in theme 3 (middle ground) both could afford opportunities to promote normal birth.

Figure 2. Conceptual framework (Study 2)

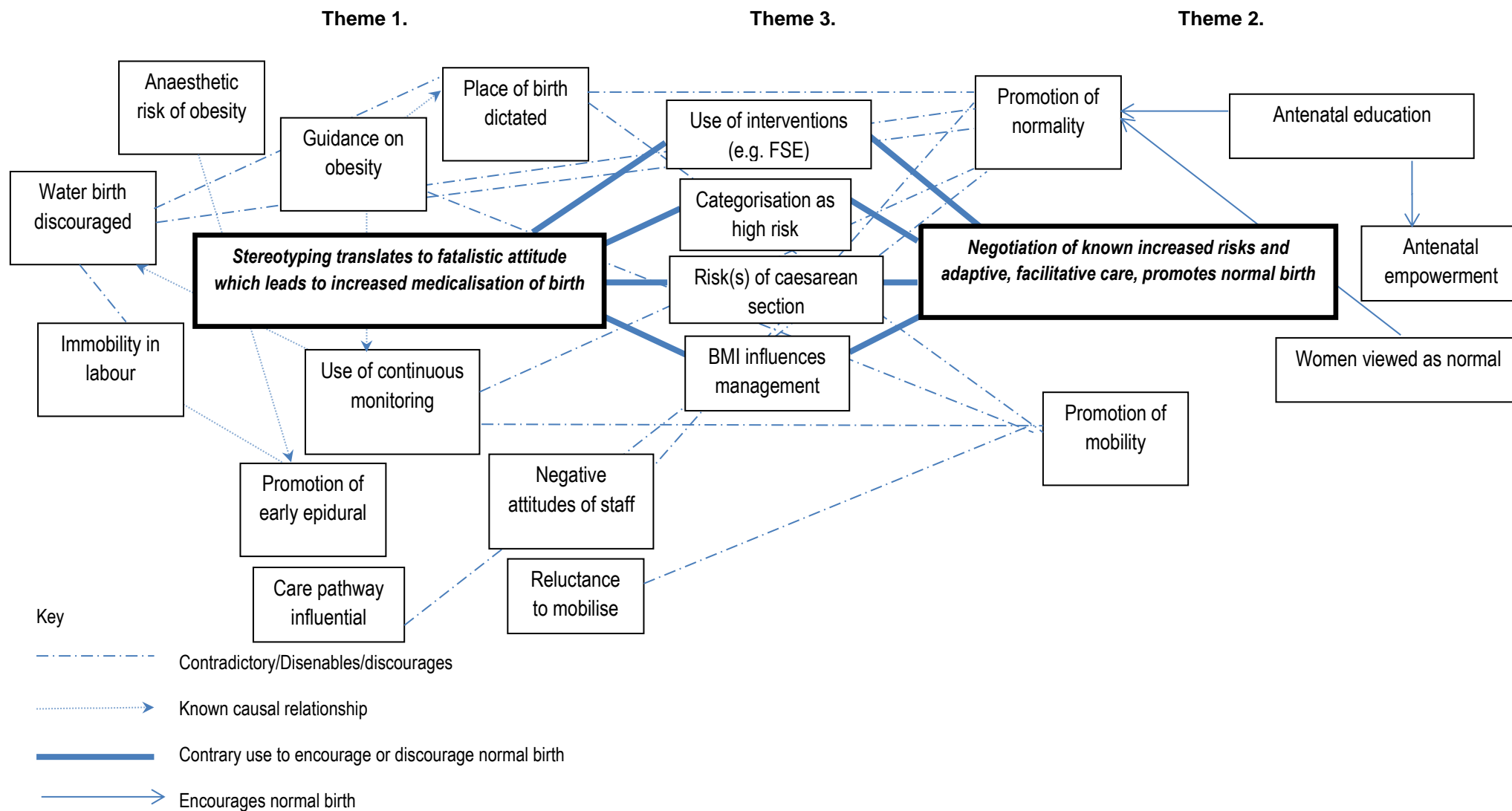


Table 4. Thematic Framework (Study 2)

Interpretation: Different approaches to obese birth offer opportunities to promote normal birth					
Theme 1 Medicalisation of obese birth		Theme 2 The promotion of normal 'obese' birth		Theme 3 Complexities and contradictions in staff attitudes and behaviours	
Place of birth <i>"We had a woman who wanted to sit on a ball because she was a home delivery, but had to be continuously monitored and they (staff) were unhappy to do it at first."</i>	Place of birth impacts on mobility Normality influenced by place of birth	Antenatal education <i>"I think we should be educating them about mobility and being mobile and trying to get them to the MLU."</i>	Importance of information-giving antenatally Antenatal education about mobility	Use of fetal scalp electrodes <i>"I would preferably, be able to monitor the babe, put the FSE on, to make sure that if she wanted, she could be mobile to help the labour as well".</i>	FSE used to aid mobility FSE viewed as an intervention by some but used to promote mobility by others
Negative attitudes of staff <i>"And the delivery of those patients, I think it's probably looked at negatively by the midwifery staff as well to an extent, because they are overweight they see them as 'oh, this person's going to be a problem'."</i>	Negative attitudes about women's size Caring for obese women viewed negatively	Promotion of normality during labour <i>"We should be treating them the same, if not more so promoting normality."</i>	Acknowledge risk but promote normality same as anyone else Pro-active approach to normality	Risk of caesarean section <i>"I think people tend to play safe. I don't think I personally would agree with that....It's best to have a normal delivery and if it can be, you know, pushed to that stage, without taking much risk, I will do that. Rather than doing something, like doing a section for example."</i>	Risk of caesarean can influence care Not all obese women have a caesarean

<p>Challenges monitoring fetal heart</p> <p><i>"I just had to stand there and I was trying to get something and half the time you didn't know if it was maternal pulse, it was very difficult."</i></p>	<p>Technically difficult monitoring fetal heart</p> <p>Fetal heart monitoring is difficult</p>	<p>Promotion of mobility during labour</p> <p><i>"I think basic care should be managed exactly the same. Like, cos any woman should be mobile in labour, you know, regardless of what they weigh."</i></p>	<p>Promote mobility regardless of size</p>	<p>BMI influencing clinical management</p> <p><i>"I don't feel that I do, but I do feel that some people probably make decisions where the lady's weight influences their decisions."</i></p>	<p>BMI may influence decision-making for caesarean section</p> <p>BMI may influence decision making positively</p>
<p>Reluctance to mobilise</p> <p><i>"I think they're generally more difficult. They're more reluctant."</i></p>	<p>Obese women less mobile in labour</p> <p>General reluctance to mobilise</p>			<p>Classification as high risk</p> <p><i>"I think putting somebody in a high risk category actually doesn't do anybody any favours because then people tread very carefully and they start to think 'oh God, she's high risk ... I better make sure that nothing wrong happens here.'"</i></p>	<p>High risk classification can be detrimental</p> <p>Women view themselves as 'normal'</p>
<p>Discouragement of use of water</p> <p><i>Because at the moment women are excluded from water birth aren't they, who have a BMI over 35."</i></p>	<p>Water birth contraindicated because of size</p> <p>Water birth not an option</p>				

5.5.1 Medicalisation of 'obese' birth

5.5.1.1 Place of birth

The current guidance (CMACE & RCOG 2010) states that women with BMI over 35 should give birth in a consultant-led unit and this was echoed by the midwives.

“Nationally the recommendation is that anyone with a BMI of 35 or more should be in consultant-led.” (M/W FG)

Whilst acknowledging the guidance, some midwives felt that although women with a raised BMI were 'not allowed' to give birth on the midwifery-led unit (MLU), they did sometimes achieve a normal birth.

“I had a woman that had a raised BMI that wasn't allowed on the MLU because of a certain cut off that they had a long time ago, who came in, mobilised and pretty much delivered herself.” (MW Int)

5.5.1.2 Negative attitudes of staff

The attitudes of staff towards obese women was discussed by both obstetricians and midwives and it was acknowledged that caring for obese women, particularly during the intrapartum period was viewed negatively, with many staff displaying a negative attitude towards the prospect of providing care.

“The minute you see somebody come through delivery suite who's very large you hear people 'oh, I don't want to look after her, don't give her to me.....so immediately they are negative ... so I don't know how they're going to be when they get the woman in the room.” (MW Int)

One midwife expressed concern as to how the negative attitudes of staff affected the women they were caring for.

“They're already feeling negative about caring for her, so I don't know how that would then come across to the woman” (MW Int)

Several reasons were suggested for this common attitude, and included the physical difficulties that are encountered, for example, the difficulties faced when monitoring the fetal heart and obese women's reluctance to mobilise.

5.5.1.3 Challenges monitoring the fetal heart

The practice of using continuous electronic fetal monitoring when caring for obese women during labour is common and was discussed and challenged by both midwives and obstetricians. Many practitioners were not able to recall any evidence for this use of continuous fetal monitoring.

“I can’t remember it [obesity] being one of the things that we put down as an indicator for continuous monitoring.” (Obs Int)

“Continuous monitoring ... I don’t think there is any evidence that says so.” (Obs Int)

The use of continuous monitoring during labour was viewed as very restrictive for women and it was felt that this was detrimental to the promotion of normality and mobility during labour. Midwives felt that continuous fetal monitoring was more likely to restrain a woman to a bed during labour and medicalise their labour.

“... Continuous monitoring, that’s going to put somebody on a bed before they’ve even started.” (MW FG)

The challenges of both intermittent auscultation and continuous monitoring were acknowledged, with the need for the use of ultrasound to locate a fetal heart being common.

“Even intermittent auscultation is more difficult for the midwives to physically perform when the women are obese ... You end up having to do ultrasounds to locate the heart” (Obs Int)

One midwife described the difficulties she had performing continuous monitoring, being unable to confidently distinguish between the fetal heart rate and the maternal pulse rate.

“I just had to stand there and I was trying to get something and half the time you didn’t know if it was maternal pulse ... it was very difficult.” (MW FG)

5.5.1.4 Women’s reluctance to mobilise

One of the major difficulties encountered by midwives when caring for obese women during labour was motivating them to be mobile during labour and have an active birth, with many women wishing to be relatively immobile throughout. Midwives found motivating them to get off the bed and move around to be particularly challenging.

“It’s hard to get them up, it’s hard to move them about.” (MW FG)

The physical size of the women and the extra effort that it took to be able to mobilise was seen as a reason for the reluctance.

“I think sometimes that the very biggest ladies do tend to be a little bit more reluctant to do that [mobilise], only because you can see it just takes so much more effort for them to move.” (MW Int)

However, some midwives recognised that although obese women were more likely to be less mobile during labour, they also acknowledged that some obese women were embarrassed that they found it more difficult to mobilise and so even though they were less mobile, it was not necessarily through choice.

*“I don’t think they like being immobile. I think they find it embarrassing.”
(MW FG)*

5.5.1.5 Discouragement of water birth

Finally, the discouragement of hydrotherapy and water birth for obese women was an important factor that contributed to the medicalisation of obese birth.

“No I don’t think they are allowed in the pool.” (MW FG)

The reasons for obese women being discouraged from using hydrotherapy for either analgesia or birth were commonly related to manual handling risks, in particular the need to evacuate the pool in an emergency.

“I had a large lady a few weeks ago and she said to me ‘oh I was told I could have a pool birth’ and I said ‘no, because it would be difficult to hear your baby and to get you out in an emergency’.” (MW FG)

Contrary to this, the multiple benefits of hydrotherapy for obese women were acknowledged, in particular the benefits of relative weightlessness and buoyancy to aid mobility during labour.

“One of the difficulties that people with high BMIs have is difficulty in changing positions ... and to have somebody like that buoyant in water takes all the pressure off their pelvis ...” (Obs Int)

“That’s the difficulty with water birth isn’t it? Because they are the ideal sort of group to benefit ... the weightlessness.” (MW FG)

5.5.2 The promotion of normal ‘obese’ birth

Contrary to the fatalistic attitudes of some midwives and obstetricians towards obese women in labour, the promotion of normal birth was widely discussed.

5.5.2.1 Antenatal education

Antenatal education was viewed as a key factor in the promotion of normal birth. Informing women during pregnancy about normal birth and preparing them for labour was viewed as a fundamental part of antenatal education, in order to make women aware of what to expect.

“It’s also about education isn’t it? So that she knows what’s coming, that she needs to be doing all the right things.” (MW FG)

Some midwives spoke of the importance of educating women about mobility during labour, in order to prevent immobility on beds during labour.

“I think we should be educating them about mobility and about being mobile and trying to get them to the MLU.” (MW Int)

5.5.2.2 Promotion of normality

Promoting normality during labour is an integral part of the midwife’s role, regardless of the obstetric, medical or demographic history of the woman. The encouragement and promotion of normal birth was viewed as fundamental in the care of obese women. One midwife, whilst acknowledging the guidance, felt it was the midwife’s role to actively promote normal birth for obese women in order for them to optimise their chance of achieving that.

“I think we should be encouraging them to have more of a normal birth.” (Obs Int)

“Rather than sitting back and just saying the guidelines say this; let’s encourage it, let’s promote it.” (MW FG)

5.5.2.3 Promotion of mobility

Similarly, the promotion of mobility during labour was acknowledged as an essential part of intrapartum care for obese women.

“I’d try to keep her either active on a ball or active over the side of the bed...I would keep her as upright as possible.” (MW Int)

Midwives felt that mobility has benefits for all women in labour, with obese women in particular benefitting significantly from being mobile during labour and birth in order to overcome the risks of a prolonged labour and operative birth.

“I think possibly if you keep obese pregnant women upright and mobile you’re probably going to get a better outcome, you’re probably going to get a nice delivery.” (MW FG)

“I think it wouldn’t be difficult to promote, I think it’s the best thing to promote mobility in that population, they need to be upright.” (MW FG)

5.5.3 Complexities and contradictions in health professionals’ attitudes and behaviours

The final theme is that of the complexity surrounding the conflicting attitudes to some of the associated risks of obesity and the use of some medical technologies when caring for obese women during labour and birth. Several contradictions existed towards the use of medical interventions and the associated risk of caesarean section for obese women, as these were viewed as either prohibitive to or facilitative of normal birth.

5.5.3.1 The use of a fetal scalp electrode

The use of a fetal scalp electrode (FSE) to monitor fetal heart rates in obese women was widely discussed and there were two very distinct attitudes in relation to their use in practice. The first was that the use of an FSE was commonly seen as a medical intervention associated with high-risk care and could potentially prohibit the promotion of normality.

“Unless they’ve put an FSE on, which is very interventional really, isn’t it, when you’re trying to promote normality.” (MW FG)

The second was a common assumption that the application of an FSE would lead to a higher incidence of immobility during labour and the use of FSE was often cited as a reason why women were not mobile in labour.

“They tend to end up with fetal scalp electrodes on and you’re automatically medicalising labour in a group of women that we know, probably don’t labour as well, so would benefit greatly from being more mobile.” (Obs Int)

“Although theoretically if you’ve got a scalp clip on you are supposed to be more mobile, but I don’t necessarily see that transferring into practice” (Obs Int)

Contrary to the negative attitudes surrounding the use of FSE, some midwives and obstetricians viewed their usage positively and whilst acknowledging it as an intervention, felt that they could be used as a catalyst for normal birth; in particular they saw the use of an FSE as an effective way to increase mobility.

“We tend to use FSEs quite a lot if we’ve got somebody that’s on continuous monitoring, so that we can get them up” (MW FG)

*“Put an FSE on, to make sure that if she wanted, she could be mobile”
(MW Int)*

This was because it is a more accurate way of recording the fetal heart (FH) compared to an abdominal transducer and did not lose the contact when women were mobile.

5.5.3.2 Risk of caesarean section

The risks of and the decision for caesarean section were discussed widely amongst obstetricians. Some obstetricians reported a much lower threshold for making a decision for caesarean section than they would with a non-obese woman, basing decisions on the safety of the woman. One obstetrician felt that decisions to proceed to caesarean section during labour varied widely between each individual obstetrician, with some obstetricians trying to avoid the need to perform a caesarean section, because of the increased risks associated with operative birth.

Conversely, it was felt that some obstetricians make decisions for caesarean section based on the time of day and the availability of consultant staff, with decisions made earlier than they would normally do for a non-obese woman.

“I do feel that some people probably make decisions where the lady’s weight influences their decision. So whether they don’t do a caesarean as soon as they should do because they are trying to avoid doing a caesareanor they do it sooner

than they should do because they want to do it when the consultant staff are available.” (Obs Int)

Interestingly, one obstetrician suggested that they would in fact allow more time for an obese woman to labour before making a decision for caesarean section, in order to avoid the need for caesarean section and the associated risks, with an aim to facilitate normal birth.

“No I think we’d give it the same, in fact I might even give it longer, it’s not much fun doing a caesarean section on a very obese patient, so no, I don’t think we jump in early.” (Obs Int)

5.5.3.3 BMI influencing clinical management

The influence that a woman’s BMI had on the clinical management of labour and birth was discussed by a number of obstetricians. This was another area that demonstrated the presence of contrasting views, with maternal BMI seen to influence clinical management both in the prohibition and facilitation of normal birth.

“I do feel that a woman’s size can influence your management and it’s very difficult to do that because obviously the woman’s safety is paramount, but it probably does then affect the way you manage her.” (Obs Int)

The attitude towards obese woman directly influenced the decision-making process, with perceptions that obese women could be potentially problematic and therefore had significantly influenced clinical decision-making.

“I would suspect it is a way in which we manage their care and I suspect we do see them as a problem...” (Obs int)

5.5.3.4 Classification as ‘high-risk’

Obese pregnant women are currently widely regarded as ‘high risk’ in obstetric terms, because of the higher likelihood of a number of antenatal, intrapartum and postnatal complications. However, this can significantly impact the management of intrapartum care. It was felt amongst obstetricians that classification as ‘high-risk’ is appropriate for women with raised BMI because of the increased risk of intrapartum complications.

“They are at higher risk of complications of labour, so I would think yes, yes they are [high risk].” (Obs Int)

Interestingly, although some obstetricians and midwives did not disagree that obese pregnant women were at higher risk of complications, some felt that labelling them as 'high risk' was particularly negative and could be detrimental to their care and, ultimately, their chances of normal birth

"I think putting somebody in a high risk category actually doesn't do anybody any favours." (MW FG)

Some midwives felt that this classification directly affected the woman's attitude and motivation for normal birth.

"I think a lot of them come in and they've been told, the risk is this, the risk is that, so they have the mindset, then that's what's going to happen to me." (MW Int)

Whilst others acknowledged that although the risks were higher for obese women, women should be encouraged to have a positive attitude to birth and ultimately empowered to try to overcome the risks and achieve a normal birth. The way the information on the associated risks was delivered was seen as a crucial factor in this.

"I know the risks are much higher, but they don't all and if you get it across to people that, think positively, you know." (MW Int)

5.6 Discussion

The aim of this study was to explore practitioners' experiences of providing intrapartum care to obese pregnant women and to inform the development of an intervention to support normal birth. The findings described the experiences of health professionals when caring for obese women during labour, including the medicalisation of obese birth, the promotion of normality for obese women and the complexities of health professionals' behaviour surrounding obese women in labour.

In the UK, successive policy documents have explicitly promoted normal birth for healthy women and their babies for over two decades (Department of Health 2004, Department of Health 2007) The earlier survey found that the promotion of normal birth is not included in the majority of clinical guidelines for the care of obese pregnant women. However, despite this, midwives and obstetricians who participated in this study described the promotion of normality and normal birth as an integral part of their role when caring for obese women

during labour. Antenatal education for obese women was viewed by midwives as an essential aspect of this, in order to allow women to have realistic expectations of labour and birth and promote normal birth. This is supported by Schott and Priest (2002) who suggest that if you prepare women for the physical and emotional realities of labour and birth, they will be confident that what they are actually experiencing is normal and are more equipped and able to cope. The national guidance on obesity recommends that women should be informed of the risks associated with obesity during pregnancy and advised on how to minimise them. It states that women should be made aware of the potential difficulties with caesarean section, but offers no guidance on how to minimise the need for it (CMACE & RCOG 2010). This is not just specific to obese women, as currently there is no guidance available on minimising the risk of caesarean section, regardless of Body Mass Index. However, all pregnant women are offered the opportunity to attend antenatal education in order to prepare for labour and birth.

The promotion of mobility during labour was viewed as an essential aspect of their care in order to minimise the associated risks of prolonged labour and operative birth, and midwives felt that if women were advised during the antenatal period of the importance of mobility during labour, they would be more likely to mobilise from the outset. Mobilisation during labour is widely acknowledged as a way of optimising the likelihood of normal birth (Kennedy et al 2010, Newburn 2009). This is reflected in the practices and attitudes described by the midwives, who viewed it as an integral part of their care, despite the challenges faced with this population. Interestingly, Singleton and Furber (2014) found that although midwives advocated the need for mobilisation, they felt obese women were not able to remain mobile during labour because of the associated risks of obesity during labour, which thus restricted their options.

In order to support and encourage mobilisation during labour and the promotion of normal birth, techniques used to promote normal birth were described. Techniques such as the use of an FSE to allow women to be fully mobile during labour, whilst continuously monitoring the fetal heart rate, are commonly utilised with obese women, with many seeing their usage as a positive intervention and a potential catalyst for normal birth. However, there was conflicting views of this practice, with some practitioners viewing the use of an FSE as a medical intervention, with the potential to inhibit mobility and normality. The widespread use of FSE in obese women reflects the national guidance that suggests that fetal scalp electrodes should be utilised if adequate fetal heart monitoring proves challenging (Singleton & Furber 2014). Many midwives adopted this guidance into their practice and whilst acknowledging

the use of an FSE to be an intervention, they utilised this method of fetal monitoring to prevent women becoming immobile in order to adequately monitor the fetal heart.

The apparent lack of consensus surrounding the clinical management of labour and birth for obese women, particularly caesarean section, is interesting. Some obstetricians reported a much lower threshold for making a decision to proceed to caesarean section than they would with a non-obese woman; other obstetricians reported actively trying to avoid a caesarean section because of the increased associated risks of operative birth in this population.

It could be argued that the increased risk of caesarean section in obese women (Zhang et al 2007, Kerrigan & Kingdon 2010, Bogaerts et al 2013) should be used to encourage the facilitation of normal labour and birth. The most common reason for caesarean section is delay during the first stage of labour, even after augmentation with oxytocin (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010) and therefore, the facilitation of mobility during labour and the use of mobility aids may prevent delay during labour and subsequently the need for caesarean section. Some obstetricians reported trying to avoid performing a caesarean section on an obese woman, unless absolutely necessary and would often allow more time for labour to progress before making a decision that operative birth was necessary. The facilitation of mobility during labour would minimise the risk of delay and therefore the need for caesarean section (Lawrence et al 2009).

At the same time, it was evident that negative attitudes towards obese women were directly influencing clinical decision-making processes with obese women commonly viewed as problematic, and decisions to proceed to caesarean section were made a lot earlier compared to non-obese women in an attempt to minimise additional intrapartum or postnatal complications. In this situation, it could be argued that the increased risk of caesarean section encouraged obstetricians to proceed to caesarean section sooner than they would with a non-obese woman, preventing women from optimising their chance of normal birth. Interestingly, the negative attitudes towards caring for obese women was attributed to colleagues; none of the participants admitted to displaying negative attitudes themselves.

The medicalisation concept has been variously theorised in medical sociology in general (Zola 1972, Conrad 2007) and in relation to childbirth in particular (Oakley 1984, Van Teijlingen 2005). Whilst early medicalisation of childbirth literature was almost exclusively critical, by the mid-1980s there was increasing recognition of how these processes are co-constituted by clinicians' and women themselves. Over the last two decades there has been a dearth of medicalisation theorising in relation to childbirth (Brubaker & Dillaway 2009). The

present study highlights the need to revisit the medicalisation concept in relation to different groups of women's contemporary experiences of childbirth. This study challenges the old medicalisation of childbirth dichotomy between medical and natural (midwifery) models of childbirth for all women. Our findings demonstrate the complex and contradictory use of technology to promote normal birth by midwives and obstetricians, specifically for obese women.

The medicalisation of obese women during labour and the challenges of providing care was discussed. Some participants expressed the view that obese women should be viewed as 'high-risk' and the care should be medicalised, reflecting the UK national guidance. However, some midwives expressed an opposing view and viewed the promotion of normality to be an integral part of the care they provide to obese women, challenging the medicalisation of care advised in the national guidance. It was widely acknowledged that continuous monitoring of the fetal heart was one of the biggest challenges and led to the medicalisation of labour and birth. Many practitioners challenged this practice and were unable to confidently recall the evidence on which this practice is based. The national guidance on the management of obesity during pregnancy is quite ambiguous, suggesting that fetal heart rate monitoring in obese women can be challenging and 'close surveillance is required with recourse to fetal scalp electrode or ultrasound assessment of the fetal heart if necessary' (CMACE & RCOG 2010 p.12). However, it does not explicitly state that continuous monitoring is necessary. The accepted practice of continuous monitoring could be questioned and challenged as it has a significant impact on the management of labour and may lead to unnecessary intervention and medicalisation of birth.

The discouragement of water birth for obese women was viewed as a contributing factor to the medicalisation of care for obese women. The reasons for obese women being discouraged from using hydrotherapy were stated to be related to manual handling risks, but the multiple benefits were also acknowledged, including increased mobility during labour. Swann and Davies (2012) suggest that the advantages of using water in labour are equally, if not more, applicable to obese women and include the use of water as a mobility and position aid, increasing the pelvic outlet and reducing the potential for delay during labour. Difficulties monitoring the fetal heart rate are commonly cited as reasons for discouraging water birth in obese women but Swann and Davies (2012) suggest that the use of waterproof telemetry could overcome this difficulty and coupled with the increasing availability of wireless telemetry, this could also be utilised to facilitate the use of hydrotherapy for women who require continuous electronic fetal heart monitoring. However, as discussed earlier, the common practice of continuous fetal heart monitoring for obese

could be challenged, as it could be argued that the evidence on which this practice is currently based is ambiguous.

The need to promote normal birth for obese women including antenatal education, the promotion of mobility and the need to minimise the risk of caesarean section, together with the challenges of providing care to obese women such as the practice of continuous monitoring and the discouragement of water birth were discussed by the research participants. However, Singleton and Furber (2014) suggest that instead of practitioners striving to encourage normal birth, it may be more appropriate to advocate 'optimal care', as this aims to achieve the best possible birth for the women, whilst acknowledging the associated risks.

5.7 Strengths and limitations

This was a relatively small study, including 24 health professionals. Whilst the findings are not intended to be generalisable, they resonate with anecdotal experiences in practice as well as being supported by the limited literature that exists in this area. The sample was obtained from two hospitals, allowing a varied sample to be obtained, including England and Scotland. A further strength is that it included midwives, obstetricians and anaesthetists and so allowed diversity within the sample and experiences from all health professional groups to be obtained. The sample may have been affected by some bias as it could be argued that practitioners who agreed to participate were more motivated to take part because of previous negative experiences of caring for obese women, or negative attitudes themselves. However, the balance of views that emerged in the data would suggest that this was not the case and provides a balanced view within the different professionals groups. Finally, this study involved systematic data collection and analysis using the framework approach. The analysis was conducted with rigour, undertaken by myself and supported by one of my supervisors, identifying and corroborating emerging themes. This helped to avoid a singular subjective analysis of the data.

5.8 Conclusion

This chapter has described health professionals' experiences of caring for obese women during labour and birth. It has described the challenges that health professionals face when caring for obese women during the intrapartum period, including fetal monitoring during labour and the promotion of mobility. It has described the medicalisation of care for obese women during labour but also demonstrated that many midwives strive to optimise the potential for normal birth by challenging current practices and utilising some 'interventions' in order to promote normality during childbirth.

In the next chapter, the findings from Study 3 will be presented which aimed to explore obese women's experiences and views of maternity care.

Chapter 6

Study 3

Chapter 6 – Study 3: Obese women’s experiences of childbirth

6.1 Introduction

The previous chapter presented the experiences of health professionals’ who care for obese women during labour and birth, and the challenges they face. This chapter presents study three which explored obese women’s experience of preparation for labour and their experiences of childbirth.

The research methods will be presented, including the study design and the ethical considerations, and the findings will then be presented in themes, addressing the study aims and objectives below.

6.2 Aim

The study aimed to explore obese women’s experiences and views of their preparation for labour as well as their experience of childbirth.

The objectives were to:

- explore obese women’s experiences of preparation for labour.
- explore obese women’s experience of their care during labour.
- discover what information on labour and birth and the risks of obesity in pregnancy obese women feel would be helpful to receive.
- identify how obese women would wish to be prepared for labour and birth in the future.
- establish what aspects of maternity care obese women feel need to be improved/changed.

6.3 Method

6.3.1 Study design

Individual semi-structured interviews were conducted with obese women who had given birth 6–8 weeks earlier. Semi-structured interviews were chosen as they enabled specific topics to be explored during the interviews. Such interviews are based on a number of open-ended questions which define the area to be explored (Britten 2006) and this enabled further

exploration of the topics of interest and allowed flexibility to explore new subjects introduced by the participants. An interview topic guide forms the basis of semi-structured interviews and is used to guide the discussions during the interview. It provides broad questions for the interviewer to ask, but also allows the freedom for additional questions to be asked, or further areas to be explored (Parahoo 2014). Semi-structured, individual interviews were chosen as they allow the women's experiences to be explored, whilst also providing structure to the interview. Unlike the previous study, where focus groups were used, focus groups were not considered appropriate for this study. As the aim was to explore women's individual experiences individual interviews would allow their experiences to be explored in greater depth than focus groups would allow. Interviews are valuable as they can facilitate exploration of thoughts, feelings and experiences and may offer a sense of freedom to the participant who may otherwise feel inhibited or embarrassed in a focus group situation (Robinson 2006). Interviews were semi-structured and were guided by a loose structure of open-ended questions that defined the desired area (Britten 2006). The research protocol can be seen in Appendix 11.

6.3.2 Setting

The study was carried out in two NHS hospitals. Both maternity units had also been the research sites in Study 1. One hospital was in England, a large tertiary unit with an annual birth rate of approximately 8000, 18% of women receiving maternity care having a BMI of 30 or greater. The second hospital was in Scotland, a district general hospital with an annual birth rate of 5000 births and an obesity rate of 24%. Both hospitals provided specialist antenatal services for obese women.

6.3.3 Sample

A sample is defined as 'a group of individuals selected from a target population as representative of that population' (Cluett & Bluff 2006b, p. 215). The target population for this study was obese women who would have recently given birth in one of the two hospitals. Purposive sampling involves choosing or identifying study participants on the basis that they have had the experiences being researched or are able to provide the necessary data (Parahoo 2014) or the selection of participants who have knowledge or experience of the subject being researched (Cluett & Bluff 2006b). Therefore participants should be able to provide data that is rich and focussed on the research question, allowing the researcher to gain an accurate account of the phenomenon (Walsh & Downe 2006). Purposive sampling was used for this study, in order to ensure that obese women who had recent experience of maternity care through pregnancy and birth were included in the study. Women were recruited during the antenatal period when they attended the specialist clinics for obese

women. Women were recruited during the antenatal period to allow enough time to consider participation. The inclusion criteria were pregnant woman with a BMI of 35 or more, whose baby was due between two specific time points. This would ensure that they would have given birth by the time the interviews were planned to take place. They also needed to be able to consent to participation and be English speaking. Non-English speaking women were excluded as there was no resource available to pay for interpretation and translation services. The planned sample was 20 (10 women from each maternity unit) because it was anticipated that would provide a wide range of antenatal and birth experiences. It was acknowledged, however, that the number of participants may be reduced if data saturation or redundancy was reached during the data collection stage. Data saturation is when all research questions have been explored in detail and no new themes are emerging (Trotter 2012). Redundancy is another concept that can indicate that participant recruitment can cease: all concepts are repeated multiple times with no new concepts emerging (Trotter 2012). It is acknowledged, however, that it can be difficult to have confidence that no new important themes or concepts would emerge if data collection continued (Cleary et al 2014).

6.3.4 Plan of investigation

Midwives who provided antenatal care to obese women in the two hospitals were given information about the study aims and eligibility criteria, and agreed to provide the initial contact with potential participants. Eligible women were first invited to participate in the research in the antenatal period between 28 and 36 weeks of pregnancy and told that the interviews would take place between 6–8 weeks of giving birth. They were given an information sheet about the research (See Appendix 12) and asked to provide their contact details if they were interested in participating. A reply slip and stamped addressed envelope was provided. Women who returned their contact details were then contacted by telephone by the researcher (AK) to discuss the research further. If they were willing to participate, consent to participate in principle was obtained, as well as consent to access their health records. The health records of each participant were then checked by a named local collaborator at each research site to ascertain the date of birth and the safe arrival of the baby. Within 14 days of each woman giving birth, the researcher contacted them again by telephone and asked if they would still like to take part. A suitable time and location for the interview was then arranged for women wishing to participate. All the interviews took place in the participants' home, as it was the most convenient location for them and lasted approximately one hour.

6.3.5 Data collection

An interview schedule was used to form a basis for the discussion (See Appendix 13). The interviews were audio recorded with the consent of the participants and the audio recordings were transcribed verbatim by a professional transcription service. Transcripts were checked for accuracy against the audio recordings prior to data analysis. The questions asked the participants if they received any information about the risks of obesity during pregnancy; what information they were provided with in order to prepare for labour and what they did to prepare themselves. They were also asked what format they would like to receive information about labour and birth in, in the future, whether they had received information about active birth and if they had been supported to achieve an active birth during labour. Consideration was also given to the language used in the wording of the questions, including the optimal term for obesity. 'Obese', 'overweight' and 'fat' were all considered and it was felt that obese and obesity were the optimal choice. This was highlighted at the ethics committee meeting, with some members of the committee being unsure of what the best language would be when approaching the subject. This is discussed in further detail in the section on ethical considerations.

6.3.6 Data analysis

As described in Chapter 3 on page 68, interview data from this study was analysed using a framework approach (Ritchie & Spencer 1994) and followed all the stages to ensure rigour. Data analysis was commenced as soon as the initial data had been collected and used as a guide, with any emerging themes explored in greater detail in subsequent interviews (Robinson 2006). The transcripts were read several times and coded. The codes and a list of pre-identified themes were subsequently applied to the data to form an index. This was later organised into charts and interpreted and mapped identifying commonalities and associations between the data in different themes (Pope et al 2006).

6.4 Ethical considerations

An application was made for ethical approval prior to the commencement of this study and was successfully gained from the Health Research Authority, National Research Ethics Service Committee (12/NW/0631). This can be seen in Appendix 14. Approval was also gained from the local R&D departments in each hospital. A named senior midwife granted approval to access the site for the purposes of the research.

The main ethical issues in relation to this study were consent, anonymity of data and confidentiality of the data obtained from the interviews. Consent is defined by Gillon (1986) as a voluntary, uncoerced decision, made by a competent person on the basis of adequate information and deliberation, to accept a proposed course of action or treatment. All potential

participants were provided with written information detailing the research and were given more than 24 hours in order to consider whether or not to participate. Written consent was obtained from each of the participants prior to the interview commencing, detailing the importance of confidentiality, anonymity of data and ensuring consent for audio recording the discussions. Each participant was given a copy of the consent form to keep and a second was retained by the researcher for the research file.

The MRC (2000) state that personal information obtained during research must always be regarded as confidential. The council suggests that personal information should be coded or anonymised at the beginning of data processing and only essential personal identifiers should be held (MRC 2000). It is acknowledged by the MRC that anonymisation of data can cause delays to the analysis of the data and increase the margin for errors within the data, but it is essential to safeguard against accidental breach of confidentiality. The data collected from the interviews was anonymised during transcription and all names and/or locations allocated a pseudonym. Data was collected by the named researcher only (AK) and analysis carried out by the named researcher (AK) and two other people (HC & CK). To maintain confidentiality, all data, both written and audio recorded, was stored in a locked cupboard, in a locked office. Audio recordings were kept until analysis was complete and then destroyed. All other data will be securely stored and destroyed after a period of ten years, in accordance with research governance procedures of the University of Stirling. All computers used during the research process were password protected. No data was stored on compact discs or on USB sticks, as there was potential for loss of such devices.

Finally, as described above, some members of the ethics committee were unsure of the most appropriate language for approaching the subject of obesity with obese women themselves. Consideration was given to the language used in the wording of the all the research documents that were used for this study, including information sheets and interview questions. Consideration was given to what the optimal term for obesity would be, with 'obese', 'overweight' and 'fat' all given consideration. Prior to deciding, the research documentation was reviewed by the 'Research User Group', a group of lay maternity service users who met on a regular basis to review proposed research and give feedback from a lay persons perspective. It was felt that obese and obesity were the optimal choices. The researcher (AK) also had extensive experience of working with obese pregnant women and from experience communicating with them, it was agreed that 'obese' and 'obesity' were acceptable terms.

6.5 Findings

A total of 8 women participated and were interviewed approximately eight weeks after giving birth. The number of women who actually participated was less than the number originally planned, as data saturation was reached, with no new emerging data. Two women had a normal birth, one woman had a forceps delivery and five had a caesarean section. With the exception of one woman, this was their first birth. Two women had a BMI between 35–39 and six women had a BMI above 40. The two women with BMI between 35 and 39 had normal births. A description of the participants can be seen in Table 5.

Table 5. Participant profile (Study 3)

Participant	Hospital setting	Parity	BMI	Mode of Birth
1	England	1	>40	Caesarean Section
2	England	1	>40	Forceps
3	England	1	>40	Caesarean Section
4	Scotland	2	>40	Caesarean Section
5	Scotland	1	35-39	Normal Birth
6	Scotland	1	>40	Caesarean Section
7	Scotland	1	35-39	Normal Birth
8	England	1	>40	Caesarean Section

Table 6 shows the thematic framework of the findings. The overall interpretation ‘Being pregnant and obese; Obese women’s experiences of pregnancy and birth’ was underpinned by three key emergent themes: embodiment of obesity; being pregnant and overweight and resource intensive maternity care. These three themes are presented in the table with examples of some of the codes used during the analysis and some excerpts from the data. These findings are encapsulated in a conceptual framework (Fig. 3) that was constructed to summarise the data. The conceptual framework was formed to demonstrate the trajectory from the embodiment of obesity to becoming pregnant as an overweight woman, experiencing the maternity regime that is currently in place for the care of obese women and then finally returning to being an obese woman again. Central to the framework is the notion of the window of opportunity for short-term change during pregnancy and the potential for longer term change. This window exists before the onset of pregnancy and continues beyond pregnancy and is demonstrated by the dotted line encompassing the ‘embodiment of obesity’ at the top and bottom of the framework. Each of the themes will be presented in turn, starting with the embodiment of obesity.

Figure 3. Conceptual framework (Study 3)

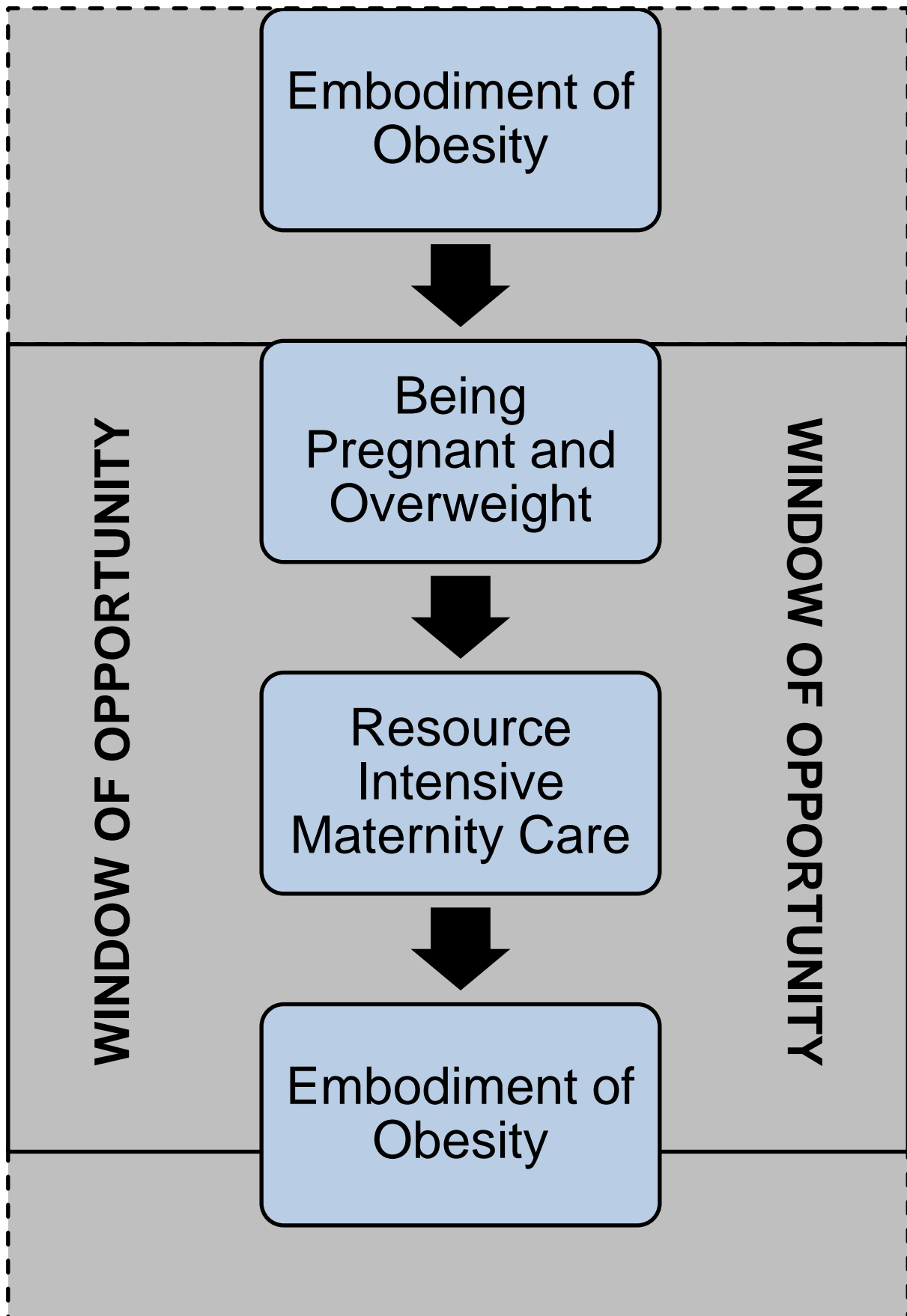


Table 6. Thematic Framework (Study 3)

Interpretation: 'Being pregnant and obese; Obese women's experiences of pregnancy and birth'							
Theme 1 Embodiment of obesity		Theme 2 Being pregnant and overweight		Theme 3 Resource intensive maternity care		Overarching Theme Window of opportunity for short-term and potential longer term change	
<p>Acute awareness of obesity and associated risks</p> <p><i>"He [consultant] was talking about what you eat the baby will eat and you know, why there's links to obesity, like generations and generations because it can happen while you're pregnant...I mean, I'm not stupid, d'you know, you're aware yourself of what the risks are and that."</i></p>	<p>Made aware of the risks of obesity</p>	<p>Thirst for knowledge during pregnancy</p> <p><i>"I'm like one of those who just wants as much as possible, so whatever leaflets were on the table, I'd pick them up."</i></p> <p><i>"I found the leaflets great but I would prefer the information face-to-face."</i></p>	<p>Wanted as much information as possible</p> <p>Prefer verbal information to leaflets</p>	<p>Midwifery support during pregnancy</p> <p><i>"I did feel neglected by her sometimes, it was as if she was just in the door, do what she has to do and get me straight back out again."</i></p>	<p>Antenatal care was rushed</p> <p>Antenatal care is a process</p>	<p>Concerted effort for behaviour change</p> <p><i>"I walked places, even though sometimes I thought 'oh, I can't be bothered' ... Some days I got up and I couldn't be bothered, but I did it."</i></p>	<p>Making an effort</p>
<p>Fluidity of weight and efforts to manage it</p> <p><i>"I'd lost some weight before I got pregnant, I'd lost quite a few stone going to the gym and going to Zumba and swimming and eating healthy."</i></p>	<p>Motivated for weight loss/ maintenance</p>	<p>Intrinsic fear for safety and well-being during pregnancy</p> <p><i>"When I found out I was pregnant I was just thinking, 'oh something is going to happen to me, you know, 'I'm really</i></p>	<p>Fearful for what might happen</p> <p>Wanted reassurance</p>	<p>Provision of tailored maternity care</p> <p><i>"I looked forward to my session of going to see the specialist midwife and dietician because I felt as if they were the only people that listened</i></p>	<p>Specialist midwife was positive aspect of antenatal care</p>	<p>Dietary changes</p> <p><i>"I came in from work and I was cooking, like meat and veg ...I knocked every fizzy drink on the head, I stopped eating chocolate, I stopped buying sugar ..."</i></p>	<p>Motivated to help self</p>

		<i>overweight, all these risks and everything.”</i>		<i>and the only people that tried to help.”</i>			
<p>Constant battle with weight management</p> <p><i>“I said to the dietician ‘this is what I don’t want to happen this time round, I don’t want to have all that work to do again’ cos I found it so difficult to try and lose weight.”</i></p>	<p>Motivated for weight loss/ maintenance</p>	<p>Catalyst for realisation of consequences of being obese</p> <p><i>“I was quite anxious throughout my whole pregnancy. Not about giving birth, but about what’s going to happen, will I be ok?”</i></p>	<p>Very fearful of risks of being overweight</p>	<p>Antenatal education</p> <p><i>“I think if there was a class and it was all bigger people that was there, I think I’d be more likely to attend. I would rather go knowing that I was the same as everybody else than go than have everybody looking at you.”</i></p> <p><i>“I think for me personally if there was like an antenatal class for overweight women, you’d be thinking ‘well, aren’t I good enough to go with other people?’ I think you would feel a bit segregated. But other people might prefer that, they might feel more comfortable.”</i></p>	<p>Preference for tailored classes</p> <p>Specific classes would be segregating</p>		

				<p>Caesarean section</p> <p><i>"I was expecting to have a normal delivery ... because I wasn't expecting to have a c-section, everything about it afterwards felt a bit strange."</i></p>	<p>CS not anticipated despite being aware of increased risk</p>		
				<p>Desire for and experience of normal birth</p> <p><i>"I wasn't lying back because that was uncomfortable, I was trying to move around as much as I could, I was on my side, I was up, I was walking around the room."</i></p> <p><i>"There was never any talk of being up or about or anything like that, it was just a case of 'just stay there in that bed.'"</i></p>	<p>Motivated for active birth</p> <p>Active birth discouraged</p>		

6.5.1 Embodiment of obesity

This theme focuses on the ‘embodiment of obesity’. The notion of embodiment encompasses the women’s lived experiences of being an obese woman and presents their descriptions of their experiences of being an obese person, or of living in an obese body. They describe their awareness of the risks of obesity, the fluidity of their weight over time and their efforts to manage it. This features as a constant battle in their lives before, during and following pregnancy.

6.5.1.1 Acute awareness of obesity and the associated risks

The women talked about being acutely aware that they were obese before their pregnancy. They wanted to convey that they were already aware of the risks of being overweight or obese and that it was not a lack of knowledge that had led them to be obese. They expressed frustration at being told what they were already aware of.

“I know I’m overweight, I know why I’m overweight, I know the risks of being overweight.” (8)

“He [consultant] was talking about what you eat the baby will eat and you know, why there’s links to obesity, like generations and generations because it can happen while you’re pregnant...I mean, I’m not stupid, d’you know, you’re aware yourself of what the risks are and that.” (3)

The advice from health professionals, although understood as part of their duty of care, was often viewed negatively and regarded by some as ‘lecturing’ and patronising.

“You don’t want to be lecturing people and telling them to change their ways now.” (8)

6.5.1.2 Fluidity of weight and efforts to manage it

The fluidity of their weight and the efforts to manage it was described by a number of women and they were keen to articulate their previous success with weight loss prior to becoming pregnant and how they had achieved weight-loss success through physical activity and dietary changes.

“I’d lost some weight before I got pregnant, I’d lost quite a few stone going to the gym and going to Zumba and swimming and eating healthy.” (2)

“I was actually doing Zumba with one of my mates....I’d already started trying to lose weight for myself again.” (6)

One participant had already lost weight in the first few weeks following the birth of her baby, inferring that it was not simply the fact that she was no longer pregnant that had contributed.

“I’m lighter now than when I was pregnant.” (8)

6.5.1.3 Constant battle with weight management

It was clear that weight management was a constant battle in the everyday lives of the participants, with the difficulties expressed in achieving weight loss and the realisation of what had contributed to weight gain in the past.

“You don’t realise, you get complacent with your portion sizes and I was always like, you know, you eat till you are full and you just keep eating ... and now I’m horrified, I was probably eating two people’s worth of dinners and things.” (4)

Even during pregnancy, the issue of weight gain and need for weight loss in the future was present, with women motivated to take advice from dieticians in order to effectively manage their weight during pregnancy.

“I said to the dietician ‘this is what I don’t want to happen this time round, I don’t want to have all that work to do again’ cos I found it so difficult to try and lose weight.” (4)

6.5.2 Being pregnant and overweight

This theme focuses on women’s experiences of being overweight and pregnant and includes information resources they used during pregnancy, the heightened fear and anxiety obese women feel when they are pregnant, the realisation of the health consequences of being obese and their concerted effort for behaviour change during pregnancy for the health and well-being of themselves and their baby.

6.5.2.1 Thirst for knowledge during pregnancy

Women were asked about the information they received during their pregnancy and whether they were happy with the format and amount of information they received. The amount of information that the obese women received appeared to be comparable to the amount of information non-obese women receive, with written information in leaflet form being very

common. Most women reported finding written information helpful, but it was also apparent that there was a general thirst for knowledge amongst the women; there was a desire to acquire as much information as possible.

“I’m like one of those who just wants as much as possible, so whatever leaflets were on the table, I’d pick them up.” (3)

“All the leaflets I got, I read all through that and I read through the leaflets for different things, like positions in labour and different things like that. I had all different leaflets; leaflets, leaflets, leaflets.” (7)

However, there was a strong preference for verbal information, with several women stating a preference for face-to-face conversations and advice with health professionals.

“It would be nice if the midwife could actually have a proper time to sit down and actually talk about it.” (5)

“I found the leaflets great but I’d rather get the information face-to-face.” (7)

The notion that information was more memorable when verbalised, rather than written down, was expressed. This was attributed to the conversation that could take place in order to provide and discuss it. Women expressed a desire to talk about the information with a health professional, in order to reinforce it and aid mental digestion.

“I prefer to talk it though with somebody. I feel that if you talk to somebody it goes into me better than reading.” (6)

The majority of women expressed a wish to receive as much information as possible, wishing to know about all aspects of pregnancy and all potential eventualities

“I would’ve wanted to know more cause that’s just the type of person I am, I want to know every single thing that could happen.” (1)

“I just want to know as much as I can. For me, it’d be everything, the ins and outs of everything, I’d like to know and I think that’s probably why I did a bit more research myself because I want to know thing that you don’t necessarily need to know.” (3)

6.5.2.2 *Intrinsic fear for safety and well-being during pregnancy*

One of the strongest feelings amongst women was that becoming pregnant led to intrinsic fear about their own safety and well-being.

“When I found out I was pregnant I was just thinking, ‘oh something is going to happen to me, you know, ‘I’m really overweight, all these risks and everything.’” (1)

Although the majority of women wanted detailed information relating to their pregnancy, they also reported that it led to an increase in fear and anxiety, with self-directed information searches and information received from health professionals leading them to become increasingly scared and fearful for their safety.

“I remember typing into the NHS website ‘overweight and being pregnant’ and it basically came up on the page ‘in this circumstance, death’. Basically it was all around death and all this and there were huge risks.” (1)

“I saw one of the doctors and she went through all the risks that can happen, about what having a high BMI means and more likely for this to happen, so I did come away feeling really scared because it’s something I can’t control.” (8)

One participant wanted reassurances about her safety and that of her baby and sought them from her GP.

“She did reassure me to a point, you know, where she was kind of like, ‘don’t worry about it, and only worry when you have to, you’ll be fine.’” (1)

This woman also expressed a wish to receive written information about being pregnant and overweight, so she could re-visit it and alleviate her fears as her pregnancy progressed.

“Maybe a booklet to say ‘you’re overweight and pregnant’, just to reassure people because they must be scared.” (1)

6.5.2.3 *Catalyst for realisation of consequences of being obese*

For many women, becoming pregnant acted as a catalyst for the realisation of being obese and what that meant for their health and well-being in relation to pregnancy. The risks of being obese during pregnancy became real and this led to anxiety and a desire for it not to be the case.

“I was quite anxious throughout my whole pregnancy. Not about giving birth, but about what’s going to happen, will I be ok?” (1)

“I do think the medical side of it frightens people a little bit because you’re thinking ‘oh god’.” (1)

“I didn’t want to be absolutely massive and risk dangerous problems in pregnancy.” (4)

However, for one woman, the risks of obesity in pregnancy became a reality and she described her diagnosis of gestational diabetes, after the routine test at 28 weeks.

“At 28 weeks you go for the gestational diabetes standard check and it was discovered that I was gestational diabetes.” (4)

This diagnosis had implications for mode of birth too, as she went on to say that because of the diagnosis of gestational diabetes she was informed that she may have to have a caesarean section because the baby was expected to be big at term.

6.5.3 Resource intensive maternity care

This theme focuses on the maternity care obese women currently receive, much of which is resource intensive, with many specialist services and multi-professional referrals. It includes midwifery support, antenatal education, specialist services for obese women, caesarean section and women’s motivation for normal birth.

6.5.3.1 Midwifery support during pregnancy

The women described their experience of antenatal care and the support they received from their named community midwife. Some were frustrated at the lack of time they were able to spend with them and felt as if they very rushed during their appointments.

“She [community midwife] wasn’t as helpful. It felt as if it was as quick as you can get in and out.” (7)

“I felt as if I was kind of taking up her time.” (1)

Others felt that they had no connection with their midwives and described feeling neglected.

“I did feel neglected by her sometimes, it was as if she was just in the door, do what she has to do and get me straight back out again.” (5)

“I didn’t feel like I had much of a connection with my midwife, because every time I saw her it was a student in with her and she let the student take the lead.” (5)

6.5.3.2 Provision of tailored maternity care

Specialist services provided for obese pregnant women, particularly during the antenatal period were discussed, and the women described their experiences of them. Both of the NHS hospitals where the research was conducted had a specialist midwife for the care of women with raised BMI and both hospitals ran a specialist antenatal clinic for women with raised BMI, although the clinical templates differed. Contrary to the negative experiences described about the relationship with and the care provided by the community midwife, the women were very pleased with their experience of care from the specialist midwife and described feeling well-looked after.

“You do feel like you’re getting well looked-after which I think is a good thing.” (2)

Also, contrary to the experiences described about the relationship with community midwives, some women described a very positive relationship with the midwife they met at the specialist antenatal clinic. They felt they received the majority of information from the specialist midwife and looked forward to the appointments they had.

“The specialist midwife was the only one that actually sat down with me and spoke to me about stuff ... she was the only one that sat and spoke to me.” (6)

“I looked forward to my session of going to see the specialist midwife and dietician because I felt as if they were the only people that listened and the only people that tried to help.” (7)

Conversely, one woman’s experience of the specialist clinic was contrary to this and she describes feeling like she was being singled out for being obese and the clinic was viewed as a negative aspect of her care.

“There’s special clinics and you think to yourself, that eight stone girl sitting there with the designer bump, who’s smoking and ten years younger than you, having kids at

16 and 17, and you think to yourself 'why isn't there a special class for them?' but it's for the likes of me and I try to look after myself, why isn't there for the likes of them?" (2)

"I understand what you are saying because some people would think 'well, why are we being segregated from someone else?" (1)

Interestingly one woman was unaware that she was attending a specialist clinic for obese women, but had noticed that the majority of women there were of a similar BMI.

"Not a specific clinic for size, no, although there may have been and they just didn't tell you because a lot of the people I noticed that were there at the same time were slightly bigger, so it's possible." (5)

Input from health professionals from other disciplines was common, including dieticians and anaesthetists and the support was highly valued.

"Because I was overweight when I was pregnant I asked to be referred to the dietician, so I was referred to her." (4)

"That helped me a lot, being under the dietician and having the support of the specialist midwife, as well as my own midwife." (6)

6.5.3.3 Antenatal education

Antenatal education was discussed in detail by all the participants, in particular the notion of antenatal education sessions specifically tailored for obese women. The majority of women viewed this positively and felt they would be open to them and would be keen to participate.

"I think if it was an option to have specific classes then I think you'd find that more people would use it than you think." (1)

"I'd like to be told, there's one for higher BMIs." (8)

Some women said they would feel more comfortable and confident going to a class specifically tailored for obese women where they are the same as everybody else.

"I'd probably be quite comfortable going to one that's for bigger people." (5)

“I would rather go knowing I was the same as everybody else than go and have everybody looking at you. I’d feel more confident going to that class.” (7)

“I think if there was a class and it was all bigger people that was there, I think I’d be more likely to attend. I would rather go knowing that I was the same as everybody else than go than have everybody looking at you.” (7)

With the ability to share experiences was found to be one of the benefits of a class specifically for obese women.

“If people want to pigeonhole me and put me in a class with other big people, I’m quite happy with that, we’re all in the same boat together and we’re all pigeon-holed together, we’re all put there and we can all share our experiences.” (4)

However, not all of the women viewed tailored classes positively. One participant felt that these classes could leave some women feeling a bit constrained and less inclined to attend.

“If they had specific classes for specific types, you might feel less sort of wanting to go, you may feel a bit like, you can only go to this class or can only go to that class.” (3)

Interestingly, some felt classes for obese women would mean they were being ‘segregated’ and may feel they are being singled out as different from other women.

“I think for me personally if there was like an antenatal class for overweight women, you’d be thinking ‘well, aren’t I good enough to go with other people?’ I think you would feel a bit segregated. But other people might prefer that, they might feel more comfortable. That’s just personal choice.” (3)

“Do you want to be segregated just because you’re overweight?” (8)

The majority of women, however, felt that antenatal classes specifically tailored for and targeted at obese women should be down to individual personal choice. The availability of classes specifically tailored for obese women would allow them to make a choice as to which to attend, based on which they would feel most comfortable attending and which they would gain the most benefit from.

“I think you can’t win no matter what you do and that’s honestly my opinion....I think if the classes are there, I think it’s what suits people.” (2)

6.5.3.4 Caesarean section

Five of the eight women who participated in this work gave birth by caesarean section. All women reported being informed of the risks of obesity and despite the increased risk of caesarean section amongst obese women, which as presented earlier, is three-times higher when compared to non-obese women, some of these women did not anticipate that they would themselves, require a caesarean section.

“I was expecting to have a normal delivery ... because I wasn’t expecting to have a c-section, everything about it afterwards felt a bit strange.” (1)

“It didn’t really cross my mind because I didn’t think I would end up having one [caesarean].” (5)

6.5.3.5 Desire for and experience of normal birth

The majority of women (five) were motivated to prepare themselves for an active labour and a normal birth and prepared themselves during the antenatal period by attending active birth classes and were keen to utilise the skills and knowledge when they were in labour.

“I was walking around the whole night long, cause I remember what they said to me ‘keep active, keep walking, just keep going’.” (1)

“I wanted to try and be as proactive as I could, during the labour.” (3)

“I wanted to be able to get up and move about.” (6)

One participant reported getting little benefit from the class she attended, suggesting the content was information that she already knew.

“I went to an active birth class. To be honest, apart from knowing what you know, I didn’t really benefit from it.” (1)

One woman didn’t attend any antenatal classes, but was still motivated for active birth when she was in labour.

"I could never go to the antenatal classes because I just didn't have time." (2)

"I wasn't lying back because that was uncomfortable, I was trying to move around as much as I could, I was on my side, I was up, I was walking around the room." (2)

The experiences of the women when they were in labour were very different from each other, with some women reporting that their midwives actively promoted active birth.

"She told me there was options of having a water birth and even if I didn't want a water birth I could manage the pain with the birthing pool." (7)

"She said there was the birthing ball, the pool, she showed me positions, that I could stand up and lean over ... she was great." (7)

Conversely, some women reported that while the advice and education they had gained about active birth and mobility during labour during the antenatal period really motivated them for active birth, this was subsequently not translated into the care they actually received. They were then not able to put into practice the things they had learned because the midwife caring for them during labour simply did not suggest or facilitate it when they were in labour.

"She didn't even mention about changing positions." (5)

"There was never any talk of being up or about or anything like that, it was just a case of 'just stay there in that bed'." (1)

"If the midwives that take the classes give you the information that you can move around, I probably would, but if they're the same mind-set as the ones that are in the ward then probably not. I think next time I will be more forceful." (5)

Finally, several women felt that some clinical and environmental factors inhibited their ability to be active during labour. This included being induced, the need for maternal and fetal monitoring equipment and the environment of the delivery suite.

"I was induced so couldn't really do much [active birth]." (5)

“I did ask if I could wander round and she was like ‘well, we’d rather you not because of the monitors and things, with you being on the drip’, so that was that.” (5)

“What made it awkward for me was I had the drip in my hand so I wasn’t as mobile as I would’ve liked to have been.” (2)

“They told me to get on the bed so they could do all the bits and bobs and then they never mentioned anything about getting up.” (5)

“Being in the delivery suite, it was a lot more limited, there’s only the bed in there.” (8)

One woman felt excluded from using hydrotherapy because her BMI made her ‘high-risk’.

“I would have like a water birth, but with me being high-risk...” (8)

6.5.4 Window of opportunity for short-term and potential longer term change

Finally, as described earlier, central to the framework is the notion that pregnancy presents a window of opportunity in which women can make short-term lifestyle changes during pregnancy, in order to maximise the health of themselves and their baby. In making these short-term changes, there is potential for longer term change beyond the period of pregnancy.

The notion of self-help and the motivation to make small lifestyle changes in order to improve their health during pregnancy and look after the baby was described by most of the participants. Some women described a concerted effort for behaviour change. Small changes were made to activity levels, with an increase in physical activity

“I walked places, even though sometimes I thought ‘oh, I can’t be bothered’. ...Some days I got up and I couldn’t be bothered, but I did it.” (2)

“I was still going to the gym, only on the treadmill, but I was still going, still walking.” (1)

There were also changes to dietary habits, with concerted efforts to improve nutrition in order to ‘look after’ the baby.

“I started having weetabix with milk and making myself have a yogurt because it just made me realise you have to be more conscious about what you eat.” (8)

“I mean, I done Slimming World throughout my whole pregnancy which was great and they gave me obviously some leaflets about obviously different things that you can do to increase your healthy extras.” (1)

“I came in from work and I was cooking, like meat and veg for meals and I was boiling vegetables and I couldn't be bothered, it would've been so much easier to kind of have something dead quick, but I thought 'well no, because I've got to look after the baby as well'. I want to make sure that if I'm looking after myself, I'm looking after the baby and I'm keeping my blood pressure down. I knocked every fizzy drink on the head, I stopped eating chocolate, I stopped buying sugar because I was worried about diabetes and as far as I was concerned, if I could get rid of all them risks myself then, okay yeah, I'm overweight and that's a fact, but what makes me any less more of a risk than a person...” (2)

Short-term changes were described by some women, including increases in physical activity and changes to dietary intake initiated and maintained because of pregnancy. If sustained following pregnancy and coupled with the public health messages and advice that they received during pregnancy in relation to healthy diet and lifestyle, these have the potential to lead to longer-term lifestyle changes. The data indicates that the women were motivated for and capable of short-term lifestyle changes during pregnancy and this could lead to longer term change, motivated by the desire to maximise their health because of the responsibility as a mother, although this may be unconscious for some women.

6.6 Discussion

This chapter reports obese women's experiences of being an obese pregnant woman within the current UK maternity care system. The key findings were: women's awareness of being obese and their efforts to manage their weight prior to pregnancy; the intrinsic fear for their well-being during pregnancy; the disconnect between antenatal preparation for normal birth and the care they received during labour; women's desire to achieve normal birth; and the window of opportunity for short term and potential longer term change.

6.6.1 Women's awareness of obesity

Women described their experiences of living as an obese person, or living in an obese body, in their everyday lives. The women were acutely aware of their weight and the risks being

overweight or obese presented and were ardent to clarify that it was not a lack of knowledge that influenced their body weight or size. The majority of participants had been obese for many years and were not ignorant to the fact that they were obese. Some felt that when they became pregnant and met with health professionals, they were spoken to negatively and the advice they received from health professionals was viewed by some as lecturing. This reflects the evidence that was presented in Chapter 1, where the attitudes of nurses and GPs towards obese patients was reported as being consistently negative, with blame attributed to the individuals for their obesity (Brown 2006). These experiences are similar to those described by Nyman et al (2008), who describe the experiences of obese women's encounters with midwives and obstetricians in Sweden. They described being treated in an offensive manner by midwives and constant feelings of guilt about their body size.

6.6.2 The desire for information and knowledge

Women also reported being aware of the risks that being obese during pregnancy presented. This is contrary to work by Keely et al (2011) who suggest that women were aware that obesity was a risk factor during pregnancy, but they were unaware of what the actual risks were and many women were only informed of this information during their pregnancy. This information, although necessary and wanted by the majority of the participants in this study, led to an increase in fear and anxiety during their pregnancy. Keely et al (2011) confirm with this notion and suggest that the information imparted to obese women by health professionals during pregnancy led to increased levels of anxiety during pregnancy.

6.6.3 The notion of segregation

The notion of 'segregation' was discussed, particularly in relation to antenatal education and the specialist antenatal services that are available for obese women. There was no common opinion in relation to the availability of antenatal classes and clinics specifically tailored for obese women, with both the advantages and disadvantages of both being cited. Interestingly, the language the participants used when discussing specialist services reflected their opinions of it. The term 'pigeon-hole' was used by one participant to describe classes specifically tailored for obese women, with this viewed positively, allowing her to feel that she was the same as everyone else and be in 'the same boat'. The notion of being pigeon-holed is not, however, always necessarily viewed positively. The Oxford English Dictionary (2006 p. 515) defines pigeon hole as 'a category in which someone is put'. Although this was viewed positively by some women, it could be argued that the notion of being put somewhere implies it is being 'done' to someone and possibly without knowledge or consent. Converse to this, there were women who felt that services specifically tailored for

obese women made them feel segregated from the rest of the population, as if they were being singled out for being obese, feeling perhaps that other people, including health professionals viewed them as not good enough to attend services with the rest of the pregnant population. The dictionary definition of segregate is 'to keep separate from the rest' (Oxford English Dictionary 2006, p.627). This reflects the negative view of the participants who used this terminology to express negative views and experiences of tailored antenatal services.

6.6.4 The disconnect between antenatal preparation and the care received during labour and birth.

The majority of women were motivated to prepare themselves for active labour and birth, with some women attending antenatal classes specifically focussed on active birth, keen to utilise the skills and knowledge when they were in labour. However, there appears to be inconsistencies in practices between the education and advice women are given during the antenatal period and what happens in practice when they are in labour; several women reported that it was not translated into their care during labour and they were not able to implement it during their labour because the midwife simply did not address the notion of active birth. It was not necessarily that it was discouraged but rather that there was no active encouragement. This is surprising because obese women are at significantly higher risk of delay during labour and caesarean section (Kerrigan & Kingdon 2010) and they would benefit greatly from being mobile during labour, in order to maximise the opportunity for normal birth and reduce the risk of caesarean section. However, it was reported as not being encouraged by some midwives working in intrapartum care in this research.

As presented in the previous chapter, many midwives viewed the promotion of mobility and active birth as an essential aspect of the care of obese women, with many midwives having the view that if women were advised during the antenatal period of the importance of mobility during labour, they would be more likely to mobilise from the outset. This does not appear to reflect the findings in this study, with women reporting preparing themselves during pregnancy for active birth, but midwives not supporting the notion in practice when they were in labour. In the previous chapter midwives attributed the immobility of obese women during labour to the high risk nature of their labour, with Singleton and Furber (2014) suggesting that it is the associated risks of obesity during labour that prevents mobility during labour.

In addition to the midwife influencing the ability of the women to practice active birth, several women felt that some clinical and environmental factors inhibited their ability to be active during labour, including being induced, the need for maternal and fetal monitoring equipment

and the high-risk environment of delivery suite. Interestingly, these conclusions were drawn both from the midwife advising some women that they were not able to be mobile, but also some women making an assumption that the high-risk environment of delivery suite prevented this. As presented in the previous chapter, maternal obesity was commonly stated as a reason for viewing women as 'high-risk', leading to medicalised care, and this reflects the national guidance (CMACE & RCOG 2010). One woman also stated the fact that she was classed as 'high-risk' as the reason she wasn't able to use hydrotherapy during her labour. However, as previously discussed, the use of hydrotherapy has multiple benefits, particularly for obese women (Swann & Davis 2012) and therefore it could be argued that this should not be used as a reason for excluding obese women from hydrotherapy and water birth if that is their wish. It is not clear whether this was an assumption by the woman herself or if she was advised that she was excluded from hydrotherapy and water birth. However, she did go on to say that she would like birthing pools to be available for women who do not fit the normal criteria for hydrotherapy, including women with raised BMI. This would suggest that this may not currently happen and some women classed as 'high-risk' may be excluded from the use of hydrotherapy. Local guidance could be amended to enable individualised care plans for women classed as 'high-risk' who wish to utilise hydrotherapy during labour, in order to maximise opportunity for normal birth and improve their experience of labour and birth.

6.6.5 Women's desire for normal birth

Of the eight women who participated in the research, five had a caesarean section. Obese women are significantly more likely to require caesarean section (Chu et al 2007, Dempsey et al 2005, Kerrigan & Kingdon 2010) and all the women who participated in this study reported being aware of the risks of being obese during pregnancy, including the increased risk of caesarean section. However, despite this knowledge, some women did not anticipate having a caesarean section themselves. It could be argued that although they are aware of the increased risk of caesarean section, they do not think that it will happen to them. Many had aspirations to have a normal birth and it could be argued that it was the wish to achieve a normal birth that motivated them to prepare themselves during the antenatal period in order to maximise their chances. Therefore the idea that they may experience a caesarean section may not have been fully acknowledged.

6.6.6 The window of opportunity for short-term and potential longer term change

The 'window of opportunity' that encapsulates the conceptual framework, as presented in Figure 3, is also present prior to pregnancy, based on the fact that a woman is obese. This is demonstrated by the dotted line encompassing the 'embodiment of obesity' at the top of the

framework. Each meeting that an obese woman has with a health professional for any reason prior to pregnancy, presents a window of opportunity for health promotion and the delivery of public health messages. However, it could be argued that this window of opportunity is realised more during pregnancy because of the regular contact women have with midwives and other health professionals. The solid line on the framework 'being pregnant and overweight' demonstrates the start of the window of opportunity at the start of pregnancy. This window of opportunity is recognised by midwives who deliver public health messages during pregnancy in order to initiate positive lifestyle changes, but as demonstrated in the findings, this window of opportunity is also realised by the women themselves, who are motivated to make short-term lifestyle changes to improve their health during pregnancy and maximise the health of their baby as it develops. This window does not end in the postnatal period, but continues to be present as women continue to have contact with health professionals during their initial transition to motherhood. Indeed, if women continue to adopt the lifestyle changes they made during pregnancy, it has the potential to lead to longer term lifestyle change. This is represented by the dotted line at the bottom of the framework.

In addition to the window of opportunity for public health messages, there is a significant window of opportunity for the promotion of normality and normal birth, in order to educate and prepare women for labour and maximise the opportunity of normal birth. Women have regular contact with midwives during pregnancy and, as reported in the findings, obese women received care from specialist midwives in specialist antenatal clinics. Although this was not viewed favourably by all the participants, the majority valued the support from their specialist midwife. The opportunity that this presents for antenatal education and the promotion of normal labour and birth is invaluable and should be later reinforced by the midwives caring for them during the intrapartum period. It could be argued that this window of opportunity also has potential for longer term health benefits, as the prevention of operative birth will lead to increased health and well-being in both the immediate postnatal period and in longer term also.

6.7 Strengths and limitations

Similar to Study 2, this study included a small sample (eight participants) and therefore the findings are not generalisable. However, data saturation was reached as no new data was emerging. This provides some confidence that no new themes would have emerged if data collection had continued. Similar to Study 2, the sample was obtained from a hospital in England and a hospital in Scotland, allowing a varied sample to be obtained, taking into account experiences in two different hospitals. The sample also included women who had

experienced a variety of birth experiences normal births, instrumental births and caesarean sections, which promoted diversity within the sample and provides some assurance that the participants were not motivated to participate because of negative experiences of birth which resulted in caesarean section. Also contributing to the strength of the findings was the rigour of the research: the data was analysed using the framework approach, with two researchers identifying and corroborating emerging themes.

6.8 Conclusion

This chapter has presented the findings of a series of qualitative interviews with obese women who had recently given birth. It has described participants' experiences and views of maternity care: the experiences of living as an obese woman; the experience of being pregnant and overweight, including the information and knowledge they wished to receive during pregnancy; and finally, their experiences of the maternity care they received, including antenatal care they received, antenatal education they participated in and their experience of the care they received during labour and birth.

The findings from the three studies that have formed this research, in addition to the literature presented in Chapter 2, were used to inform development of an intervention that will aim to increase normality for obese women during the intrapartum period. This will now be presented in Chapter 7.

Chapter 7

Intervention development

Chapter 7 – Intervention development

7.1 Introduction

The previous chapter presented the findings from Study 3, which explored obese women's experiences and views of maternity care, their experiences of the antenatal care they received, the antenatal education they participated in and their experience of the care they received during labour and birth.

This chapter contains the rationale, method and findings of a multi-disciplinary workshop that was held to develop the intervention. The workshop used the evidence gathered within the preceding studies, combined with the participants' knowledge of the context in which the intervention would be delivered, to develop the recommended intervention.

7.2 Intervention development

An intervention is anything that uses a combination of strategies to produce behaviour change or improved health outcomes for individuals or groups of people (Heath et al 2015). Heath et al (2015) suggest that theoretically-informed interventions are more successful and lead to improved outcomes. The development of this intervention was based on the development stage of the MRC framework for the development of complex interventions (MRC 2006). There is increasing recognition of the importance and requirement to carefully develop and evaluate complex interventions if they are to be successfully implemented and sustained in clinical practice. A number of different approaches exist, including theory-based, methods-based, person-based, paradigm-based, evidence-based approaches; however, there is no evidence as to which approach is useful in which circumstance.

Theory-based interventions have an emphasis on existing psychological or implementation theories, for example the Theoretical Domains Framework, a method that combines 33 theories of behaviour and behaviour change which are grouped into 14 domains (Atkins et al 2017). It is used in the design stage of interventions to help identify the most appropriate model and theory to use, and also how best to implement the intervention most effectively (Jones et al 2015). An alternative theory used in the theory-based approach is Normalisation Process Theory. This theory is concerned with the implementation, embedding and integration of clinical practices (May & Finch 2009).

The methods-based approach involves the use of mixed methods or intervention mapping. It combines a single theory, or multiple theories, with empirical evidence and new research data to form a base for the development of an intervention (Heath et al 2015). It is suggested

that this method is closely aligned with the guidance from the MRC for the development and evaluation of complex interventions in health care (Heath et al 2015).

Person-based interventions focus on interventions that can be delivered to groups of people, or patients, as opposed to individuals. Such interventions are commonly used for health improvement, social support and behaviour change interventions (Hoddinott et al 2010). Delivering an intervention to a group can be achieved using a variety of methods, including, face-to-face meetings and digital methods. In order to optimise the delivery of interventions in group settings, it is important to consider how the intervention will be delivered, who the group comprises, what the outcomes of the intervention are anticipated to be and how the dynamics of the group may affect the intervention delivery and outcome (Hoddinott et al 2010).

Paradigm-based approaches use participatory research with patients or involve researchers, patients and health care service providers in the intervention development, known as co-production or co-construction. This approach ensures participation of all involved in the intervention, including the service users and the service providers who will be responsible for delivering the intervention (Bessant & Maher 2009).

An evidence-based approach to intervention development uses a number of sources of evidence to design an intervention. These include systematic reviews of current evidence on the subject, national clinical guidance that are currently in use and any newly generated evidence that has emerged during the intervention design phase (Salisbury et al 2015).

There is little guidance about how best to develop complex interventions in order to reduce the gap between evidence and its translation and application into practice. Currently there is no agreed 'best way', although there is research currently underway to address this gap which aims to produce guidance on how to develop complex interventions in order to improve health or health care outcomes (O'Cathain et al 2017).

In this study, a methods-based approach was utilised and included:

- intervention mapping using both pre-existing evidence from the literature search and the new evidence that was generated during the course of the three research studies to form the basis of the intervention;
- a paradigm-based approach using co-construction where health professionals and maternity service users participated in both the research and the intervention development stages;

This combined approach was taken to capitalise on the strengths of each approach. The intention was to develop an intervention that was evidence-based, by basing its development on the existing and new data that had been gathered, whilst ensuring that the intervention would be desirable to both maternity staff and pregnant women and therefore be likely to succeed and be sustainable in the future. Involving staff and recent maternity service users in the research allowed the intervention to directly reflect the needs of both health care professionals and obese pregnant women. This approach built on a theory informed intervention development approach to intervention development that has been previously successful when developing other interventions (Duncan & Fitzpatrick 2016).

7.3 Workshop design and rationale

The next stage of the work was to hold a multi-disciplinary intervention development workshop. The workshop aimed to use the data already collected (presented in Chapters 4, 5 and 6) and the experience of the workshop participants to reach a consensus on a suitable and acceptable intervention that could be developed and implemented into maternity care. It could then be used to educate health professionals and improve knowledge around obesity and pregnancy, instil confidence in health professionals to challenge current intrapartum practice, support consistent decision-making around the care of obese women and utilise alternative techniques and practices to limit staff fear when caring for obese women. In this way it is hoped it could increase 'normality' and maximise the opportunity for normal birth for women who are obese. The workshop aimed to ascertain a consensus on what the intervention could be, if it were to be implemented in the future.

Colleagues at the University of Stirling have successfully developed an approach to designing interventions that takes a methods-based, co-construction approach to maximise participants' engagement in the intervention development process, while basing the content of the intervention on data that has already been gathered. The technique involves running a face-to-face workshop with key stakeholders in order to present emergent data from the preceding research, consider different intervention components and select (using consensus methods) the components that are deemed to be most likely to be implementable, effective and sustainable. This approach was replicated within the intervention design workshop. An overview of the workshop can be seen in Table 7 below.

7.4 Method

7.4.1 Sample and recruitment

Purposive sampling was used to invite health professionals with experience of working with obese pregnant women to attend the workshop, as they would be able to make valuable contributions based on their previous clinical experience and knowledge. Colleagues who had previously expressed an interest to attend, who demonstrated enthusiasm for the subject and a willingness to participate were invited, some of whom were aware of the workshop as they had participated in the earlier stages of the research. A snowball technique, where one participant recommends another person who may wish to participate (Cluett & Bluff 2006b), was also used; other potential participants were suggested by their colleagues based on their clinical expertise or interest in the subject. In order to form a multi-disciplinary group, health professionals from a variety of background were invited. Participants invited included consultant midwives, midwives, a specialist midwife, a consultant obstetrician, a midwife educationalist, a health psychologist, a senior researcher with experience of health care intervention design, the principal PhD supervisor and recent maternity service users. These people were invited to participate as they were considered to be able to contribute significantly to the development of the intervention or are key personnel who would be involved in the implementation of the intervention in the future. The workshop was chaired by the researcher (AK). Fourteen potential participants were invited to attend by email, with a background to the workshop provided (Appendix 15). They were asked to respond, accepting or declining the invitation. Thirteen responded. All respondents accepted the invitation to attend. However, the service users who accepted the invitation were unfortunately unable to attend on the day, due to personal circumstances. They were unable to be replaced due to the late notice of non-attendance. Attendees were as follows: two consultant midwives, two midwives, a specialist midwife, a consultant obstetrician, a midwife educationalist, a health psychologist, a senior researcher and the principal PhD supervisor.

7.4.2 Setting

The workshop was held in a maternity unit in Scotland, as this was convenient for all participants and had previously been a research site for studies 2 and 3 of this work.

7.4.3 Structure of the day

The structure of the day was based on a previous theory-informed intervention development day that had been successfully delivered and led to an intervention that had high levels of feasibility and acceptability in practice (Duncan & Fitzpatrick 2016). The workshop was based on a combination of a methods-based approach, with intervention mapping and a paradigm-based approach, using co-construction (Heath et al 2015, Bessant & Maher 2009). An overview of the workshop, including the workshop timeline, the action taken, the theoretical underpinning for the action and the expected output is presented in Table 7. The

table is based on previous intervention development work by Duncan (2014). The theoretical underpinning for each action is presented alongside the action in both the table and the paragraphs below, to demonstrate the application of the intervention development approaches in the process.

Prior to the workshop, all participants were sent a short summary sheet (Appendix 15) that described the background to the research programme, a summary of the key findings and the purpose of the workshop. This allowed them to attend with some prior knowledge of the research and an awareness of the aim of the workshop.

Participants were welcomed and the workshop was opened with a presentation by the midwife educationalist, who is a colleague of the researcher's and well-respected in the field. She presented a background to obesity and pregnancy including a summary of the research programme so far and an introduction to the purpose of the workshop' including the full programme of research was then presented in detail. This included background, methods and findings from all three of the studies conducted during the research. A proposal for an intervention was then presented, with the related theory and rationale. This was based on the findings of the preceding studies and was used as a basis for the workshop discussions. The multi-disciplinary group then discussed the issues relating to obesity in pregnancy, practical implementation of such an intervention, the advantages and disadvantages and then proposed other interventions that may be more suitable. A multi-disciplinary consensus was then agreed on the most suitable and appropriate intervention.

Table 7. Overview of intervention workshop

Workshop Timeline	Action	Supported theoretical underpinning	Expected output
PRE-EVENT			
Identify key individuals to attend ↓	Consider key individuals who would be valuable contributors to the workshop.	Co-construction approach (<i>Bessant & Maher 2009</i>)	The workshop will be attended by the right people in order to successfully design the intervention:- key stakeholders, potential early adopters and research study participants.
Invite potential participants by email ↓	Email sent to named obstetric, anaesthetic and midwifery colleagues, identified by key contacts at the research sites. Email includes background to the research programme and invites them to attend the workshop.		Invitees will be informed about the workshop and the rationale for it, including what the research has achieved so far and what is hoping to be achieved at the workshop.
DAY EVENT			
Welcome ↓	Participants are welcomed by well-respected midwifery colleague, independent of the work.		People feel welcomed, relaxed and valued at the start of the workshop.
Overview presentation ↓	Well-respected midwifery colleague, not directly involved in the work gives opening presentation, summarising the problem, the need for a solution and endorses the work done to date.		Participants have a clear understanding of the background to the research and the importance of the problem
Presentation of research programme ↓	Detailed presentation by the researcher of the research programme, including the aims, methods and summary of findings.	Intervention mapping (<i>Heath et al 2015</i>)	Participants gain knowledge of the work done to date and start to understand and internalise the situation
What next and why? ↓	Researcher gives short presentation following on from the research findings about potential ideas for the intervention that have emerged from the research data. She encourages workshop participants to consider possibilities for the intervention, practicalities of implementation and change management processes.	Intervention mapping (<i>Heath et al 2015</i>)	Participants begin to make sense of what is being said to internalise the need for an intervention to be developed. Participants are clear on the purpose of the discussion to follow and given suggestions to start the discussion.
Discussion ↓	Participants use the research findings to suggest possible components of an intervention, considering implementation into clinical practice. Notes are made by the researcher and a research colleague.	<i>Consensus decision-making</i> (<i>Hartnett 2018</i>)	Participants discuss the research presented and suggest possible elements of an intervention. Pros and cons of each aspect are discussed and consideration given to clinical implementation.
Summary and consensus	Consensus decision made by participants about what the intervention will be. The workshop is summarised by the lead researcher and thanks participants for attending.	Co-construction approach (<i>Bessant & Maher 2009</i>) <i>Consensus decision making</i> (<i>Hartnett 2018</i>)	A consensus agreement is made about the intervention. The researcher thanks the participants for attending—to make the participants feel valued—and highlights the achievements of the workshop how these will be reported as part of the research programme.

7.5 Findings

7.5.1 Key discussion at workshop

Following the presentation of the research programme that preceded the workshop, including the findings from the three studies, the participants were invited to discuss the findings and consider possibilities for an intervention including the possible content of an intervention and also the practicalities of implementation into clinical practice.

7.5.1.1 Antenatal information

Current antenatal information provision was discussed by the workshop participants in light of both the study research findings (Chapters 4, 5 and 6) and anecdotal information. These suggest that women are currently receiving information about maternal obesity during the antenatal period. Both verbal and written information is valuable, with women reporting a preference for verbal information, as previously reported in Chapter 6. Workshop participants discussed these findings and felt that written information in isolation was not best practice but rather verbal information should be incorporated into discussions at antenatal consultations. Issues of varying literacy ability were acknowledged as a reason why written information should not be solely relied upon. Alternative forms of antenatal information provision were considered, with tailored booklets to supplement discussions and tailored antenatal education classes suggested as possibilities as well as the use of visual information and education on social media sites such as 'You Tube'.

7.5.1.2 Conflicting advice

Participants discussed the conflicting advice that currently exists in relation to obesity and the care of obese women. Participants perceived there to be a big disconnect between midwives providing antenatal care to obese women and midwives on delivery suite, who provide intrapartum care. This reflects and supports the data that came out in Study 3, presented in Chapter 6, where women described the disconnect between their antenatal preparation for labour and birth, and the actual care they received. The workshop participants concurred with these findings and felt that there was a significant difference between the information that is currently provided during the antenatal period in relation to preparation for labour and the promotion of normal birth and the reality of the care that is provided by midwives during the intrapartum period. It was felt that community midwives were very positive in their approach to antenatal education about active labour and normal birth, regardless of whether a woman was obese or not, but this did not necessarily translate in the intrapartum area, with the attitudes of midwives on the delivery suite perceived to be very different. Women were given very different and often conflicting advice in relation to mobility and normality when they were receiving intrapartum care.

Some of the participants also reported that they had witnessed midwives receiving differing advice or different decisions being made by colleagues, depending on the day of the week or time of day. The people involved in the decision making also had an impact. Midwives would receive different advice or support depending on who the senior midwife was, with some very supportive of encouraging normality and others encouraging medicalisation of obese women. Based on this, it was felt that one focus of the intervention should be to support more consistent decision making.

7.5.1.3 Staff fear

Whilst health professionals are aware of the increased risks of obesity, both in pregnancy and during the intrapartum period, there appears to be an increased level of fear when caring for obese women. This became apparent in the discussion that took place in which the fear of litigation was discussed. There was a consensus that some midwives feel they need to have 'permission' to encourage normality when caring for an obese woman during labour and birth because of the 'high-risk' nature of pregnant obese women. There was a feeling that some myths relating to obese women need to be debunked in order to change staff attitudes and allay fears. There was also a suggestion that sharing good news stories and good outcomes for obese women, across the multi-disciplinary team, in particular with obstetricians and anaesthetists, could be beneficial in order to communicate and highlight that some obese women do achieve normal birth and have positive birth experiences. It was thought this would go some way to allay fears and encourage positivity and normality amongst all staff in relation to obese women.

7.5.1.4 Negative stereotypes of obesity on delivery suite

The negative attitudes of some staff when caring for obese women, reported in Study 2 in Chapter 5, was discussed in greater depth at this point as it was viewed as a significant problem. The participants concurred with the findings from Study 2; they supported the view that some staff display unhelpful attitudes and negatively stereotype obese women. All health professionals are aware of the increased risk of caesarean section for obese women and it was thought that this could be directly influencing the negative stereotypes that exist. Reflecting the findings from Study 2, including midwives' reluctance to encourage mobility with obese women, for example, the perception that birthing balls do not take the increased weight of obese women, it was felt that many midwives do not encourage their use when caring for obese women. Many participants felt there needed to be a change in culture and the attitude of staff caring for obese women in labour, in order to encourage women to

maximise the opportunity for normal birth and increase women's self-efficacy through active labour and normal birth.

7.5.2 Suggestions for potential intervention package

Participants made a number of suggestions of what the intervention should include. The target of the intervention was discussed and it was felt that health professionals, including midwives, obstetricians and anaesthetists, should be the target audience for the intervention itself, with obese women being the population on whom the intervention will impact on. It was felt that the intervention should be targeted at all levels of staff and influence practice across the disciplines; it would have greater impact that way and be more likely to be implemented into practice. The workshop participants wanted the intervention to aim to change attitudes and perceptions of staff towards obesity in pregnancy and they wanted it to have an emphasis on active labour and normal birth.

It was felt that midwives needed permission 'to do things' when caring for obese women during labour and some aspects of the proposed intervention would seek to do this. Care pathways were suggested as a potential aspect of the intervention, as because it would be evidence-based, they would give midwives confidence to follow the care pathway when caring for an obese woman. Further discussion on care pathways questioned whether they would challenge practitioners thinking, with some fearing that many would simply follow the care pathway without individualising care if necessary.

Similar to a care pathway, a flow-chart was another suggestion, focussing specifically on the care of obese women. It was felt that it would enable practitioners to easily follow a number of logical steps when caring for an obese woman and ensure that all aspects are considered. The format of the flow-chart was considered to be important, with the need for it to be easy to read, in large font and eye-catching, and easily accessible at all times, laminated on the walls in each delivery room for ease of reference.

Education of staff was also discussed and it was felt by all workshop participants that this should form an essential part of the intervention in order to ensure all health professionals were well-informed and educated about obesity in pregnancy. If educated, they would feel confident to adopt their practice appropriately and to accurately and consistently advise and inform obese women. An e-learning package focussing on obesity was suggested with evidence presented about obesity, including both facts and current evidence about the risks of obesity in pregnancy, labour and birth.

The availability of a reference folder for staff to refer to was a further suggestion as a way of both educating staff and guiding their practice. This method has been used previously in Scotland with the pathways for maternity care as part of the 'Keeping Childbirth Natural and Dynamic' (KCND) programmes (Healthcare Improvement Scotland 2009) with folders in all clinical areas with the various clinical pathways documented. Midwives regularly referred to these as part of their practice and they have been reported to be a valuable resource. A similar folder was suggested as a potential aspect of the intervention, to be used as a reference when caring for obese women in labour.

An obesity 'Do's and Don'ts' with the rationale for each item and the supporting evidence was viewed as a potentially easy-to-read and easy to follow tool. Similar to a care pathway, it was felt that this would develop midwives' confidence to include or omit aspects of care in their practice because they had the evidence-base for each do or don't. However, it was again questioned whether this would lead to midwives simply following the list of do's and don'ts, without individualising care if necessary.

Finally, there was a lot of discussion around the implementation of ward champions for obesity on each ward or clinical area. It was felt that the introduction of ward champions for obesity give midwives confidence to challenge aspects of current practice. Each ward champion would provide clinical leadership, empower midwives and encourage evidence-based, individualised care. It was felt that any midwife with an interest in obesity would be a suitable champion. The aim and advantages of potential intervention components, as conceived by workshop participants are summarised in Table 8 below.

Table 8. Potential intervention components

Intervention component	Aim	Advantages	Disadvantages
Care pathway	Provide a formalised pathway for aspects of care for obese women during labour	Increase midwives' confidence when caring for obese women	Might discourage individualised care
Flow-chart	Support local clinical guidance and provide a logical step by step guide when caring for obese women	Easy to follow, covering all aspects of care	Might discourage individualised care
Education	Ensure health professionals are educated on obesity during pregnancy	Enable health professionals to provide evidence based care and deliver accurate information to be provided to obese women	Nil
Reference folder	Educate staff and provide guidance for practice	Resource available at all times to refer to	May get lost or be removed. Need to be updated regularly
Do's and Don'ts	Provide an easy to read and follow tool to support practice when caring for obese women	Increase confidence to adapt practice when caring for an obese woman	May discourage individualised care and midwives to question own practice
Ward champions	Provide clinical leadership and support in relation to obesity in pregnancy and empower midwives to challenge practice	Encourage discussion about care of obese women and increase confidence to challenge some aspects of practice as peer support available	Ward champion may be allocated obese women repeatedly as viewed as their area of interest or expertise

7.5.3 Intervention component consensus decision

To conclude the workshop, following the discussion, a consensus decision was made on what the intervention should include and how it should look in clinical practice. Consensus decision-making is a process for groups to generate agreement, respecting the contributions of all participants (Hartnett 2018). Consensus decision making is commonly used by groups seeking to generate widespread participation and agreement. As many stakeholders as possible are involved in the group discussion, with all participants encouraged to contribute. The group constructs proposals with input from all group participants and the aim of the consensus process is to generate as much agreement as possible, with a concerted attempt to reach full agreement, if possible. During the process, each individual's preferences should be voiced so that the group can incorporate all concerns into an emerging consensus proposal (Hartnett 2018).

The decision-making used at the intervention development workshop followed this approach, with all participants encouraged to contribute to the discussion about the intervention that was to be developed. Suggestions for the intervention were made, as described above in section 7.5.2 and each individual had the opportunity to voice their opinion on the aspects of the intervention that had been suggested and the advantages and disadvantages they felt they presented. A consensus decision was then made, where, following discussion on each proposed aspect, full agreement was reached.

The overall aim of the intervention is to educate health professionals and improve knowledge around obesity and pregnancy, instil confidence in health professionals to challenge current intrapartum practice, and utilise alternative techniques and practices to increase 'normality', and maximising the opportunity for normal birth for women who are obese. It was decided that the intervention would consist of three elements:

- a) an e-learning package for health professionals
- b) intrapartum care pathway with five 'must-do's'
- c) nominated ward champions for obesity.

The intervention will now be described using the headings from the Template for Intervention Description and Replication (TIDieR) checklist which provides a well recognised guide to describing and replicating health care interventions (Hoffmann et al 2014). The TIDieR checklist is a twelve point checklist that serves as a prompt for authors to describe interventions in sufficient detail to allow them to be easily replicated (Hoffmann et al 2014). The first nine steps of the checklist will be used to describe the intervention, as the final three steps refer to the modifications and evaluations of the intervention following its trial.

1) Name of the intervention:

The promotion of normal birth for obese women

2) Why:

a) The rationale for an e-learning package for health professionals was to educate health professionals about obesity in pregnancy in order to enable them to discuss overweight and obesity with pregnant women. It was hoped that it would provide appropriate and consistent advice about the risks of obesity during pregnancy so the women could optimise their health during pregnancy through weight management and physical activity. It would also provide detailed information on how midwives can support women during the intrapartum period to normalise their care and maximise their chance of normal birth. E-learning was considered to be preferable to group staff training as it would allow each individual to complete in their own time.

b) The rationale for an intrapartum care pathway with five must-do's was to provide a template of aspects of care for midwives to consider and regularly re-evaluate throughout the intrapartum period when caring for obese women. The five 'must do's' emerged from the discussion that took place during the workshop and were considered by the participants to be the five most important aspects of intrapartum care for this population, based on the available published evidence and the emergent data from the studies that preceded the workshop that was presented at the beginning of the day. They are also aspects of care that are currently not always challenged for this population. They were considered to be important when attempting to normalise intrapartum care and maximise the possibility of normal birth. Midwives are to be encouraged to regularly re-evaluate and individualise their care, particularly when risk factors change.

c) The rationale for ward champions for obesity was to embed obesity and the care of obese women into the core of the midwifery workforce. In order for an intervention to be successfully implemented into an organisation and sustained, there needs to be a person embedded within the organisation to lead the change and supports its implementation as it is more likely to be adopted by others if individuals within their network are also willing to support it (Greenhalgh et al 2004). There was a lot of discussion around the need for ward champions for obesity and it was acknowledged that the advice and support for midwives who are caring for obese women during labour varies greatly. The support to normalise care of obese women was

inconsistent and was influenced by the attitudes and beliefs of the shift leader and other midwifery colleagues, with midwives reporting different decisions being made about intrapartum practices depending on the midwifery and obstetric leadership each day. The introduction of ward champions for obesity would give midwives more confidence to challenge some aspects of current practice, encourage normality and empower obese women to aim for a normal birth, wherever possible.

3) What (materials):

a) The e-learning package will be an online interactive training package including the evidence about the risks of obesity during pregnancy and birth. It will include information on the intrapartum risks of obesity and equip midwives with the knowledge on how to support obese women in an attempt to minimise these risks and, wherever possible, achieve a normal birth. It will include quizzes and infographics throughout. The Royal College of Midwives currently have an i-learn package on maternal obesity and pregnancy which aims to educate midwives on the facts surrounding maternal obesity and support them to discuss overweight and obesity with pregnant women as well as advising and supporting them in appropriate weight management techniques and physical activity (RCM 2017). It is anticipated that this e-learning package would build on the information included in this i-learn programme.

b) The intrapartum care pathway with five 'must-do's' will be presented as an eye-catching and easy-to-read flowchart that will be laminated and mounted on the wall in each intrapartum area. This will allow midwives and other health professionals to refer to them when caring for obese women and use as a prompt to challenge thinking. The five 'must do's' will be:

- 1) **Think mobility** – Optimise mobilisation, adopt upright positions, stay off the bed, offer support to stay active, encourage the use of active birth aids.
- 2) **Think pain relief** – Discuss options for analgesia, discuss the pros and cons of early epidural, consider the use of hydrotherapy
- 3) **Think fetal monitoring** – consider the risk factors and evidence for continuous EFM during labour, discuss what type of monitoring woman wishes, choose optimal method to encourage mobility.
- 4) **Think nutrition and hydration** – encourage oral fluids, encourage simple nutrition, evaluate risk factors, individualise decisions.

5) **Think environment** – consider and utilise equipment for active birth, use of fetal monitoring, role of birth partner.

c) Ward champions for obesity will be appointed in each intrapartum area. They will be midwives with an interest or passion for obesity and with enthusiasm to act as a clinical leader in this area. The role of the ward champions will be to encourage evidence-based practice in relation to obesity, empower and encourage midwives to challenge practice in relation to intrapartum care of obese women and encourage both midwives and obese women to strive to normalise the care as appropriate. They will act as source of support for midwives and other staff caring for obese women, provide clinical leadership on the subject of obesity, influence clinical guidelines and be instrumental in the cascading and communication of new evidence. A formal role description will be provided to the champion to clarify the role and be circulated to all intrapartum areas.

4) **What (procedures):**

a) Each midwife and obstetrician who provides care for obese women during the intrapartum period will complete the e-learning training annually as part of their mandatory training. The training package will take approximately one hour to complete. Each health professional will have an individual access code in order for them to log in and complete the package. The completion of the package will be reviewed at the annual appraisal meeting.

b) The intrapartum care pathway, with five 'must-do's' will be displayed as a laminated flowchart and will be mounted on the wall in each intrapartum area. It will be reviewed and updated in line with the clinical guideline on obesity, or when new evidence emerges that challenges current practices. The ward champion for obesity will be responsible for ensuring there is a pathway available in each room in the intrapartum areas.

c) Ward champions for obesity will be appointed in each intrapartum area. Interested midwives will be encouraged to send an 'expression of interest' in the role to a named recruiter and interviews will be conducted in order to identify suitable candidates. A formal role description will be provided to the champion to formalise and clarify the role and this will also be circulated to all intrapartum areas, enabling all staff members to be aware of the role and the function of it.

5) Who provided:

- a) Each midwife and obstetrician who provides care to obese women in labour must complete the e-learning training package

- b) The care pathway will be available as a resource to all health professionals working in the intrapartum area caring for obese women.

- c) The ward champions for obesity will be midwives who have an interest or passion for obesity and have enthusiasm to act as a clinical leader in this area. They must be registered midwives with experience of providing care to obese women during labour. They will complete the e-learning training package prior to commencing the role.

6) How:

- a) The e-learning package will be delivered online and will be completed annually. Each health professional will complete it individually.

- b) The care pathway and five 'must-do's' will be available in hard copy, laminated and mounted on the wall in each room in the intrapartum areas. It will also be available in electronic format and be located in the relevant folder with the local clinical guidelines, so health professionals can access it individually if desired.

- c) Ward champions will be allocated to each ward area and will be available to act as a source of support for midwives and other staff caring for obese women. They will provide clinical leadership on the subject of obesity, influence clinical guidelines and be instrumental in the cascading and communication of new evidence. They will be available for face-to-face support or by email.

7) Where:

- a) The e-learning package can be completed at work on a computer within the hospital or at home on a personal computer. The training will be accessed by a personal login which allow for remote access.

- b) The care pathway will be available in each intrapartum area and will be stored electronically with the local clinical guideline for obesity in pregnancy.

c) The ward champions will be based in the intrapartum areas and will be able to be contacted in the ward area, or remotely by telephone or email, but only while they are on duty.

8) When and how much:

a) The e-learning package will be completed annually and completion reviewed annually at the appraisal meeting.

b) One pathway will be available in hard copy in each room in the intrapartum areas.

c) Two ward champions for obesity will be appointed for each intrapartum area.

9) Tailoring:

No tailoring will take place. All aspects of the intervention will be delivered to the same specification in each location.

7.6 Benefits and limitations of the selected intervention development approach

In this study, two approaches to intervention development were used including the use of a methods-based approach using intervention mapping and a paradigm-based approach of co-construction. The decision to combine these approaches was taken as they each had several benefits and would capitalise on the strengths of each approach. The intention was to develop an evidence-based intervention that would be desirable to the target population and be effective and sustainable in the future. The adoption of the methods-based approach allowed the evidence that had been generated in the preceding research to be used as the basis of the intervention. The application of a co-construction paradigm-based approach has multiple benefits, including, the involvement of health professionals and maternity service users in the development of an intervention ensures that the intervention addresses their needs and increases the likelihood of successful implementation. Including the target population for the intervention in the development stage is recommended by the MRC (MRC 2006) in order to improve the efficiency of the implementation. Although it was intended that maternity service users were involved in the workshop, unfortunately they were unable to attend on the day. The inclusion of health professionals from a variety of disciplines was also beneficial to the development process as it allowed a variety of opinions and clinical experiences to be included and added breadth to the ideas generated. Finally, the use of consensus decision-making encouraged free discussion on the aspects of the intervention and allowed a consensus decision to be reached that incorporated the opinions of each participant. A consensus decision was then made, where, following discussion on each

proposed aspect, full agreement was reached. It also allowed the results of the workshop to be decided on the day of the workshop and immediately available to the researcher.

Alternative methods were considered in the initial stages when planning the workshop, including the use of a person-based approach, as it was anticipated that the intervention would be delivered to a group of people, for example, to all midwives. However, after further consideration, it became evident that the intervention could potentially be comprised of a number of component parts, some of which may be delivered on a group basis, for example, education, and some on an individual basis. It was therefore decided that this approach may not be the most appropriate and alternative methods, as described above, were more advantageous.

7.7 Conclusion

The multi-disciplinary workshop was held as a conclusion to the research programme that aimed to design an intervention to promote normal birth amongst obese women. Health professionals from a range of disciplines participated in the workshop and used the preceding research in the programme as a basis for the intervention design. The intervention, that will be composed of three separate elements, was decided on through a consensus decision-making process and will include an e-learning educational package for health professionals; an intrapartum care pathway with five 'must-dos'; and the introduction of ward champions for obesity, who will provide leadership, support and increase the confidence of health professionals caring for obese women during labour and birth.

Chapter 8

Final discussion and conclusion

Chapter 8 – Final discussion and conclusion

8.1 Introduction

The previous chapter presented the outcome of the multi-disciplinary workshop that designed an intervention to promote normal birth amongst obese women. Participants from a range of disciplines participated in the workshop and used the preceding research as a basis for the intervention design. The intervention was agreed using a consensus decision-making process. The resultant intervention will comprise: an e-learning educational package for health professionals; an intrapartum care pathway with five 'must-dos'; and the introduction of ward champions for obesity. The workshop was the culmination of the preceding four components of the research; the literature review which formed the basis of the work as a whole and the three research studies that generated the evidence on which the intervention is based.

This chapter will now present the final conclusions from the entire research project, suggesting some recommendations for practice and further research, and highlighting the strengths and limitations of the work.

8.2 Aim and objectives of the research

The overall aim of this thesis was to design an intervention to promote normal birth amongst obese women, following the framework for developing and evaluating complex interventions in health care (MRC 2006). This thesis has achieved its aim in undertaking three consecutive studies 1) a survey of obesity guidelines, 2) health professionals' views of caring for obese pregnant women and 3) obese women's experiences of labour and birth. The intervention has been designed, comprising three component parts; an educational, a clinical and a leadership aspect.

8.3 Originality of thesis

The originality of this thesis lies in the application of the MRC framework in order to develop an intervention focussed on obesity and normal birth, its application to practice in the design of the intervention and the involvement of multi-disciplinary health professionals and obese women from the same hospitals in two countries of the UK (England and Scotland).

This work has a unique focus on obesity in direct relation to normal birth, with the aim being to promote normality through a non-medicalised intervention, an innovative aim in this area. There is a dearth of literature on intrapartum interventions for the promotion of normality in

obese women during labour and therefore this thesis offers a unique addition to the literature. As presented in Chapter 2, the majority of existing qualitative studies focus on health professionals' or women's experiences, and views of antenatal care or maternity care in general. Only one qualitative study has focussed on the intrapartum care of obese women (Singleton & Furber 2014). There have been a number of reviews of obesity and pregnancy care, but none that have focussed on intrapartum care, obesity and normal birth. These include Cochrane Reviews (Furber et al 2013) and qualitative evidence syntheses (Smith & Lavender 2011, Jones & Jomeen 2017). The available literature on the use of interventions during pregnancy and birth for obese women principally focus on interventions during the antenatal period and include interventions for weight management during pregnancy, or interventions for weight reduction in the postnatal period (Hui et al 2006, Claesson et al 2007, Dodd et al 2010, Furber et al 2013, McGiveron et al 2014, Amorim Adegboye & Linne 2013). This thesis, therefore offers an original contribution to knowledge, including primary research, coupled with the design of a non-medicalised intervention to promote normality amongst obese women in labour.

8.4 Key findings

Study 1 clearly demonstrated that in recent years, most maternity units across the UK have developed local clinical guidance for the care of obese women during pregnancy and birth. Many of these reflect the national guidance that was published in 2010 (CMACE & RCOG 2010). However, the guidelines focus on the obstetric care of obese women, being intrapartum care heavily focussed on the associated risks of obesity, with medicalised care recommended in response to this. The findings of the survey indicated support from the majority of the respondents for the development of an intervention that may influence normal birth rates amongst obese women in the future.

Study 2 described the challenges faced by health professionals' in providing intrapartum care to obese women including the practical challenges such as achieving effective fetal monitoring during labour. The most significant challenge that was reported by many of the midwives in promoting normality was encouraging mobility. Many health professionals described the medicalisation of intrapartum care for obese women, and how this affected the care they provided. However, many of the midwives reported that they did strive to promote normality and attempted to optimise the potential for normal birth, challenging current practices and utilising some 'interventions' in order to promote normality during childbirth. One example of this is the use of a fetal scalp electrode to encourage mobility if continuous monitoring was necessary. These findings resonate with the findings of Singleton and Furber (2014) who described the challenges midwives faced when trying to promote normality in a

medicalised environment and in particular, the obstacles to the promotion of normality. Midwives felt the use of continuous electronic fetal monitoring equipment was one of the biggest inhibitors to promoting normality. The midwives interviewed by Singleton and Furber (2014) believed the most significant aspect of encouraging normality in labour and achieving normal birth was the promotion of active birth. It was, however, this that they reported as the most challenging. Singleton and Furber (2014) also reported that the midwives felt the medicalisation of care and high-risk nature of the delivery suite precluded mobility, in particular the use of hydrotherapy, which was reflected in Study 2 of this research. Also according to health professionals who participated in Study 2 of this work, Singleton and Furber (2014) reported that midwives felt that obese women's care was over-medicalised.

While the findings of this work echo the findings of Singleton and Furber (2014), with health professionals reporting the care of obese women during labour to be medicalised and challenging, there are also notable differences. Singleton and Furber (2014) reported a sense of helplessness amongst the midwives when difficulties were faced. In contrast, the findings of this work, (reported in Chapter 5), demonstrated an alternative attitude amongst some midwives when faced with challenges when caring for obese women during labour. Midwives reported attempting to promote normality and optimise the potential for normal birth by challenging current practices and utilising some 'interventions' in order to promote normality during childbirth. For example, some midwives reported using a fetal scalp electrode when continuous electronic fetal monitoring was necessary, in order to promote mobility. They acknowledged that although continuous electronic fetal monitoring may be necessary for some obese women, restricting mobility through the use of fetal monitoring technology was unacceptable. Therefore, they challenged this practice and used a fetal scalp electrode, viewed by some health professionals as an intervention, as a catalyst for mobility and therefore avoided women being restricted to a semi-recumbent position. This innovative use of technology to promote normality is a novel finding in the context of existing research investigating health professionals' management of obesity.

The experiences and views of maternity care of obese women who had recently given birth were reported in Chapter 6. The findings indicated that obese women have an intrinsic fear of pregnancy and birth and are fearful for the health and well-being of both themselves and their babies. These findings echo those of Hildingsson and Thomas (2012) who reported obese women to have an increased fear of childbirth, when compared to women who were not obese.

One of the key findings from Study 3 was that obese women reported having a desire to achieve normal birth. The majority reported preparing themselves during the antenatal period for active labour and normal birth; the women were motivated to utilise the skills and knowledge that they had acquired when they were in labour. This desire for normal birth and motivation for active labour is particularly interesting in view of the significantly increased risk of caesarean section for obese women. It could be questioned whether the women did not attribute the risks of caesarean section to themselves, or if they used the knowledge of the increased risk to further motivate them to prepare for normal birth. There were no other papers identified in the literature search that reported similar findings, in respect of experiences of the care obese women received during labour. Therefore these findings add to the existing body of knowledge on obese women's experience of maternity care.

Although women reported a desire for normal labour and birth, and motivation to both prepare themselves antenatally and utilise the skills and knowledge during labour, they also reported that these wishes were not always supported by the health professionals who cared for them during labour. Women reported that they were not able to implement their knowledge during their labour because their midwife did not address the notion of active birth with them, with some women reporting the subject not being addressed at all and others reporting their wishes being discouraged by midwives or inhibited because of medical interventions. This contrasts with the findings from Study 2, reported in Chapter 5, where midwives reported that the promotion of mobility and active birth was an essential aspect of their care of obese women. Women felt midwives did not encourage or support their wishes to stay active during labour; however, midwives reported the opposite, suggesting that they would support women's wishes for mobility, but that they felt a reluctance to mobilise obese women and reported the encouragement of mobility to be one of the biggest challenges when caring for obese women. This is a contradiction that would benefit from further investigation.

However, health professionals and women agreed that the medical interventions received during labour, including being induced, the need for maternal and fetal monitoring equipment and the high-risk environment of delivery suite, inhibited their ability to be active during labour. These findings resonate with those of Singleton and Furber (2014) in which midwives reported feeling helpless and unable to promote mobility and normality due to the medicalisation of care for obese women. The most significant aspect of care that both midwives and women felt was influenced by the medicalisation of intrapartum care for obese women was the discouragement of hydrotherapy. Women reported not being encouraged to use hydrotherapy and midwives reported discouraging its use with obese women

predominantly because of perceived manual handling risks. However, they did acknowledge the multiple benefits of hydrotherapy, including the increased ability to stay mobile during labour (Swann & Davies 2012).

The 'window of opportunity' described in Chapter 6 is a key finding. Each meeting that an obese woman has with any health professional prior to pregnancy, presents a window of opportunity for health promotion and the delivery of public health messages. However, this window of opportunity is realised more during pregnancy and the opportunity to deliver public health messages is recognised by midwives and by the women themselves. Women reported being motivated to make short-term lifestyle changes to improve their health and maximise their baby's well-being. This is consistent with the findings of Knight-Agarwal et al (2016) who reported that although there were inconsistencies in the advice provided to women by midwives the biggest motivator to eat well and adopt a healthy lifestyle was the health and well-being of the baby. This supports the notion that obese pregnant women are open to advice and support to enable them to make lifestyle changes and a window of opportunity exists for this. This window has the potential to lead to longer term lifestyle change if women continue to adopt the lifestyle changes they made during pregnancy, with the support of health professionals in the early postnatal period.

In addition to the window of opportunity that pregnancy presents for public health messages, it also presents a significant window of opportunity for the promotion of normal birth, through appropriate antenatal education. This opportunity should be utilised as it has potential for longer term health benefits: the prevention of operative birth would reduce associated postnatal morbidity and lead to increased health and well-being for both mother and baby in the immediate and long-term postnatal period.

Finally, a multi-disciplinary workshop was held as a conclusion to the research programme. During the workshop an intervention was designed that would promote normality amongst obese women and optimise their opportunity for normal birth. Health professionals from a range of disciplines participated in the workshop and used the preceding research as a basis for the intervention design. A non-medicalised intervention was agreed that consists of three component parts: an educational aspect, with an e-learning package for health professionals; a clinical aspect of an intrapartum care pathway with five 'must-dos'; and a leadership aspect with the introduction of ward champions for obesity, who will provide leadership, support and increase the confidence of health professionals caring for obese women during labour and birth.

8.5 Strengths and limitations of the research

The strengths and limitations of each individual part of the research were presented in their respective chapters. The strengths and limitations of the research as a whole will now be presented and discussed.

The main limitation is that although the content and design of the intervention has been agreed, it has not been fully developed and is therefore not able to be piloted at this point. The piloting of an intervention is an essential component of its development in order to test the effectiveness and acceptability of it in clinical practice. As stated in Chapter 1, this research has focussed on the initial stages of the MRC framework: the development of the intervention. The piloting of the intervention was outside the scope of this work and will be carried out in a future study.

The sample size for each of the three individual studies is a further limitation to the research. The response rate for the survey that was conducted in study 1, was lower than originally planned, because of the unavailability of relevant personnel, despite multiple attempts to make contact, which led to a smaller than anticipated sample size. This limits the generalisability of the survey findings. The planned sample did include maternity units from all Strategic Health Authorities and Health Boards across the UK, however, the smaller than anticipated sample size means the findings are not generalisable to every maternity unit in the UK and are therefore only representative of the units that participated in the survey. However, the survey was conducted in order to form a basis for this work as a whole, with the aim of the survey to identify current practice in relation to the care of obese women during labour and assess the need for the development of an intervention for the care of obese women during labour. The findings were used to inform the subsequent stages of this work and the development of the intervention.

A further limitation is the small numbers of health professionals and obese women who participated in the research. In qualitative research, transferability refers to the ability to transfer qualitative research findings to similar contexts with similar groups (Cluett & Bluff 2006b). The small numbers of participants in the qualitative studies, particularly study three, where obese women were interviewed, means that the findings are not transferable to other obese women and therefore can only be interpreted and reported for this particular cohort of women. Further research with a larger number of participants would be necessary in order to allow for transferability across the population of obese women, as a whole. Study two involved twenty four health professionals, and although this is a larger sample than study three, the findings are not transferable to all health professionals. They do however resonate

with anecdotal experiences in practice as well as being supported by the limited literature that exists in this area. In both studies, the initial data was analysed by two researchers, including one of the academic supervisors, which adds to the trustworthiness of the data and credibility of the findings (Robinson 2006). Therefore, although the findings are not transferable to other groups with similar characteristics, the credibility and trustworthiness of the findings can be assured for these particular populations of participants.

A particular strength of the research is that it involved multi-disciplinary health professionals and obese women as research participants. This allowed data from both perspectives to be obtained, that of a service provider and a service user. A second strength in the data collection is that data saturation was achieved in both parts of the qualitative research. This provides confidence that no new data would have emerged if data collection had continued. The multi-disciplinary involvement in the intervention development and design is a further strength, with contributions from a range of disciplines, all of whom would be involved in the implementation of the intervention into practice. Stakeholder involvement at the design stage of the intervention provides confidence of its relevance to practice and that implementation concerns have been integral from the outset. The workshop included representatives from multiple disciplines and although there was only a single representative from some disciplines, they were personnel who had expressed an interest to attend and demonstrated enthusiasm for the subject and therefore were able to make valuable contributions to the workshop. However, it is acknowledged that including larger numbers from each discipline may have allowed for alternative ideas to be presented and discussed. The absence of service users at the workshop prevented them directly contributing to the initial design of the intervention, which is an important aspect of any development in healthcare. It was intended that service users would be involved in the workshop and were invited to attend during the initial planning of the workshop, but unfortunately they were unable to attend on the day. One service user did state that they would be willing to review the intervention following initial design and provide constructive feedback.

The final strength of the work is that although the intervention design was preceded by three individual research studies that formed part of this work as a whole and provided the evidence for the intervention, the individual studies also stand alone (i.e. Kerrigan et al 2015).

8.6 Final discussion

One of the main themes that was presented in Chapter 6 was the resource intensive maternity care that is provided to obese women. Women reported their maternity care to

include the attendance at a specialist antenatal clinic for obese women, with referrals to professionals from a number of disciplines for care and support during pregnancy. Although the women evaluated their care positively and reported feeling well looked after it could be questioned as to whether this resource-intensive care is necessary and appropriate to meet their needs. The high-risk classification of obese women during pregnancy leads to increased maternal and fetal monitoring (CMACE & RCOG 2010), the accuracy of which could itself be questioned. This leads to the classification of obese women as 'high-risk' when they enter the intrapartum period initiating a number of medical interventions from the outset including induction of labour and continuous fetal monitoring. This all presents multiple challenges for midwives caring for obese women and as the findings of this research show, negatively impacts on normality. There is also a lower threshold for caesarean section as the findings of this research reported, which in turn increases the risk of thrombosis and postpartum wound infection (Denison et al 2008, Kerrigan & Kingdon 2010, Arrowsmith et al 2011). Recent figures reporting national maternity statistics for 2016–17 demonstrate a rise in caesarean section rates, which are now 27.8% (NHS digital 2017). The rising obesity rates amongst childbearing women may have contributed to the rising national caesarean section rate, with greater numbers of obese women undergoing caesarean section. The increased risk of caesarean section that obesity carries (Zhang et al 2007, Kerrigan & Kingdon 2010), coupled with the medicalisation of care of obese women and their classification as 'high-risk', all contribute to the increased rates of caesarean section in obese women and, ultimately, the national caesarean section rates. There is, therefore, a need to address the intrapartum care of obese women including considering suitable birth place choices, examining intrapartum practices such as the need for, and methods of, fetal monitoring for obese women and challenging practices such as immobility and the exclusion of hydrotherapy. Addressing these issues has the potential to reduce the caesarean section rate amongst obese women, improve women's experience of labour and birth and reduce postnatal morbidity for both mothers and babies. This research has provided evidence to support these challenges and the intervention developed as the conclusion of this research can provide the vehicle to address them.

Both the health professionals and women who participated reported the care of obese women during labour and birth to be medicalised and felt it inhibited the promotion of normality and therefore had the potential to be detrimental to normal birth. Midwives believed the high-risk nature of the delivery suite environment precluded mobility and this was echoed by the women who reported the use of medical interventions as hindering their ability to have an active labour. The secondary analysis of the Birthplace in England study, which looked at the impact of maternal obesity on intrapartum outcomes in otherwise low-risk women

(Hollowell et al 2013), encourages individualised care planning in respect of birth place, if maternal obesity is the sole risk factor. The study found that although in otherwise healthy women, obesity was associated with an increased risk of augmentation, intrapartum caesarean section and some adverse maternal outcomes, when interventions and outcomes requiring obstetric care were considered together, the magnitude of the increased risk was modest. They found that nulliparous low risk women of normal weight had higher absolute risks and were more likely to require obstetric intervention or care than otherwise healthy multiparous women with BMI >35. Hollowell et al (2013) therefore recommended that otherwise healthy multiparous obese women may have lower intrapartum risks than previously appreciated and BMI should be taken into consideration when assessing options for birth in non-obstetric unit settings. This recommendation allows otherwise low risk obese women to choose to give birth in a midwifery-led setting and therefore the medicalised environment and high-risk nature of a consultant-led delivery suite would be avoided and consequently this would reduce the medical interventions that inhibit normality and increase the potential for active labour and normal birth.

The clinical guidelines on the care of obese women during pregnancy were first published in 2010 (CMACE & RCOG 2010). This guidance has formed the basis for local clinical guidelines in maternity units across the UK, as reported in Chapter 4. However, this guidance has not been reviewed or revised since the original publication more than seven years ago. Guidelines published by the National Institute of Health and Care Excellence are reviewed and revised between two and ten years and the decision to update guidance is based on a balanced assessment of new relevant evidence published since guideline publication, the views of the Committee and topic experts, and other sources of information on the continued relevance of the guideline (NICE 2014). It could be argued that a review of the guidance should be conducted in the near future to ensure that the guidance is based on the best available evidence and incorporates new evidence that has been published since 2010. For example, the findings of the Birthplace in England secondary analysis, discussed above (Hollowell et al 2013) should be incorporated into updated national guidance on obesity and local clinical guidance maternity units across the UK as currently it is recommended that all women with a BMI ≥ 35 should give birth in a consultant-led setting (CMACE & RCOG 2010). The recommendation by Hollowell et al (2013) has potential to increase not only the number of women able to choose midwifery-led birth settings but also automatically increase normality during labour and birth for obese women in these settings because midwives will be the lead carers for intrapartum care and the birth environment will be less medicalised and encourage mobility. The work presented in this thesis could also be incorporated into updated national clinical guidelines, as part of it has already been

published (Kerrigan et al 2015), providing evidence for aspects of midwifery care during labour that are currently lacking in the national guidance.

8.7 Implications of the research for clinical practice and further research

The findings of this work have implications for clinical practice and further research. Obesity rates continue to rise globally (WHO 2016), with rates in the UK currently 27% (Central Intelligence Agency 2015) and approximately 20% amongst women of childbearing age are obese (Health and social care information centre 2014). This work therefore has several implications for clinical practice related to the care of obese women during labour and birth. Clinical guidelines for the management of obese women during pregnancy should be reviewed and revised regularly in order to ensure they are based on the best available evidence. This is particularly important for national guidance, as this work has demonstrated that local clinical guidelines in maternity units across the UK are predominantly based on the national guidance that was published in 2010. Regular review of these guidelines would encourage maternity units to regularly review local guidelines, ensuring they reflect best practice recommendations. As suggested above, the evidence presented in this thesis could be incorporated into updated national clinical guidelines, as part of it has already been published (Kerrigan et al 2015), providing evidence for aspects of midwifery care during the intrapartum period that are currently lacking and evidence for alternative uses of accepted interventions in order to promote normality.

Health professionals should be encouraged to challenge practice in relation to the care of obese women and adapt their practice according to the needs and wishes of the woman they are caring for. Some midwives regularly challenge practice and reported adapting their practice on an individual basis in order to support normality and encourage normal birth. The use of techniques that are commonly viewed as 'interventions' was reported in order to encourage mobility, for example the application of a fetal scalp electrode when continuous monitoring is necessary, to allow mobility and prevent semi-recumbent positions. This work supports practices such as these through the development of the intervention and both the clinical aspect of the intrapartum care pathway with the five 'must do's' and the leadership aspect of the intervention, with the introduction of ward champions will support the notion of challenging practice. This would also allay staff fear when caring for obese women and reduce the discrepancy between the promotion of normality described by midwives and the discouragement of active birth reported as experienced by women.

As stated above, although women reported a desire for normal labour and birth, however, they reported that their wishes were not always supported by the health professionals who

cared for them during labour. This is contrary to the views of midwives who stated that the promotion of mobility was an essential aspect of the care of obese women but felt reluctance amongst obese women to mobilise during labour. This is an interesting inconsistency that would benefit from further investigation in the future.

Finally, this work has focussed on the initial stage of the MRC framework, the development of the intervention. The formal development and piloting of the intervention was outside the scope of this work; it is planned that this will be carried out in a future study. This will allow the intervention to be piloted and evaluated, assessing its effectiveness in clinical practice and identifying the most effective methods for long-term implementation.

The future development and testing of the intervention has the potential to have significant implications for clinical practice, as its long-term implementation could standardise the education around obesity in pregnancy, ensuring all health professionals receive the same training on the subject, equip practitioners, in particular midwives, with the confidence and knowledge to effectively challenge some accepted, but arguably detrimental intrapartum practices and provide clinical, peer support to support women to increase normality during labour and maximise their opportunity for normal birth. If demonstrated to be effective during the piloting the stage, maternity units will be encouraged to adopt the intervention into their local practice for the care of obese women during labour and birth.

8.8 Final conclusion

This work has clearly demonstrated that the care of obese women during labour is often medicalised and focussed on the associated risks. However, although obese women are sometimes stereotyped and there are conflicting views on how to care for obese women, some practitioners do strive to promote normality and optimise the potential for normal birth by challenging current practices and utilise some 'interventions' in order to facilitate normality and mobility during childbirth. Obesity is a major and growing health problem and a major cause of morbidity and mortality for pregnant women. Whilst acknowledging the importance of safety, increasing medical intervention during labour for obese women may further increase the risk of complications, with detrimental effects. Addressing the intrapartum management of obese women through non-medicalised interventions is of paramount importance in order to promote normality, maximise the opportunity for normal birth and reduce the associated morbidities.

References

References

Amorim Adegboye, A. R., Linne, Y. M. (2013) Diet or exercise, or both, for weight reduction in women after childbirth *Cochrane database of systematic reviews* 2013 Issue 7 Art. No. CD005627. DOI: 10.1002/14651858.CD.005627.pub3.

Arrowsmith, S., Wray, S., Quenby, S. (2011) Maternal obesity and labour complications following induction of labour in prolonged pregnancy *BJOG* 118 578–588.

Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., Foy, R., Duncan, E., Colquhoun, H., Grimshaw, J., Lawton, R., Michie, S. (2017) A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems *Implementation Science* 12 77.

Avci, M. E., Sanlikan, F., Celik, M., Avci, A., Kocaer, M., Gocmen, A. (2015) Effects of maternal obesity on antenatal, perinatal and neonatal outcomes *The Journal of Maternal-fetal and Neonatal Medicine* 28 (17) 2080–2083.

Baeten, J. M., Bukusi, E., Lambe, M. (2001) Pregnancy complications and outcomes among overweight and obese nulliparous women *American Journal of Public Health* 91 (3) 436–440.

Bates, C. (1997) *Debating Midwifery: Normality in Midwifery* London: Royal College of Midwives.

Beauchamp, T., Childress, J. (2001) *Principles of Biomedical Ethics* 5th edition Oxford: Oxford University Press.

Bessant, J., Maher, L. (2009) Developing radical service innovations in healthcare – the role of design methods *International Journal of Innovation Management* 13 (4) 555–568.

Bianco, A. T., Smilen, S. W., Davis, Y., Lopez, S., Lapinski, R., Lockwood, C. J. (1998) Pregnancy outcome and weight gain recommendations for the morbidly obese women *Obstetrics and Gynecology* 91 (1) 97–102.

Birth Choice UK (2015) *2014/15 Maternity statistics for England* Accessed at <http://www.birthchoiceuk.com/professionals> Accessed 25/2/17.

Bogaerts, A., Witters, I., Van den Bergh B., Jans, G., Devlieger, R. (2013) Obesity in pregnancy: altered onset and progression of labour *Midwifery* 29 1303–1313.

Bowen, G. (2009) Document analysis as a qualitative research method *Qualitative research Journal* 9 (2) 27–40.

Britten, N. (2006) Qualitative interviews *In* Pope, C., Mays, N. (Eds) *Qualitative Research in Health Care* 3rd edition p.12-20 London: Blackwell Publishing.

Broom, A., Willis, E. (2007) Competing paradigms of health research *In* Saks, M., Allsop, J. (Eds) *Researching Health: Qualitative, Quantitative and Mixed methods* p.16-31 London: Sage.

Brown, I. (2006) Nurses' attitudes towards adult patients who are obese: Literature review *Journal of Advanced Nursing* 53 (2) 221–232.

Brubaker, S. J., Dillaway, H. E. (2009) Medicalisation, natural childbirth and birthing experiences *Sociology Compass* 3 (1) 31–48.

Bryman, A. (2012) *Social Research Methods* 4th edition Oxford: Oxford University Press.

Carter, B. (2004) How do you analyse qualitative data? *In* Lavender, T., Edwards, G., Alfirevic, Z. (Eds) *Demystifying Qualitative Research in Pregnancy and Childbirth* p.87-108 Wiltshire: Quay Books.

Cedergren, M. I. (2004) Maternal morbid obesity and the risk of adverse pregnancy outcome *Obstetrics and Gynaecology* 103 (2) 219–224.

Central Intelligence Agency (2015) Country comparison: Obesity – Adult prevalence rate. The World Factbook. Accessed at <https://www.cia.gov/library/publications/resources/the-world-factbook/rankorder/2228rank.html> Accessed 15/1/17.

Centre for Maternal and Child Enquiries (2010) *Maternal Obesity in the UK: Findings from a National Project* London: CMACE.

Centre for Maternal and Child Enquiry and Royal College of Obstetricians and Gynaecologists (2010) *Management of women with obesity in pregnancy. CMACE and RCOG joint guidance* London: CMACE and RCOG.

Centre for Maternal and Child Enquiries (2011) *Saving Mothers' Lives: Reviewing Maternal Deaths to Make Motherhood Safer: 2006–08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom.* BJOG 2011; 118 (Suppl. 1):1–203.

Chu, S. Y., Kim, S. Y., Schmid, C. H., Dietz, P. M., Callaghan, W. M., Lau, J., Curtis, K. M. (2007) Maternal obesity and risk of caesarean delivery: A meta-analysis *Obesity Reviews* 8 385–394.

Claesson, I-M., Sydsjo, G., Brynhildsen, J., Cedergren, M., Jeppsson, A., Nystrom, F., Sydsjo, A., Josefsson, A. (2008) Weight gain restriction for obese pregnant women: A case-control intervention study *BJOG* 155 44–50.

Cleary, M., Horsfall, J., Hayter, M. (2014) Data Collection and sampling in qualitative research: does size matter? Editorial *Journal of Advanced Nursing* 70 (3) 473–475.

Cluett, E., Bluff, R. (2006a) From practice to research In Cluett, E., Bluff, R. (Eds) *Principles and Practice of Research in Midwifery* 2nd edition p.13-32 London: Churchill Livingstone.

Cluett, E., Bluff, R. (2006b) *Principles and Practice of Research in Midwifery* 2nd edition London: Churchill Livingstone.

Cnattingius, S., Bergstrom, R., Lipworth, L., Kramer, M. (1998) Pre-pregnancy weight and the risk of adverse pregnancy outcomes *The New England Journal of Medicine* 338 (3) 147–152.

Confidential enquiry into maternal and child health (2004) *Why Mothers die 2000–2002. Midwifery summary and key recommendations.* London: Royal College of Obstetricians and Gynaecologists.

Conrad, P. (2007) *The Medicalisation of Society: On the Transformation of Human Conditions into Treatable Disorders* Baltimore: Johns Hopkins University Press.

Crabtree, S (2004) Midwives constructing 'normal birth' In Downe, S. (Ed) *Normal Childbirth: Evidence and Debate* p.85-99 London: Elsevier.

Crane, S. S., Wojtowycz, M. A., Dye, T. D., Aubry, R., Artal, R. (1997) Association between pre-pregnancy obesity and the risk of caesarean delivery *Obstetrics and Gynecology* 89 (2) 213–216.

Creswell, J. W. (2012) Writing a qualitative study In Creswell, J. W. (Ed) *Qualitative Enquiry and Research Design: Choosing Among Five Approaches* 3rd edition p.213-242 London: Sage.

Creswell, J. W., Miller, D. L. (2000) Determining validity in qualitative enquiry *Theory into Practice* 39 (3) 124–130.

Crotty, M. (1998) *The Foundations of Social Research. Meaning and Perspective in the Research Process*. London: Sage publications.

Daemers, D.O.A., Wijnen, H.A.A., Van Limbeek, E.B.M., Bude, L.M., Nieuwenhuijze, M.J., Spaanderman, M.E.A., de Vries, R.G. (2014) The impact of obesity on outcomes of midwife-led pregnancy and childbirth in a primary care population: A prospective cohort study *BJOG* 121 1403–1414.

Delanty, G., Strydom, P. (2003) *Philosophies of Social Science: Classic and Contemporary Reading* Maidenhead: Open University Press.

Dempsey, J.C., Ashiny, Z., Qiu, C.F., Miller, R.S., Sorensen, T.K., Williams, M.A. (2005) Maternal pre-pregnancy overweight status and obesity as risk factors for caesarean delivery. *Journal of Maternal, Fetal, Neonatal Medicine*. 17 (3) 179–85.

Denison, F. C., Price, J., Graham, C., Wild, S., Liston, W. A. (2008) Maternal obesity, length of gestation, risk of postdates pregnancy, and spontaneous onset of labour at term *BJOG* 115 720–725.

Denzin, N. K., Lincoln, Y. S. (2011) *The Sage Handbook of Qualitative Research* 4th edition London: Sage.

Department of Health (2003) *The Chief Medical Officer's Annual Report 2002* London: Department of Health.

Department of Health (2004) *Summary of Intelligence on Obesity. Choosing Health Summaries*. London: Department of Health.

Department of Health (2007) *Maternity Matters: Choice, Access and Continuity of Care in a Safe Service* London: Department of Health.

Dietz, P. M., Callaghan, W. M., Morrow, B., Cogswell, M. E. (2005) Population-based assessment of the risk of primary caesarean delivery due to excess pre-pregnancy weight among nulliparous women delivering term infants *Maternal and Child Health Journal* 9 (3) 237–244.

Dignon, A., Truslove, T. (2013) Obesity, pregnancy outcomes and caesarean section: A structured review of the combined literature *Evidence-based Midwifery* 11 (4) 132–137.

Dodd, J. M., Grivell, R. M., Crowther, C. A., Robinson, J. S. (2010) Antenatal interventions for overweight or obese pregnant women: A systematic review of randomised trials *BJOG* 117 1316–1326.

Downe, S., Walsh, D. (2007) Normal birth and birth centre care: A Public Health Catalyst for maternal and societal well-being *In* Edwards, G., Byrom, S. (Eds) *Essential Midwifery Practice. Public Health* 209-222 Oxford: Blackwell Publishing.

Duncan, E. A. S. (2014) *Intervention description table: PROPEL dissemination and implementation workshop structure*. Unpublished. Stirling: NMAHP Research Unit.

Duncan, E., Fitzpatrick, D. (2016) Improving self-referral for diabetes care following hypoglycaemic emergencies: a feasibility study with linked patient data analysis *BMC Emergency medicine* 16 13- 21.

Finlay, L. (2002) “Outing” the researcher: the provenance, process and practice of reflexivity *Qualitative health research* 12 (4) 531–545.

Furber, C. M. McGowan, L., Bower, P., Kontopantelis, E., Quenby, S., Lavender, T. (2013) Antenatal interventions for reducing weight in obese women for improving pregnancy

outcome *Cochrane database of systematic reviews* 2013 Issue 1, Art No. CD009334 DOI: 10.1002/14651858.CD009334.pub2.

Giacomini, M. (2013) Theory matters in qualitative health research *In* Bourgeault, I., Dingwall, R., De Vries, R. (Eds) *The Sage Handbook of Qualitative Methods in Health Research* p.125-156 London: Sage.

Gillon, R. (1986) *Philosophical Medical Ethics*. Chichester: John Wiley Cited in Jones, S. R. (2000) *Ethics in Midwifery* 2nd edition. London: Mosby.

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O. (2004) Diffusions of innovations in service organisations: systematic review and recommendations *The Milbank Quarterly* 82 (4) 581–629.

Guba, E. G., Lincoln, Y. S. (2005) Paradigmatic controversies, contradictions and emerging confluences *In* Denzin, N. K., Lincoln, Y. S. (Eds) *The Sage Handbook of Qualitative Research* 3rd edition p.191-215 London: Sage.

Hancke, K., Gundelach, T., Hay, B., Sander, S., Reister, F., Weiss, J. M. (2015) Pre-pregnancy obesity compromises obstetric and neonatal outcomes *Journal of Perinatal Medicine* 43 (2) 141–146.

Hartnett, T. (2018) Consensus decision making <https://www.consensusdecisionmaking.org/> Accessed 26/5/18.

Heath, G., Cooke, R., Cameron, E. (2015) A theory-based approach for developing interventions to change patient behaviours: a medication adherence example from paediatric secondary care *Healthcare* 3 1228–1242.

Health and Social Care Information Centre (2014) *Health survey for England 2013. Health, social care and lifestyles* Leeds: HSCIC.

Healthcare Improvement Scotland (2009) *Pathways for maternity care Scotland*: NHS Quality Improvement Scotland.

Heslehurst, N., Lang, R., Wilkinson, J. R., Summerbell, C. D. (2007) Obesity in pregnancy: a study of the impact of maternal obesity on NHS maternity services. *BJOG* 114 334–342.

Heselhurt, N., Moore, H., Rankin, J., Ells, L. J., Wilkinson, J. R., Summerbell, C. D. (2011) How can maternity services be developed to effectively address maternal obesity? A qualitative study *Midwifery* 27 e170-e177.

Heude, B., Thiebaugeorges, O., Goua, V., Forhan, A., Kaminski, M., Foliguet, B., Schweitzer, M., Magnin, G., Charles, M. The EDEN Mother-child study group (2011) Pre-pregnancy body mass index and weight gain during pregnancy: relations with gestational diabetes and hypertension, and birth outcomes *Maternal Child Health Journal* 16 335–363.

Hildingsson, I., Thomas, J. (2012) Perinatal outcomes and satisfaction with care in women with a high body mass index *Journal of Midwifery and Women's Health* 57 (4) 336–344.

Hoddinott, P., Allan, K., Avenall, A., Britten, J. (2010) Group interventions to improve health outcomes: a framework for their design and delivery *BMC public health* 10 800.

Hoffmann, T. C., Glasziou, P. G., Milne, R., Perera, R., Moher, D., Altman, D. G., Barbour, V., Macdonald, H., Johnston, M., Lamb, S. E. Dixon-Woods, M., McCulloch, P., Wyatt, J. C., Chan, A., Michie, S. (2014) Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide *BMJ* 348 g1687.

Holloway, I., Wheeler, S. (2010) *Qualitative Research in Nursing and Healthcare* 3rd edition Chichester: Wiley Blackwell.

Hollowell, J., Pillas, D., Rowe, R., Linsell, L., Knight, M., Brocklehurst, P. (2013) The impact of maternal obesity on intrapartum outcomes in otherwise low risk women: secondary analysis of the Birthplace national prospective cohort study *BJOG* 121 (3) 343–355.

Hui, A., Ludwig, S., Gardiner, P., Sevenhuysen, G., Murray, R., Morris, M., Shen, G. (2006) Community-based exercise and dietary intervention during pregnancy: a pilot study *Canadian journal of diabetes* 30 (2) 169–175.

Jensen, H., Agger, A., Rasmusseb, K. L. (1999) The influence of pre-pregnancy body mass index on labour complications *Acta obstetrician et gynecologica Scandinavia* 78 799–802.

Johnson, A. (2000) *The Blackwell Dictionary of Sociology* London: Blackwell.

Jones, C., Jomeen, J. (2017) Women with a BMI ≥ 30 and their experience of maternity care: A meta- ethnographic synthesis *Midwifery* 53 87–95.

Jones, S., Hamilton, S., Shucksmith, J., Araujo-Soares, V. (2015) Theoretical domains framework: Is this a useful tool for interrogating behaviour change in complex interventions? https://my.rcn.org.uk/_data/assets/pdf_file/0016/622150/2015-research-5.2.3.pdf Accessed 09/11/17.

Kaiser, P. S., Kirby, R. S. (2001) Obesity as a risk factor for caesarean section in a low-risk population *Obstetrics and Gynaecology* 97 (1) 39–43.

Keely, A., Gunning, M., Denison, F. (2011) Maternal obesity in pregnancy: women's understanding of risks *British Journal of Midwifery* 19 (6) 364–369.

Kennedy, H., Grant, J., Walton, C., Shaw-Baltista, J., Sandall, J. (2010) Normalising birth in England: a qualitative study *The Journal of Midwifery and Women's Health* 55 262–269.

Kerrigan, A. M., Kingdon, C. (2010) Maternal obesity and pregnancy: a retrospective study *Midwifery* 26 138–146.

Kerrigan, A., Kingdon, C., Cheyne, H. (2015) Obesity and normal birth: a qualitative study of clinician's management of obese pregnant women during labour *BMC pregnancy and childbirth* 15 256.

Kingdon, C. (2005) Reflexivity: not just a qualitative methodological research tool *British Journal of Midwifery* 13 (10) 622–627.

Kingdon, C. (2009) *Sociology for Midwives* London: Quay Books.

Kiran, T. S., Hemmadi, S., Bethel, J., Evans, J. (2005) Outcome of pregnancy in a woman with an increased body mass index *British Journal of Gynaecology* 112 768–772.

Kitzinger, J. (2006) Focus groups In Pope, C., Mays, N. (Eds) *Qualitative Research in Health Care* p.21-31 Oxford: Blackwell Publishing.

Knight, M., Kurinczuk, J. J., Spark, P., Brocklehurst, P. (2010) Extreme Obesity in Pregnancy in the United Kingdom. *Obstet Gynecol* 115 989–97.

Knight-Agarwal, C. R., Williams, L. T., Davis, D., Davey, R., Shepherd, R., Downing, A., Lawson, K. (2016) The perspectives of obese women receiving antenatal care: a qualitative study of women's experiences *Women and Birth* 29 189–195.

Kominiarek, M. A., Gay, F., Peacock, N. (2015) Obesity in pregnancy: a qualitative approach to inform an intervention for patients and providers *Maternal and Child Health Journal* 19 1698–1712.

Kristensen, J., Vestergaard, M., Wisborg, K., Kesmodel, U., Secher, N.J. (2005) Pre-pregnancy weight and the risk of stillbirth and neonatal death. *BJOG* 112 (4) 403–408.

Kuhn, T. (1970) *The Structure of Scientific Revolutions* 2nd edition Chicago: University of Chicago Press.

Kumari, A. S. (2001) Pregnancy outcome in women with morbid obesity *International Journal of Gynaecology and Obstetrics* 73 (3) 101–107.

Lashen, H., Fear, K., Sturdee, D. W. (2004) Obesity is associated with increased risk of first trimester and recurrent miscarriage: matched case-control study *Human Reproduction* 19 (7) 1644 –1646.

Lawrence, A., Lewis, L., Hofmeyr, G.J., Dowswell, T. Styles, C. (2009) Maternal positions and mobility during first stage of labour *Cochrane Database Syst Rev* 2: CD003934.

Lewis, G. (2007) *The Confidential Enquiry into Maternal and Child Health. Saving Mothers' Lives: Reviewing Maternal Deaths to Make Motherhood Safer 2003-2005. The Seventh Report on Confidential Enquiries into Maternal Deaths in the United Kingdom*. London: Confidential Enquiry into Maternal and Child Health.

Lincoln, Y., Guba, E. (1985) *Naturalistic Inquiry* Beverley Hills: Sage.

Lindhart, C. L., Rubak, S., Mogensen, O., Lamont, R. F. (2013) The experience of pregnant women with a body mass index >30kg/m² of their encounters with healthcare professionals *Acta obstetrica et gynecologica Scandanavia* 92 1101–1107.

MacDorman, M., Delercq, E., Menacker, F., Malloy, M. (2008) Neonatal mortality for primary caesarean section and vaginal birth to low-risk women: application of an intervention to treat model *Birth* 35 (1) 3–8.

Manning, D. (2004) What are the ethical considerations? In Lavender, T., Edwards, G., Alfirevic, Z. (Eds) *Demystifying Qualitative Research in Pregnancy and Childbirth* p.35-47 Wiltshire: Quay Books.

Maternity Care Working Party (2007) *Making normal birth a reality: Consensus statement* Cited by Birth choice UK at <https://www.birthchoiceuk.com/professionals> Accessed 22/2/17.

May, C., Finch, T. (2009) Implementation, embedding and integration: an outline of normalisation process theory *Sociology* 43 535–554.

Maykut, P., Morehouse, R. (1994). *Beginning Qualitative research: A Philosophic and Practical Guide* London: The Falmer Press.

Mays, N., Pope, C. (2006) Quality in qualitative health research In Pope, C., Mays, N. (Eds) *Qualitative Research in Healthcare* 3rd edition p.82-101 Oxford: Blackwell Publishing.

McGiveron, A., Foster, S., Pearce, J., Taylor, M. A., McMullen, S., Langley-Evans, S. C. (2014) Limiting antenatal weight gain improves maternal health outcomes in severely obese pregnant women: findings of a pragmatic evaluation of a midwife-led intervention *Journal of human nutrition and dietetics* 28 (supplement 1) 29–37.

Medical Research Council (2000) *Personal Information in Medical Research*. London: Medical Research Council.

Medical Research Council (2006) *Developing and Evaluating Complex Interventions: New Guidance* London: Medical Research Council.

Morgan, J. (2004) Planning your research In Lavender, T., Edwards, G., Alfirevic, Z. (Eds) *Demystifying Qualitative Research in Pregnancy and Childbirth* p.48-62 Wiltshire: Quay Books.

Mulherin, K., Miller, Y., Barlow, F., Diedrichs, P., Thompson, R. (2013) Weight stigma in maternity care: women's attitudes, experiences and care providers' attitudes *BMC Pregnancy and Childbirth* 13 art no.19.

Myles, T. D., Gooch, J., Santolaya, J. (2002) Obesity as an independent risk factor for infectious morbidity in patients who undergo caesarean delivery *Obstetrics and Gynecology* 5 (1) 959–964.

National Audit Office (2001) *Tackling obesity in England*. London: The Stationary Office.

National Health Service Careers (2010) *Midwifery* Accessed at www.nhscareers.nhs.uk/detail Accessed 21/2/2010.

National Health Service Digital (2017) *NHS Maternity Statistics 2016–17* London: NHS Digital.

National Institute for Health and Clinical Excellence (2006) *Obesity – Guidance on the Prevention, Identification, Assessment and Management of Overweight and Obesity in Adults and Children*. London: National Institute for Health and Clinical Excellence.

National Institute for Health and Care Excellence (2007) *Intrapartum Care: Care of Healthy Women and Their Babies During Childbirth* London: National Institute for Health and Care Excellence.

National Institute for Health and Care Excellence (2010) *Weight Management Before, During and After Pregnancy. NICE public health guidance 27* London: National Institute for Health and Care Excellence.

National Institute for Health and Care Excellence (2011) *Guidelines for Caesarean Section* London: National Institute for Health and Care Excellence.

National Institute for Health and Care Excellence (2014) *Process and Methods Guides: Developing NICE Guidelines* London: National Institute for Health and Care Excellence.

Newburn, M. (2009) Promoting and Protecting Normal Birth *The Practising Midwife* 12 4–6.

Nohr, E. A., Bech, H., Davies, M. J., Frydenberg, M., Henriksen, T. B., Olsen, J. (2005) Pre-pregnancy, obesity and fetal death *Obstetrics and Gynecology* 106 (2) 250–258.

Nursing and Midwifery Council (2009) *What Does a Midwife Do?* Accessed at www.nmc-uk.org/aArticle.aspx?ArticleID=2099 Accessed 1/2/10.

Nyman, V. M., Prebensen, A. K., Flesner, G. E. M. (2008) Obese women's experiences of encounters with midwives and physicians during pregnancy and childbirth *Midwifery* 26 (4) 424–429.

Oakley, A. (1984) *The Captured Womb: A History of the Medical Care of Pregnant Women* New York: Basil Blackwell Inc.

O'Cathain, A., Croot, E., Duncan, E., Hoddinott, P., Yardley, L., Turner, K. (2017) INDEX study: Identifying and assessing different approaches to developing complex interventions <https://www.sheffield.ac.uk/scharr/sections/hsr/mcru/indexstudy> Accessed 01/11/17.

Oxford English Dictionary (2006) *Little Oxford English Dictionary* 9th edition Oxford: Oxford University Press.

Parahoo, K. (2014) *Nursing Research: Principles, Process and Issues* 3rd edition Hampshire: Palgrave Macmillan.

Poobalan, A. S., Aucott, L. S., Gurung, T., Smith, W. C. S., Bhattacharya, S. (2008) Obesity as an independent risk factor for elective and emergency caesarean delivery in nulliparous women-systematic review and meta-analysis of cohort studies *Obesity Reviews* 10 28–35.

Pope, C., Ziebland, S., Mays, N. (2006) Analysing qualitative data In Pope, C., Mays, N. (Eds) *Qualitative Research in Health Care* p.63-81 Oxford: Blackwell Publishing.

Public Health England (2017) UK and Ireland prevalence and trends Accessed at https://www.noo.org.uk/noo_about_obesity/adult_obesity/UK_prevalence_and_trends Accessed 15/1/17.

Rapley, T. (2007) *Doing Conversation, Discourse and Document Analysis* London: Sage.

Ritchie, J., Spencer, L. (1994) Qualitative data analysis for applied policy research *In* Bryman, A., Burgess, R. G. (Eds) *Analyzing Qualitative Data* p.173-194 London: Routledge.

Robinson, A. (2006) Phenomenology *In* Cluett, E., Bluff, R. (Eds) *Principles and Practice of Research in Midwifery* 2nd edition p.187-202 London: Churchill Livingstone.

Robinson, H., Tkatch, S., Mayes, D. C., Bott, N., Okun, N. (2003) Is maternal obesity a predictor of shoulder dystocia? *Obstetrics and Gynecology* 101 (1) 24–27.

Robinson, H., O'Connell, C., Joseph, K., McLeod, N. (2005) Maternal outcomes in pregnancies complicated by obesity *Obstetrics and Gynecology* 106 (6) 1357–1364.

Roopnarinesingh, A. J., Homer, H., Bassaw, B., Sirjusingh, A., Roopnarinesingh, S. (1999) Obstetric hazards of maternal obesity *Journal of obstetrics and gynaecology* 19 (5) 474–476.

Royal College of Midwives (2014) *Estimated proportion of normal births in the UK* Accessed at <https://www.rcmnormalbirth.org.uk/home> Accessed 25/1/17.

Royal College of Midwives (2017) *Obesity: Supporting women i-learn module* London: RCM <http://www.ilearn.rcm.org.uk/mod/book/view.php?id=616&chapterid=1785> Accessed 7/11/17.

Royal College of Obstetricians and Gynaecologists (2013) *Shoulder dystocia. Information for you* London: RCOG.

Rubin, H., Rubin, I. (2005) *Qualitative Interviewing: The Art of Hearing Data* 2nd edition London: Sage.

Salisbury, C., Thomas, C., O' Cathain, A., Rogers, A., Pope, C., Yardley, L., Hollinghurst, S., Fahey, T., Lewis, G., Large, S., Edwards, L., Roswell, A., Segar, J., Brownsell, S., Montgomery, A. (2015) TELehealth in Chronic disease: A mixed-methods study to develop the TECH concept model for intervention, design and evaluation *BMJ Open* 5 (2) e006448. doi:10.1136/bmjopen-2014-006448.

Schmied, V. A., Duff, M., Dahlen, H., Mills, A. E., Kolt, G. S. (2011) 'Not waving but drowning': A study of the experiences and concerns of midwives and other health professionals caring for obese childbearing women *Midwifery* 27 424–430.

Schott, J., Priest, J. (2002) *Leading Antenatal Classes* 2nd edition Oxford: Books for Midwives.

Scott-Pillai, R., Spence, D., Cardwell, C., Hunter, A., Holmes, V. (2013) The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric population, 2004–2011 *BJOG* 120 (8) 932–939.

Sebire, N.J., Jolly, M., Harris, J.P., Wadsworth, J., Joffe, M., Beard, R.W. L., Regan, L., Robinson, S. (2001) Maternal obesity and pregnancy outcome: a study of 287,213 pregnancies in London *International Journal of Obesity* 25 (8) 1175–1182.

Sheiner, E., Levy, A., Menes, T. S., Silverberg, D., Katz, M., Mazor, M. (2004) Maternal obesity as an independent risk factor of caesarean delivery *Paediatric and perinatal epidemiology* 18 (3) 196–201.

Singleton, G., Furber, C. (2014) The experiences of midwives when caring for obese women in labour, a qualitative study. *Midwifery* 30 103–111.

Smith, H. W. (1991) *Strategies of Social Research* 3rd edition St Louis: Halt, Reinhart & Winston.

Smith, M. J. (1998) *Social Science in Question* London: Sage.

Smith, H. (2004) How do you assess qualitative research? In Lavender, T., Edwards, G., Alfirevic, Z. (Eds) *Demystifying Qualitative Research in Pregnancy and Childbirth* p.141-158 Wiltshire: Quay Books.

Smith, D., Lavender, T. (2011) The maternity experience for women with a body mass index $\geq 30\text{kg/m}^2$: a meta-synthesis *BJOG* 118 779–789.

Sobal, J. (1995) The medicalization and demedicalization of obesity In Maurer, D., Sobal, J. (Eds) *Eating Agendas. Food and Nutrition as Social Problems* p.67-90 USA: Aldine Transaction.

Society of Obstetricians and Gynaecologists of Canada (2008) Joint policy statement on normal childbirth *Journal of Obstetrics and Gynaecology Canada* 30 (12) 1163–1165.

Spencer, L., Ritchie, J., O'Connor, W., Morrell, G., Ormston, R. (2014) Analysis in practice In Ritchie, J., Lewis, J., McNaughton Nicholls, C., Ormston, R. (Eds) *Qualitative Research Practice: A Guide for Social Science Students and Researchers* p.295-346 London: Sage.

Stephansson, O., Dickman, P., Johansson, A., Cnattingius, S. (2001) Maternal weight, pregnancy weight gain and the risk of antepartum stillbirth *American Journal of Obstetrics and Gynecology* 184 (3) 463–469.

Stiles, W. B. (1993) Quality control in qualitative research *Clinical Psychology Review* 13 (6) 593–618.

Strauss, A., Corbin, J. (1998) *Basics of Qualitative Research* 2nd edition London: Sage.

Swann, L., Davies, S. (2012) The role of the midwife in improving normal birth rates in obese women *British Journal of Midwifery* 20 (1) 7–12.

Thacker, S., Stroup, D., Chang M. (2006) Continuous cardiotocography (CTG) as a form of electronic fetal monitoring for fetal assessment during labour. *The Cochrane Library* Issue 3. Oxford. Update Software.

Trotter R. T. (2012) Qualitative research sample design and sample size: resolving and unresolved issues and inferential imperatives. *Preventative medicine* 55 (5) 398–400 Cited in Cleary, M., Horsfall, J., Hayter, M. (2014) Data Collection and sampling in qualitative research: Does size matter? Editorial *Journal of Advanced Nursing* 70 (3) 473–475.

Twohig. P.L., Putnam, W. (2002) Group interviews in primary care research: advancing the state of the art or ritualized research? *Family Practice* 19 (3) 278–284.

Vahratian, A., Zhang, J., Troendle, J. F., Savitz, D. A., Siega-Riz, A. M. (2004) Maternal prepregnancy overweight and obesity and the pattern of labour progression in term nulliparous women *Obstetrics and Gynecology* 104 (5) Part 1. 943–95.

Van Teijlingen, E (2005) A Critical analysis of the medical model as used in the study of pregnancy and childbirth *Sociological Research Online* 10 (2) Accessed at www.socresonline.org.uk/10/2/Teijlingen.html#porter1999 Accessed 25/2/17.

Verini, J. M., Moreli, J. B., Magalhaes, C. G., Costa, R. A. A., Rudge, M. Calderon, I. (2016) Maternal and fetal outcomes in pregnancies complicated by overweight and obesity *Reproductive health* 13 100–107.

Wagstaff, P. (2006) Surveys *In* Cluett, E., Bluff, R. (Eds) *Principles and Practice of Research in Midwifery* 2nd edition p.93-166 London: Churchill Livingstone.

Walsh, D., Baker, L. (2004) How to collect qualitative data *In* Lavender, T., Edwards, G., Alfirevic, Z. (Eds) *Demystifying Qualitative Research in Pregnancy and Childbirth* p.63-86 Wiltshire: Quay Books.

Walsh, D., Downe, S. (2006) Appraising the quality of qualitative research *Midwifery* 22 (2) 108–119.

Wen, S. Rusen, I., Walker, M., Liston, R., Kramer, S., Baskett, T. (2004) Comparison of maternal mortality and morbidity between trial of labour and elective caesarean section among women with previous caesarean section delivery *American Journal of Obstetrics and Gynaecology* 191 (4) 1263–1269.

WHICH Birth Choice (2017) *Helping you decide where to give birth* Accessed at www.which.co.uk/birth-choice Accessed 11/1/17.

Wilcox, J. C., Campbell, K. J., Van der Plicht, P., Hoban, E., Pidd, D., Wilkinson, S. (2012) Excess gestational weight gain: an exploration of midwives' views and practice *BMC pregnancy and childbirth* 12 102–112.

Wilkinson, S. A., Poad, D., Stapleton, H. (2013) Maternal overweight and obesity: a survey of clinicians' characteristics and attitudes, and their responses to their pregnant clients *BMC pregnancy and childbirth* 13 117–124.

World Health Organisation (1999) *Care in Normal Birth: A Practical Guide. Report of a Technical Working Group* Geneva: World Health Organisation.

World Health Organisation (WHO), 2016. Health Topics: Obesity. Available at <http://www.who.int/topics/obesity/en/> Accessed 27/11/17.

World Medical Association (2000) *Declaration of Helsinki. Ethical Principles for Medical Research Involving Human Subjects* Geneva: World Health Organisation.

Zhang, J., Bricker, L., Wray, S., Quenby, S. (2007) Poor uterine contractility in obese women *BJOG* 114 343–348.

Zola, I. K. (1972) Medicine as an institution of social control *Sociological Review* 20 (November) 487–504.

Appendices

Appendix 1 – Study 1 protocol

Intrapartum care of obese women Telephone Survey Protocol

Background

Medically, obesity is viewed as a non-communicable disease that has reached epidemic proportions, with its prevalence having trebled in the UK since the 1980s (Department of Health (DH) 2004). Obesity is a major public health issue in the developed world and the Chief Medical Officer (DH 2003 p.36) has highlighted obesity as ‘a health time bomb’, recognising it as a growing challenge for the government in the UK. Obese pregnant women are at greater risk of gestational diabetes, pre-eclampsia, fetal macrosomia and stillbirth (Sebire et al 2001, Kumari 2001, Cedergren 2004, Baeten et al 2001, Kristensen et al 2005, Nohr et al 2005). During the intrapartum period, obese women have an increased risk of induction of labour, delay during the first stage, caesarean section and post-operative infectious morbidity (Denison et al 2008, Vahratian et al 2004, Zhang et al 2007, Kaiser & Kirby 2001, Sheiner et al, 2004, Dempsey et al 2005, Kerrigan & Kingdon 2010, Myles et al 2002). The risk of these intrapartum complications are present for all pregnant women, but are exacerbated by obesity. There is currently little guidance on intrapartum care of obese women. Strategies are required to improve preparation for labour and intrapartum care of obese women in order to reduce the morbidities associated with obesity and childbearing.

Aim

To explore to what extent guidelines for the intrapartum care of obese women are available in maternity hospitals across the United Kingdom (UK).

Methodology

Quantitative methodology will be employed, using a telephone survey method. A named person from each hospital will be contacted by telephone and asked four questions about intrapartum care of obese women. The answers to the questions will be documented on a one-page proforma and subsequently analysed.

Setting

The telephone survey will be conducted in maternity hospitals (41) across the UK.

Sampling

There are a total of 31 strategic health authorities and health boards across the United Kingdom, each with a number of maternity units within them. Purposive sampling will be used and the sample will be stratified by Strategic Health Authority or Health Board. A total of 41 hospitals will be included in the survey. Hospitals will be sampled as follows:

- 1 hospital from each of the 14 health boards in Scotland
 - 2 hospitals from each of 10 SHA in England
 - 1 hospital from each of the 3 health boards in Wales
 - 1 hospital from each of the 4 health boards in Northern Ireland
- Total number of hospitals = 41

The strategic health authorities in England are larger than those in Scotland, Wales and Northern Ireland and contain a larger number of maternity units in each; therefore, two maternity units from each strategic health authority in England will be sampled.

Plan of Investigation

An initial telephone call to each maternity unit will be made in order to identify a named person, to conduct the survey with. This will either be the delivery suite manager or a consultant midwife in intrapartum care. A second telephone call will then be made to undertake the survey or arrange a convenient time to call back, if this time is not convenient.

Data Analysis

The data will be numerically coded and inputted into SPSS. It will be analysed using descriptive statistics.

Survey Questions (See proforma)

- 1) Do you have guidelines on intrapartum care of obese women?
- 2) How long have you had them?
- 3) Do you feel there is a need for an intrapartum guideline?
- 4) Can I have a copy?

References

- Baeten, J. M., Bukusi, E., Lambe, M. (2001) Pregnancy complications and outcomes among overweight and obese nulliparous women *American Journal of Public Health* 91 (3) 436–440.
- Cedergren, M. I. (2004) Maternal morbid obesity and the risk of adverse pregnancy outcome *Obstetrics and Gynaecology* 103 (2) 219–224.
- Dempsey, J.C., Ashiny, Z., Qiu, C.F., Miller, R.S., Sorensen, T.K., Williams, M.A. (2005) Maternal pre-pregnancy overweight status and obesity as risk factors for caesarean delivery *Journal of Maternal, Fetal, Neonatal Medicine* 17 (3) 179–85.
- Denison, F. C., Price, J., Graham, C., Wild, S., Liston, W. A. (2008) Maternal obesity, length of gestation, risk of postdates pregnancy, and spontaneous onset of labour at term *BJOG* 115 720–725.
- Department of Health (2003) *The chief medical officer's annual report 2002* London: Department of Health.
- Department of Health (2004) *Summary of Intelligence on Obesity. Choosing Health Summaries*. London: Department of Health.
- Kaiser, P. S., Kirby, R. S. (2001) Obesity as a risk factor for caesarean section in a low-risk population *Obstetrics and Gynaecology* 97 (1) 39–43.
- Kerrigan, A. M., Kingdon, C. (2010) Maternal obesity and pregnancy: a retrospective study *Midwifery* 26 138–146.
- Kristensen, J., Vestergaard, M., Wisborg, K., Kesmodel, U., Secher, N.J. (2005) Pre-pregnancy weight and the risk of stillbirth and neonatal death *British Journal of Obstetrics and Gynaecology* 112 (4) 403–408.
- Kumari, A. S. (2001) Pregnancy outcome in women with morbid obesity *International journal of gynaecology and obstetrics* 73 (3) 101–107.

Myles, T. D., Gooch, J., Santolaya, J. (2002) Obesity as an independent risk factor for infectious morbidity in patients who undergo caesarean delivery *Obstetrics and Gynecology* 5 (1) 959–964.

Nohr, E. A., Bech, H., Davies, M. J., Frydenberg, M., Henriksen, T. B., Olsen. (2005) Prepregnancy obesity and feta death *Obstetrics and Gynecology* 106 (2) 250–258.

Sebire, N.J., Jolly, M., Harris, J.P., Wadsworth, J., Joffe, M., Beard, R.W. L., Regan, L., Robinson, S. (2001) Maternal obesity and pregnancy outcome: a study of 287,213 pregnancies in London *International Journal of Obesity* 25 (8) 1175–1182.

Sheiner, E., Levy, A., Menes, T. S., Silverberg, D., Katz, M., Mazor, M. (2004) Maternal obesity as an independent risk factor of caesarean delivery *Paediatric and perinatal* 18 (3) 196-201.

Vahratian, A., Zhang, J., Troendle, J. F., Savitz, D. A., Siega-Riz, A. M. (2004) Maternal prepregnancy overweight and obesity and the pattern of labour progression in term nulliparous women *Obstetrics and Gynecology* 104 (5) Part 1. 943–951.

Zhang, J., Bricker, L., Wray, S., Quenby, S. (2007) Poor uterine contractility in obese women *BJOG* 114 343–348.

Appendix 2 – Study 1 proforma

Telephone Survey Proforma

Site No.....

Date of survey.....

Contact name.....

Contact details.....

Introduction

I'm Angela Kerrigan, a midwife in Liverpool and I'm studying for a PhD at the University of Stirling. My research focuses on intrapartum care of obese women and will aim to develop an intervention that will increase the normal birth rate amongst this population. As part of the background to my work, I want to establish to what extent guidelines for the intrapartum care of obese women are available in maternity hospitals across the UK. If you have a few minutes spare, would it be possible to ask you a few questions about the intrapartum care of obese women at your hospital.

Question 1.

Do you currently have guidelines on intrapartum care of obese women?

Yes

No

If yes, does it focus on midwifery care only?

Yes

No

Question 2.

How long have you had them?

Less than 1 year

1-5 years

>5years

Question 3.

Do you feel there is a need for an intrapartum guideline?

Yes

No

Question 4.

Can I have a copy of the guideline?

Appendix 3 – Study 2 focus group question guide

Obesity and intrapartum care

Focus group questions (Version 1. 22/11/10)

- 1) How are obese women currently prepared for labour? Could this be improved/changed?
- 2) Have you experienced particular issues or problems in the care of obese women in labour? What are they?
- 3) Can you think of any possible solutions to these issues? What has worked well in caring for obese women?
- 4) Do you think intrapartum care of obese women should be managed differently to non-obese women?
- 5) What do you base your current practice on?
- 6) Do you feel that you have enough information or training in the care of obese women? Is there any information/training you would like to receive in this area?

Appendix 4 – Study 2 interview schedule

Obesity and intrapartum care

Interview Schedule (Version 1. 1/11/10)

- 1) Have you experienced any particular issues (or problems) when caring for an obese woman during labour? What were these?

- 2) How did these affect the care you provided/were able to provide?

- 3) Can you think of any possible solutions to these issues? What has worked well in caring for obese women?

- 4) Do you think intrapartum care of obese women should be managed differently to non-obese women?

- 5) Do you feel that you have enough information or training in the care of obese women? Is there any information/training you would like to receive in this area?

Appendix 5 – Covering letter for focus groups

Nursing, Midwifery and Allied Health Professions Research Unit

Professor Brian Williams, Director

Iris Murdoch Building • University of Stirling • Stirling • FK9 4LA

Tel: +44 (0) 1786 466341 • Fax: +44 (0) 1786 466100

www.nmahpru.qcal.ac.uk



Version 2. 26/6/11

26th August 2011

Re: Obesity and intrapartum care- Focus groups

I would like to invite you to take part in a research study. The purpose of the study is to explore health professionals' experiences of providing intrapartum care to obese pregnant women. The research will aim to identify issues health professionals face when caring for obese women and discuss how these impact on patient care. This research is part of a wider research project, which aims to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst obese women.

As part of the research, I am going to conduct two focus groups with midwives who provide care to obese women. I hope that you will be willing to participate in one of these groups. I have enclosed an information sheet about the research and a list of potential dates. If you are interested and would like to take part in one of the focus groups, could you please complete the reply slip and post back to me in the enclosed addressed envelope.

If you have any questions in the meantime please contact me on a.m.kerrigan@stir.ac.uk or 0151 702 4355

Yours sincerely,

Angela Kerrigan
Midwife/PhD Student
Liverpool Women's Hospital/ University of Stirling

*NMAHP Research Unit is funded by the Chief Scientist Office, Scottish Government
Bases at: Glasgow Caledonian University and University of Stirling*

The University of Stirling is a charity registered in Scotland, number SC 011159
Glasgow Caledonian University is a charity registered in Scotland, number SC 021474

Appendix 6 – Study 2 focus groups information sheet

Obesity and intrapartum care

Information Sheet for focus groups (Version 3. 26/6/11)

Research Team: Angela Kerrigan, Helen Cheyne, Kate Niven

Introduction

I would like to invite you to take part in a research study. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what your participation will involve.

What is the purpose of the study?

The purpose of the study is to explore health professionals' experiences of providing intrapartum care to obese pregnant women. It will aim to identify any issues practitioners' face when caring for obese women and discuss how these impact on patient care. This research is part of a wider research project, which aims to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst obese women.

Why have I been invited to participate?

You have been invited to take part because you are a health professional who provides maternity care to obese women. For the purpose of this study obesity has been defined as a body mass index greater than 35.

Do I have to take part?

It is up to you whether or not you wish to take part in this research. If you agree to take part, you will be asked to sign a consent form. You are free to withdraw from the research at anytime, without giving a reason.

What will happen if I take part?

If you decide to take part in this research, you will be invited to attend a focus group with a number of other midwives. Midwives involved in the antenatal and intrapartum care of obese women will be invited. The focus group will take place in the hospital at a date and time convenient to the majority of participants. A list of potential dates has been included at the end of this information sheet. The discussion will be audio-recorded with your permission in order for the data to be transcribed and re-visited for analysis.

What the possible disadvantages/risks of taking part?

There are no risks to you if you participate in this research. The only disadvantage will be that you will need to give up some of your time in order to attend a focus group with a number of other midwives. It is expected that the focus groups will last between 60 and 90 minutes.

What are the possible benefits of taking part?

The research study will not have any direct benefits to you at the present time, but the information gained from the research may influence the intrapartum care of obese pregnant women in the future.

Will my participation be kept confidential?

Yes. All information collected during the research will be kept strictly confidential. All names of people and work places will be removed and substituted with a pseudonym to maintain anonymity. No identifiable details will be included in any research reports. The data will only be seen by the researcher directly involved in the data analysis and will be stored in a locked office and on a password protected computer. All audio-recorded data will be destroyed following data analysis. All other data will be destroyed 10 years after the completion of the research.

What will happen if I decide to withdraw from the research?

You are free to withdraw from the study at any time. If you decide to withdraw, you will not be contacted again in connection with this research.

What will happen to the results of the research?

The results of the research will be used to develop and pilot a tool kit to increase the rate of normal birth amongst obese women. The results will also be published in a professional peer-reviewed journal.

Who is funding/organising the research?

The research is being organised and funded by the Nursing, Midwifery and Allied Health Professions Research Unit at the University of Stirling.

Who has reviewed the research study?

The research has been reviewed by the NHS research ethics committee, the University of Stirling, School of Nursing and Midwifery ethics committee and the Research and Development department in this hospital.

What happens next?

The focus group meetings are scheduled to take place on the following days:

Monday 26th September at 2.30pm

Maternity Seminar Room

Tuesday 27th September at 2.30pm

Maternity Seminar Room

Using the enclosed reply slip, please indicate whether you would be willing to take part and highlight the date which will be most convenient to you to attend the focus group meeting. Alternatively, email a.m.kerrigan@stir.ac.uk with your preferred date.

Further information and contact details

For more information on this research please contact the researcher Angela Kerrigan by email a.m.kerrigan@stir.ac.uk or telephone 0151 7024355. You can also contact Professor William Lauder, Department of Nursing and Midwifery, University of Stirling, Stirling FK9 4LA Tel: 01786 46 6345 william.lauder@stir.ac.uk He is acting as the independent contact for this study.

Thank you for taking time to read this information sheet

Reply slip

Please return this reply slip in the envelope provided.

1. Print your name

2. Please indicate your availability

I am available to take part in the meeting on

Monday 26 th September at 2.30pm
Tuesday 27 th September at 2.30pm

I would not like to take part

Please provide your contact details below. These details will only be used to confirm the date, venue, time and your attendance at the focus group meeting.

Address:

Telephone number:

Email:

Appendix 7– Covering letter for interviews

Nursing, Midwifery and Allied Health Professions Research Unit

Professor Brian Williams, Director

Iris Murdoch Building • University of Stirling • Stirling • FK9 4LA

Tel: +44 (0) 1786 466341 • Fax: +44 (0) 1786 466100

www.nmahpru.gcal.ac.uk



Version 2. 26/6/11

23rd August 2011

Dear

Re: Obesity and intrapartum care - Interviews

I would like to invite you to take part in a research study. The purpose of the study is to explore health professionals' experiences of providing intrapartum care to obese pregnant women. The research will aim to identify issues health professionals face when caring for obese women and discuss how these impact on patient care. This research is part of a wider research project, which aims to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst obese women.

As part of the research, I am going to conduct individual interviews with Consultant Obstetricians and Anaesthetists who provide care to obese women. I hope that you will be willing to participate in an interview. I have enclosed an information sheet about the research. I will contact you within the next two weeks to see if you are interested and arrange a convenient date and time.

If you have any questions meantime please contact me on a.m.kerrigan@stir.ac.uk or 0151 702 4355

Yours sincerely

Angela Kerrigan
Midwife/ PhD Student
Liverpool Women's Hospital/ University of Stirling

*NMAHP Research Unit is funded by the Chief Scientist Office, Scottish Government
Bases at: Glasgow Caledonian University and University of Stirling*

The University of Stirling is a charity registered in Scotland, number SC 011159
Glasgow Caledonian University is a charity registered in Scotland, number SC 021474

Appendix 8 – Study 2 interviews information sheet

Obesity and intrapartum care

Information Sheet for interviews (Version 3. 26/6/11)

Research Team: Angela Kerrigan, Helen Cheyne, Kate Niven

Introduction

I would like to invite you to take part in a research study. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what your participation will involve.

What is the purpose of the study?

The purpose of the study is to explore health professionals' experiences of providing intrapartum care to obese pregnant women. It will aim to identify any issues practitioners' face when caring for obese women and discuss how these impact on patient care. This research is part of a wider research project, which aims to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst obese women.

Why have I been invited to participate?

You have been invited to take part because you are a health professional who provides maternity care to obese women. For the purpose of this study obesity has been defined as a body mass index greater than 35.

Do I have to take part?

It is up to you whether or not you wish to take part in this research. If you agree to take part, you will be asked to sign a consent form. You are free to withdraw from the research at anytime, without giving a reason.

What will happen if I take part?

If you decide to take part in this research, you will be invited to participate in an individual interview. Consultant Obstetricians and Anaesthetists involved in the antenatal and intrapartum care of obese women are being invited to take part. The interview will take place in the hospital at a date and time convenient to you. The interview will be audio-recorded with your permission in order for the data to be transcribed and re-visited for analysis.

What the possible disadvantages/risks of taking part?

There are no risks to you if you participate in this research. The only disadvantage will be that you will need to give up some of your time in order to be interviewed. It is expected the interview will last approximately one hour.

What are the possible benefits of taking part?

The research study will not have any direct benefits to you at the present time, but the information gained from the research may influence the intrapartum care of obese pregnant women in the future.

Will my participation be kept confidential?

Yes. All information collected during the research will be kept strictly confidential. All names of people and work places will be removed and substituted with a pseudonym to maintain anonymity. No identifiable details will be included in any research reports. The data will only be seen by the researcher directly involved in the data analysis and will be stored in a locked office and on a password protected computer. All audio-recorded data will be destroyed following data analysis. All other data will be destroyed 10 years after the completion of the research.

What will happen if I decide to withdraw from the research?

You are free to withdraw from the study at any time. If you decide to withdraw you will not be contacted again in connection with this research.

What will happen to the results of the research?

The results of the research will be used to develop and pilot a tool kit to increase the rate of normal birth amongst obese women. The results will also be published in a professional peer-reviewed journal.

Who is funding/organising the research?

The research is being organised and funded by the Nursing, Midwifery and Allied Health Professions Research Unit at the University of Stirling.

Who has reviewed the research study?

The research has been reviewed by the NHS research ethics committee, the University of Stirling School of Nursing and Midwifery ethics committee and the Research and Development department in this hospital.

What happens next?

I will contact you within the next two weeks by telephone to see if you wish to participate. If you do wish to participate, a mutually convenient date and time for the interview can be arranged.

Further information and contact details

For more information on this research please contact the researcher Angela Kerrigan by email a.m.kerrigan@stir.ac.uk or telephone 01517024355. You can also contact Professor William Lauder, Department of Nursing and Midwifery, University of Stirling, Stirling FK9 4LA Tel: 01786 46 6345 william.lauder@stir.ac.uk He is acting as the independent contact for this study.

Thank you for taking time to read this information sheet

Appendix 9 – Study 2 protocol

Obesity and intrapartum care

Research protocol (Version 3. 26/6/11)

Background and rationale

Obesity is defined as the point when excess weight may seriously endanger health (Department of Health (DH) 2008) and medically, it is viewed as a non-communicable disease that has reached epidemic proportions, with its prevalence having trebled in the UK since the 1980s (DH 2004). Obesity is a major public health issue in the developed world and the Chief Medical Officer (DH 2003 p.36) has highlighted obesity as 'a health time bomb', recognising it as a growing challenge for the government in the UK. This is because of its direct contribution to chronic diseases, such as diabetes mellitus, hypertension, high blood cholesterol, coronary heart disease, strokes and cancer (Sheiner et al 2004).

In the UK, obesity affects one-fifth of the female population (Lashen et al 2004). The Confidential Enquiry into Maternal and Child Health (CEMACH 2004), which considers all deaths of women during pregnancy and up to a year following birth, suggest maternal obesity is associated with a range of risks in maternity care. The most recent report examining all maternal deaths in the UK from 2003 to 2005 (Lewis 2007) places a great emphasis on the effects that maternal obesity can have on pregnancy and childbearing. More than half of all women whose deaths were included in the latest report were either overweight or obese and fifteen percent of the maternal deaths were in women who were morbidly obese, with a BMI of 35 or above. It is suggested, based on these figures, that obesity is one of the greatest threats to the childbearing population of the UK. Available literature demonstrates that obese pregnant women have a higher risk of a number of pregnancy complications, including miscarriage, pre-eclampsia, gestational diabetes, fetal macrosomia and stillbirth (Kumari 2001, Sebire et al 2001, Stephansson et al 2001, Cedergren 2004, Kristensen et al 2005, Nohr et al 2005, Robinson et al 2005).

These women are also at an increased risk of a number of complications which arise during the intrapartum and early postnatal periods. Maternal obesity can have a direct influence on mode of birth and postnatal morbidity. The risk of induction of labour is reported to be doubled for obese pregnant women (Kiran et al 2005, Denison et al 2008). Delay in the first stage of labour is significantly more common (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010), with the risk ranging from 1.5 times to 3 times more likely. Obese women also have a significantly increased risk of caesarean section (Crane et al 1997, Kaiser & Kirby 2001, Sheiner et al, 2004, Dempsey et al 2005, Kiran et al 2005, Chu et al 2007, Zhang et al 2007, Kerrigan & Kingdon 2010). The increased risk of caesarean section amongst obese women varies from two-fold to more than three-fold, with the most common reason for caesarean section being delay during the first stage of labour, even after augmentation with oxytocin (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010). The increased risk of caesarean section also has a considerable impact on postnatal morbidity, with maternal obesity being an independent risk factor for post-caesarean infections (Myles et al 2002).

Qualitative literature in this area is very limited but reports that maternal obesity has implications on the demand for extra resources in order to provide adequate care and that currently, obese women experience feelings of guilt and many face prejudice when accessing maternity care (Heselhurst et al 2007, Nyman et al 2008).

Much literature exists on maternal health and obesity, with the focus on pre-pregnancy or antenatal weight management interventions for obese pregnant women, in order to prevent excess weight gain during pregnancy and reduce the associated risks (Weaver 2008, Claesson et al 2008). However, there is currently a dearth of available literature on optimum clinical management for this population that focuses on clinical care during labour rather than antenatal weight management.

Research programme

This study is part of a wider PhD research project. The overall aim of the research is to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst obese women by focussing on antenatal education for women and midwifery care during labour. The Medical Research Council framework for the development and evaluation of complex healthcare interventions (MRC 2006) will inform the stages of development of the tool kit.

The following stages have been or will be undertaken:

1. A literature review was conducted, as outlined above that identified specific risks associated with being obese during labour, including the increased risk of delay during the first stage of labour and the increased risk of needing a caesarean section.
2. A telephone survey of practice in maternity hospitals across the UK has been carried out with the aim of identifying current practice in relation to care of the obese woman in labour and to assess the need for a toolkit to be developed. The survey found that the majority of hospitals currently have clinical guidelines for the obstetric management of obese women during pregnancy, labour and the postnatal period, but only a small number made any reference to guidance for midwifery care during labour. The survey indicated support from practitioners for the development of an intrapartum tool kit.
3. A qualitative study will explore practitioners' experiences of caring for obese pregnant women and the issues they face when providing care. Although the main focus is care in labour, it is anticipated that the tool kit will include antenatal education materials and therefore the experiences of midwives who provide antenatal care to obese women will also be sought, in order to inform this information development.
4. Obese women's experiences and views of maternity care will also be obtained using a qualitative methodology.

The current application is for 3. A qualitative study to explore practitioners' experiences of caring for obese pregnant women and the issues they face when providing care.

The tool kit will be developed based on the findings of the literature review and the data gathered at stages 3 and 4. It is anticipated that the tool kit will comprise two aspects: an educational tool for use during the antenatal period which will provide literature and antenatal classes for women informing them of the risks of obesity during labour and the ways in which they can maximise their wellbeing and chances of normal birth, and a guideline for midwives, for management of obese women during labour.

For the purposes of this study, obesity is defined as having a BMI greater than 35.

Aim of the study

To explore practitioners' experiences of providing intrapartum care to obese pregnant women.

Objectives

- To obtain practitioners' experiences of caring for obese pregnant women.
- To identify the issues that practitioners face when caring for obese pregnant women.
- To identify how these issues impact on patient care.
- To identify possible solutions that could decrease the impact on care.

Ethical Approval

Ethical approval will be obtained from the local NHS Ethics Committee, the University of Stirling School of Nursing and Midwifery ethics committee and the NHS R&D departments where the focus groups will be undertaken.

Design

A qualitative methodology will be utilised with data collected through focus groups and individual interviews.

Setting

The research will take place in two NHS hospitals in the UK, one hospital in England and one in Scotland.

Sampling

Purposive sampling will be employed. A total of four focus groups and six individual interviews will be conducted across the two sites. Health professionals who provide maternity care to obese women will be invited to participate, specifically midwives, obstetricians and anaesthetists. All midwives who currently work in antenatal or intrapartum care will be invited to attend one of two focus groups at their hospital. It is anticipated that approximately 5–8 midwives will attend each group. A named contact person for each hospital will distribute a research information pack to each midwife. This will contain a covering letter, an information sheet with a list of possible dates for the focus group and a reply slip. Midwives will be asked to return the reply slip to the researcher in a stamped addressed envelope if they wish to participate in a focus group. The researcher will then contact each individual, using the contact information provided, to arrange the most suitable date and time. Each consultant obstetrician and consultant anaesthetist employed at the

hospital will be invited to participate, with the aim that one consultant anaesthetist and two consultant obstetricians from each hospital will be interviewed individually. A research information pack will be sent to each consultant, containing a covering letter and an information sheet. This letter will be followed up within two weeks with a telephone call to ascertain if they wish to participate and arrange a mutually convenient time for an interview. At the start of focus groups and interviews an explanation of the study will be provided and participants will be asked to sign a consent form.

Data Collection

Data will be collected by conducting four focus groups and six individual interviews. Focus groups: Focus groups are often used in the development stages of research (Jackson 1998). They may produce a rich range of ideas as they aim to draw on the interaction between participants. The focus groups will last between 60 and 90 minutes. A small number of trigger questions will be used to start and guide the discussion. These will define the areas to be explored, but the participants will be encouraged to discuss the aspects of the topic they feel are most relevant to them as health professionals.

Interviews: Interviews will last between 60 and 90 minutes. Interviews will be semi-structured, with a short list of open-ended questions being used to start and guide the interview. Focus groups and interviews will be audio-recorded with prior permission in order for the data to be transcribed and analysed.

Data Analysis

The audio-recordings will be transcribed verbatim. The data will then be analysed using a framework approach (Ritchie & Spencer 1994). Data analysis will be commenced as soon as the initial data has been collected and this will be used to guide further data collection, with any emerging themes explored in greater detail in subsequent groups/interviews. The transcribed data will be read several times. A list of pre-identified themes will then be applied to the data to form an index, which will then be sorted into groups or charts. The charts will then be interpreted and a process of data mapping will be undertaken to identify any associations between themes and define concepts. Data analysis will be conducted using the qualitative data software package Max QDA.

Ethical considerations

All potential participants will be provided with written information detailing the research and will be given at least 24 hours in order to consider whether or not to participate. Written consent will be obtained prior to the focus group discussions, detailing the importance of

confidentiality, anonymity of data and ensuring consent for audio recording the discussions. Each participant will have a copy of the consent form to keep and one will remain in the research file.

The data collected from the focus groups will be anonymised during transcription and all names and/or locations allocated a pseudonym. Data will be collected by the named researcher only (AK) and analysis will be carried out by the named researcher (AK) and one other person (HC). Audio recordings will be kept until analysis is complete and then destroyed. To maintain confidentiality, all data, both written and audio recorded will be stored in a locked cupboard, in a locked office, and securely destroyed after a period of ten years. All computers used will be password protected.

References

Cedergren, M. I. (2004) Maternal morbid obesity and the risk of adverse pregnancy outcome *Obstetrics and Gynaecology* 103 (2) 219–224.

Chu, S. Y., Kim, S. Y., Schmid, C. H., Dietz, P. M., Callaghan, W. M., Lau, J., Curtis, K. M. (2007) Maternal obesity and risk of caesarean delivery: a meta-analysis *Obesity Reviews* 8 385–394.

Claesson, I. M., Sydsjö, G., Brynhildsen, J., Cedergren, M., Jeppsson, A., Nyström, F., Sydsjö, A., Josefsson A. (2008) Weight gain restriction for obese pregnant women: a case-control intervention study *BJOG* 115 (1) 45–50.

Confidential enquiry into maternal and child health (2004) *Why Mothers Die 2000–2002. Midwifery Summary and Key Recommendations*. London: Royal College of Obstetricians and Gynaecologists.

Crane, S. S., Wojtowycz, M. A., Dye, T. D., Aubry, R., Artal, R. (1997) Association between pre-pregnancy obesity and the risk of caesarean delivery *Obstetrics and Gynecology* 89 (2) 213–216.

Dempsey, J.C., Ashiny, Z., Qiu, C.F., Miller, R.S., Sorensen, T.K., Williams, M.A. (2005) Maternal pre-pregnancy overweight status and obesity as risk factors for caesarean delivery. *Journal of Maternal, Fetal, Neonatal Medicine*. 17 (3) 179–85.

Denison, F. C., Price, J., Graham, C., Wild, S., Liston, W. A. (2008) Maternal obesity, length of gestation, risk of postdates pregnancy, and spontaneous onset of labour at term *BJOG* 115 720–725.

Department of Health (2003) *The Chief Medical Officer's Annual report 2002* London: Department of Health.

Department of Health (2004) *Summary of Intelligence on Obesity. Choosing Health Summaries*. London: Department of Health.

Department of Health (2008) *Healthy Weight, Healthy Lives: A Cross-government Strategy for England*. London: Department of Health.

Heselhurst, N., Lang, R., Rankin, J., Wilkinson, J. R., Summerbell, C. D. (2007) Obesity in pregnancy: a study of the impact of maternal obesity on NHS maternity services *BJOG* 114 334–342.

Jackson P. (1998) Focus group interviews as a methodology *Nurse Researcher* 6 (1) 72–84.

Kaiser, P. S., Kirby, R. S. (2001) Obesity as a risk factor for caesarean section in a low-risk population *Obstetrics and Gynaecology* 97 (1) 39–43.

Kerrigan, A. M., Kingdon, C. (2010) Maternal obesity and pregnancy: a retrospective study *Midwifery* 26 138–146.

Kiran, T. S., Hemmadi, S., Bethel, J., Evans, J. (2005) Outcome of pregnancy in a woman with an increased body mass index *BJOG* 112 768–772.

Kristensen, J., Vestergaard, M., Wisborg, K., Kesmodel, U., Secher, N.J. (2005) Pre-pregnancy weight and the risk of stillbirth and neonatal death. *BJOG* 112 (4) 403–408.

Kumari, A. S. (2001) Pregnancy outcome in women with morbid obesity *International Journal of Gynaecology and Obstetrics* 73 (3) 101–107.

Lashen, H., Fear, K., Sturdee, D. W. (2004) Obesity is associated with increased risk of first trimester and recurrent miscarriage: matched case-control study *Human Reproduction* 19 (7) 1644–1646.

Lewis, G. (2007) *The Confidential Enquiry into Maternal and Child Health. Saving Mothers' Lives: Reviewing Maternal Deaths to Make Motherhood Safer 2003–2005. The Seventh Report on Confidential Enquiries into Maternal Deaths in the United Kingdom*. London: CEMACH.

Medical Research Council (2006) *Developing and Evaluating Complex Interventions: New Guidance* London: Medical Research Council.

Myles, T. D., Gooch, J., Santolaya, J. (2002) Obesity as an independent risk factor for infectious morbidity in patients who undergo caesarean delivery *Obstetrics and Gynecology* 5 (1) 959–964.

Nohr, E. A., Bech, H., Davies, M. J., Frydenberg, M., Henriksen, T. B., Olsen. (2005) Prepregnancy, obesity and fetal death *Obstetrics and Gynecology* 106 (2) 250–258.

Nyman, V. M., Prebensen, A. K., Flesner, G. E. M. (2008) Obese women's experiences of encounters with midwives and physicians during pregnancy and childbirth *Midwifery* Article in press.

Ritchie, J., Spencer, L. (1994) Qualitative data analysis for applied policy research In Bryman, A., Burgess, R. G. (Eds) *Analyzing qualitative data* London: Routledge p.173–194.

Robinson, H., O'Connell, C., Joseph, K., McLeod, N. (2005) Maternal outcomes in pregnancies complicated by obesity *Obstetrics and Gynecology* 106 (6) 1357–1364.

Sebire, N.J., Jolly, M., Harris, J.P., Wadsworth, J., Joffe, M., Beard, R.W. L., Regan, L., Robinson, S. (2001) Maternal obesity and pregnancy outcome: a study of 287,213 pregnancies in London *International Journal of Obesity* 25 (8) 1175–1182.

Sheiner, E., Levy, A., Menes, T. S., Silverberg, D., Katz, M., Mazor, M. (2004) Maternal obesity as an independent risk factor of caesarean delivery *Paediatric and perinatal epidemiology* 18 (3) 196–201.

Stephansson, O., Dickman, P., Johansson, A., Cnattingius, S. (2001) Maternal weight, pregnancy weight gain and the risk of antepartum stillbirth *American Journal of Obstetrics and Gynecology* 184 (3) 463–469.

Vahratian, A., Zhang, J., Troendle, J. F., Savitz, D. A., Siega-Riz, A. M. (2004) Maternal prepregnancy overweight and obesity and the pattern of labour progression in term nulliparous women *Obstetrics and Gynecology* 104 (5) Part 1. 943–951.

Weaver, K. (2008) Review: dietary restriction, with or without aerobic exercise, promotes weight loss in postnatal women *Evidence-based Nursing* 11 (1) 14.

Zhang, J., Bricker, L., Wray, S., Quenby, S. (2007) Poor uterine contractility in obese women *BJOG* 114 343–348.

Appendix 10 – Study 2 ethical approval letter



National Research Ethics Service

NRES Committee North West - Liverpool East

North West REC Centre
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0161 625 7373

04 July 2011

Miss Angela Kerrigan
Research Midwife
Liverpool Women's NHS Foundation Trust
Crown Street
Liverpool
L8 7SS

Dear Miss Kerrigan

Full title of study: Obesity and intrapartum care: professionals
REC reference number: 11/NW/0280

Thank you for your email of 27 June 2011. I can confirm the REC has received the documents listed below as evidence of compliance with the approval conditions detailed in our letter dated 19 May 2011. Please note these documents are for information only and have not been reviewed by the committee.

Documents received

The documents received were as follows:

Document	Version	Date
Letter of invitation to participant	2 - Interviews	26 June 2011
Letter of invitation to participant	2 - Focus Groups	26 June 2011
Participant Consent Form	3	26 June 2011
Participant Information Sheet: Interviews	3	26 June 2011
Participant Information Sheet: Focus Groups	3	26 June 2011
Protocol	3	26 June 2011

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

11/NW/0280

Please quote this number on all correspondence

Yours sincerely

Miss Charlene Mike
Assistant Committee Co-ordinator

E-mail: charlene.mike@northwest.nhs.uk

This Research Ethics Committee is an advisory committee to the North West Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England

Appendix 11 – Study 3 protocol

Obesity and intrapartum care: Women's Views

Research protocol (Version 3. 16/07/12)

Background and rationale

Obesity is defined as the point when excess weight may seriously endanger health (Department of Health (DH) 2008) and medically, it is viewed as a non-communicable disease that has reached epidemic proportions, with its prevalence having trebled in the UK since the 1980s (DH 2004). Obesity is a major public health issue in the developed world and the Chief Medical Officer (DH 2003 p.36) has highlighted obesity as 'a health time bomb', recognising it as a growing challenge for the government in the UK. This is because of its direct contribution to chronic diseases, such as diabetes mellitus, hypertension, high blood cholesterol, coronary heart disease, strokes and cancer (Sheiner et al 2004).

In the UK, obesity affects one-fifth of the female population (Lashen et al. 2004). The Confidential Enquiry into Maternal and Child Health (CEMACH 2004), which considers all deaths of women during pregnancy and up to a year following birth, suggest maternal obesity is associated with a range of risks in maternity care. In recent years, the report has placed great emphasis on the effects that maternal obesity can have on pregnancy and childbearing. More than half of all women whose deaths were included in the 2007 report were either overweight or obese and fifteen percent of the maternal deaths were in women who were morbidly obese, with a BMI of 35 or above. In the most recent report (2011), obesity remains a significant contributor to maternal death, with the prevalence increasing in both the general population and the pregnant population. Women with a high body mass index remain over-represented in maternal deaths (Lewis 2011). Available literature demonstrates that obese pregnant women have a higher risk of a number of pregnancy complications, including miscarriage, pre-eclampsia, gestational diabetes, fetal macrosomia and stillbirth (Kumari 2001, Sebire et al 2001, Stephansson et al 2001, Cedergren 2004, Kristensen et al 2005, Nohr et al 2005, Robinson et al 2005).

These women are also at an increased risk of a number of complications which arise during the intrapartum and early postnatal periods. Maternal obesity can have a direct influence on mode of birth and postnatal morbidity. The risk of induction of labour is reported to be doubled for obese pregnant women (Kiran et al 2005, Denison et al 2008). Delay in the first stage of labour is significantly more common (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010), with the risk ranging from 1.5 times to 3 times more likely. Obese women also have a significantly increased risk of caesarean section (Crane et al 1997, Kaiser & Kirby 2001, Sheiner et al, 2004, Dempsey et al 2005, Kiran et al 2005, Chu et al 2007, Zhang et al 2007, Kerrigan & Kingdon 2010). The increased risk of caesarean section amongst obese women varies from two-fold to more than three-fold, with the most common reason for caesarean section being delay during the first stage of labour, even after augmentation with oxytocin (Vahratian et al 2004, Zhang et al 2007, Kerrigan & Kingdon 2010). The increased risk of caesarean section also has a considerable impact on postnatal morbidity, with maternal obesity being an independent risk factor for post-caesarean infections (Myles et al 2002).

Qualitative literature in this area is very limited but reports that maternal obesity has implications on the demand for extra resources in order to provide adequate care and that currently, obese women experience feelings of guilt and many face prejudice when accessing maternity care (Heselhurst et al 2007, Nyman et al 2008).

Much literature exists on maternal health and obesity, with the focus on pre-pregnancy or antenatal weight management interventions for obese pregnant women, in order to prevent excess weight gain during pregnancy and reduce the associated risks (Weaver 2008, Claesson et al 2008). However, there is currently a dearth of available literature on optimum clinical management for this population that focuses on clinical care during labour rather than antenatal weight management.

Research programme

This study is part of a wider PhD research project. The overall aim of the research is to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst obese women by focussing on antenatal education for women and midwifery care during labour. The Medical Research Council framework for the development and evaluation of complex healthcare interventions (MRC 2006) will inform the stages of development of the tool kit.

The following stages have been or will be undertaken:

1. A literature review was conducted, as outlined above that identified specific risks associated with being obese during labour, including the increased risk of delay during the first stage of labour and the increased risk of needing a caesarean section.
2. A telephone survey of practice in maternity hospitals across the UK has been carried out with the aim of identifying current practice in relation to care of the obese woman in labour and to assess the need for a toolkit to be developed. The survey found that the majority of hospitals currently have clinical guidelines for the obstetric management of obese women during pregnancy, labour and the postnatal period, but only a small number made any reference to guidance for midwifery care during labour. The survey indicated support from practitioners for the development of an intrapartum tool kit.
3. A qualitative study explored practitioners' experiences of caring for obese pregnant women and the issues they face when providing care. This showed that health professionals face difficulties when providing care to obese women during labour, particularly when trying to promote normality during childbirth.
4. A second qualitative study will explore postnatal obese women's experiences and views of maternity care.

The current application is for 4: A qualitative study to explore postnatal, obese women's experiences and views of maternity care.

The tool kit will be developed based on the findings of the literature review and the data gathered at stages 3 and 4. It is anticipated that the tool kit will comprise two aspects: an educational tool for use during the antenatal period which will provide literature and antenatal classes for women informing them of the risks of obesity during labour and the ways in which they can maximise their wellbeing and chances of normal birth, and a guideline for midwives, for management of obese women during labour.

For the purposes of this study, obesity is defined as having a BMI greater than 35.

Aim of the study

To explore postnatal obese women's experiences and views of maternity care.

Objectives

- To explore postnatal, obese women's experiences of preparation for labour.
- To explore obese women's experience of their care during labour.
- To identify what information on labour and birth and the risks of obesity in pregnancy obese women wish to receive.
- To identify how obese women are currently prepared for labour and how they wish to be prepared for labour and birth in the future.
- To identify what aspects of maternity care, obese women wish to be improved/changed.

Ethical Approval

Ethical approval will be obtained from the local NHS Ethics Committee, the University of Stirling, School of Nursing, Midwifery and Health ethics committee and the NHS R&D departments where the focus groups will be undertaken.

Design

A qualitative method will be utilised with data collected through semi-structured, individual interviews.

Setting

The research will take place in two NHS hospitals in the UK, one hospital in England and one in Scotland.

Sampling

Purposive sampling will be employed. All women who have a BMI of 35 or more and have an expected date of delivery (EDD) between a defined period of time will be invited to participate in the research in the antenatal period and given an information sheet about the research. Women will be approached about the study at an antenatal appointment with their midwife between 28 and 36 weeks of pregnancy. They will be given information about the research by their midwife and asked to provide their contact details if they are interested in participating. A reply slip and stamped addressed envelope will be provided. Women who return their contact details will then be contacted by telephone by the researcher (AP) to discuss the research further and if they are willing to participate, consent to participate in

principle will be obtained. The health records of each participant will be checked by a local collaborator at each research site to ascertain the date of birth and the safe arrival of the infant. Verbal consent for this will be obtained when the researcher contacts the participant by telephone during the antenatal period. This information will be passed to the researcher. Within 14 days of each woman giving birth, they will be contacted again by telephone and asked if they would still like to take part. A suitable time and location for the interview will be arranged for all women wishing to participate. The interview will take place in a location convenient for the woman. This is most likely to be her own home, but may be at the hospital if this is most convenient. Interviews will take place within 4–8 weeks of the women giving birth. Approximately 20 women will be interviewed (10 from each NHS hospital). A letter thanking women for their interest in the study will be sent to anyone who expresses an interest in participating but does not subsequently get involved.

Data Collection

Data will be collected by conducting individual interviews. The interviews will last between 60 and 90 minutes and will be semi-structured, with a short list of open-ended questions being used to start and guide the interview. The interviews will be audio-recorded with prior permission in order for the data to be transcribed and analysed.

Data Analysis

The audio-recordings will be transcribed verbatim. The data will then be analysed using a framework approach (Ritchie & Spencer 1994). Data analysis will be commenced as soon as the initial data has been collected and this will be used to guide further data collection, with any emerging themes explored in greater detail in subsequent interviews. The transcribed data will be read several times. A list of pre-identified themes will then be applied to the data to form an index, which will then be sorted into groups or charts. The charts will then be interpreted and a process of data mapping will be undertaken to identify any associations between themes and define concepts.

Ethical considerations

All potential participants will be provided with written information detailing the research and will be given at least 24 hours in order to consider whether or not to participate. Written consent will be obtained prior to the interview, detailing the importance of confidentiality, anonymity of data and ensuring consent for audio recording the discussions. Each participant will have a copy of the consent form to keep and one will remain in the research file.

The data collected from the interviews will be anonymised during transcription and all names and/or locations allocated a pseudonym. Data will be collected by the named researcher only (AP) and analysis will be carried out by the named researcher (AP) and one other person (HC). To maintain confidentiality, all data, both written and audio recorded will be stored in a locked cupboard, in a locked office. Audio recordings will be kept until analysis is complete and then destroyed. All other data will be destroyed after a period of ten years. All computers used will be password protected.

References

Cedergren, M. I. (2004) Maternal morbid obesity and the risk of adverse pregnancy outcome *Obstetrics and Gynaecology* 103 (2) 219–224.

Chu, S. Y., Kim, S. Y., Schmid, C. H., Dietz, P. M., Callaghan, W. M., Lau, J., Curtis, K. M. (2007) Maternal obesity and risk of caesarean delivery: a meta-analysis *Obesity Reviews* 8 385–394.

Claesson, I.M., Sydsjö, G., Brynhildsen, J., Cedergren, M., Jeppsson, A., Nyström, F., Sydsjö, A., Josefsson A. (2008) Weight gain restriction for obese pregnant women: A case-control intervention study *BJOG* 115 (1) 45–50.

Confidential enquiry into maternal and child health (2004) *Why Mothers Die 2000–2002. Midwifery Summary and Key recommendations*. London: Royal College of Obstetricians and Gynaecologists.

Crane, S. S., Wojtowycz, M. A., Dye, T. D., Aubry, R., Artal, R. (1997) Association between pre-pregnancy obesity and the risk of caesarean delivery *Obstetrics and Gynecology* 89 (2) 213–216.

Dempsey, J.C., Ashiny, Z., Qiu, C.F., Miller, R.S., Sorensen, T.K., Williams, M.A. (2005) Maternal pre-pregnancy overweight status and obesity as risk factors for caesarean delivery. *Journal of Maternal, Fetal, Neonatal Medicine* 17 (3) 179–185.

Denison, F. C., Price, J., Graham, C., Wild, S., Liston, W. A. (2008) Maternal obesity, length of gestation, risk of postdates pregnancy, and spontaneous onset of labour at term *BJOG* 115 720–725.

Department of Health (2003) *The Chief Medical Officer's Annual Report 2002* London: Department of Health.

Department of Health (2004) *Summary of Intelligence on Obesity. Choosing Health Summaries*. London: Department of Health.

Department of Health (2008) *Healthy Weight, Healthy Lives: A Cross-government Strategy for England*. London: Department of Health.

Heselhurst, N., Lang, R., Rankin, J., Wilkinson, J. R., Summerbell, C. D. (2007) Obesity in pregnancy: a study of the impact of maternal obesity on NHS maternity services *BJOG* 114 334–342.

Kaiser, P. S., Kirby, R. S. (2001) Obesity as a risk factor for caesarean section in a low-risk population *Obstetrics and Gynaecology* 97 (1) 39–43.

Kerrigan, A. M., Kingdon, C. (2010) Maternal obesity and pregnancy: a retrospective study *Midwifery* 26 138–146.

Kiran, T. S., Hemmadi, S., Bethel, J., Evans, J. (2005) Outcome of pregnancy in a woman with an increased body mass index *BJOG* 112 768–772.

Kristensen, J., Vestergaard, M., Wisborg, K., Kesmodel, U., Secher, N.J. (2005) Pre-pregnancy weight and the risk of stillbirth and neonatal death *BJOG* 112 (4) 403–408.

Kumari, A. S. (2001) Pregnancy outcome in women with morbid obesity *International Journal of Gynaecology and Obstetrics* 73 (3) 101–107.

Lashen, H., Fear, K., Sturdee, D. W. (2004) Obesity is associated with increased risk of first trimester and recurrent miscarriage: matched case-control study *Human Reproduction* 19 (7) 1644–1646.

Lewis, G. (2011) *Saving Mother's Lives. Reviewing Maternal Deaths to make Motherhood Safer: 2006–2008. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom*. London: CMACE.

Medical Research Council (2006) *Developing and Evaluating Complex Interventions: New Guidance* London: Medical Research Council.

Myles, T. D., Gooch, J., Santolaya, J. (2002) Obesity as an independent risk factor for infectious morbidity in patients who undergo caesarean delivery *Obstetrics and Gynecology* 5 (1) 959–964.

Nohr, E. A., Bech, H., Davies, M. J., Frydenberg, M., Henriksen, T. B., Olsen. (2005) Prepregnancy, obesity and fetal death *Obstetrics and Gynecology* 106 (2) 250–258.

Nyman, V. M., Prebensen, A. K., Flesner, G. E. M. (2008) Obese women's experiences of encounters with midwives and physicians during pregnancy and childbirth *Midwifery* Article in press.

Ritchie, J., Spencer, L. (1994) Qualitative data analysis for applied policy research In Bryman, A., Burgess, R. G. (Eds) *Analyzing qualitative data* London: Routledge p.173–194.

Robinson, H., O'Connell, C., Joseph, K., McLeod, N. (2005) Maternal outcomes in pregnancies complicated by obesity *Obstetrics and Gynecology* 106 (6) 1357–1364.

Sebire, N.J., Jolly, M., Harris, J.P., Wadsworth, J., Joffe, M., Beard, R.W. L., Regan, L., Robinson, S. (2001) Maternal obesity and pregnancy outcome: a study of 287,213 pregnancies in London *International Journal of Obesity* 25 (8) 1175–1182.

Sheiner, E., Levy, A., Menes, T. S., Silverberg, D., Katz, M., Mazor, M. (2004) Maternal obesity as an independent risk factor of caesarean delivery *Paediatric and perinatal epidemiology* 18 (3) 196–201.

Stephansson, O., Dickman, P., Johansson, A., Cnattingius, S. (2001) Maternal weight, pregnancy weight gain and the risk of antepartum stillbirth *American Journal of Obstetrics and Gynecology* 184 (3) 463–469.

Vahratian, A., Zhang, J., Troendle, J. F., Savitz, D. A., Siega-Riz, A. M. (2004) Maternal prepregnancy overweight and obesity and the pattern of labour progression in term nulliparous women *Obstetrics and Gynecology* 104 (5) Part 1. 943–951.

Weaver, K. (2008) Review: dietary restriction, with or without aerobic exercise, promotes weight loss in postnatal women *Evidence-based Nursing* 11 (1) 14.

Zhang, J., Bricker, L., Wray, S., Quenby, S. (2007) Poor uterine contractility in obese women *BJOG* 114 343–348.

Appendix 12 – Study 3 information sheet

Obesity and intrapartum care: Women's views

Information Sheet for interviews (Version 3. 28/09/12)

Research Team: Angela Pascall, Helen Cheyne, Brian Williams

Introduction

I would like to invite you to take part in a research study that will explore obese women's views about intrapartum care. 'Intrapartum care' is the care you receive during your labour and birth. Obesity is defined when someone has a Body Mass Index (BMI) over 35. Being obese during pregnancy means you are at a higher risk of a number of complications during labour and birth, including, delay during labour and the need for caesarean section. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what your participation will involve.

What is the purpose of the study?

The purpose of the study is to explore obese women's experiences and views of maternity care. It will aim to explore women's experiences of maternity care, identify what information obese women wish to receive during pregnancy about labour and birth and identify what aspects of maternity care they wish to be improved/changed. This research is part of a wider research project, which aims to develop and pilot a tool kit that will aim to increase the rate of normal birth amongst women who have a BMI over 35. The information obtained from this research will be used to develop the tool kit that will then be used to try to decrease the incidence of delay during labour and/or the need for caesarean section. This could mean more obese women have a normal birth in the future and fewer obese women have emergency caesarean sections.

Why have I been invited to participate?

You have been invited to take part because you are due to give birth in the coming weeks and your BMI is over 35.

Do I have to take part?

It is up to you whether or not you wish to take part in this research. If you agree to take part, you will be asked to sign a consent form. You are free to withdraw from the research at anytime, without giving a reason.

What will happen if I take part?

If you decide to take part in this research, you will be invited to participate in an individual interview. All women with a BMI over 35, who give birth in the next 12 weeks will be invited to participate when their baby is between 4 and 8 weeks old. This will allow you time to recover from the birth and think about your experience of pregnancy and birth as a whole. The interview will take place in a place and at a time that is convenient to you. This may be in your own home or at the hospital. The interview will be audio-recorded with your permission in order for the data to be transcribed and re-visited for analysis.

What the possible disadvantages/risks of taking part?

There are no risks to you if you participate in this research. The only disadvantage will be that you will need to give up some of you time in order to be interviewed. It is expected the interview will last approximately one hour.

What are the possible benefits of taking part?

The research study will not have any direct benefits to you at the present time, but the information gained from the research may influence the intrapartum care of obese pregnant women in the future.

Will my participation be kept confidential?

Yes. All information collected during the research will be kept strictly confidential. All names of people and work places will be removed and substituted with a pseudonym to maintain anonymity. No identifiable details will be included in any research reports. The data will only be seen by the researcher directly involved in the data analysis and will be stored in a locked office and on a password protected computer. All audio-recorded data will be destroyed following data analysis. All other data will be destroyed 10 years after the completion of the research.

What will happen if I decide to withdraw from the research?

You are free to withdraw from the study at any time. If you decide to withdraw you will not be contacted again in connection with this research. Your decision to withdraw from the study will not adversely affect the care of you or your baby.

What will happen to the results of the research?

The results of the research will be used to develop and pilot a tool kit to increase the rate of normal birth amongst women who have a BMI over 35. The results will also be published in a professional peer-reviewed journal.

Who is funding/organising the research?

The research is being organised and funded by the Nursing, Midwifery and Allied Health Professions Research Unit at the University of Stirling.

Who has reviewed the research study?

The research has been reviewed by the NHS research ethics committee, the University of Stirling, School of Nursing, Midwifery and Health ethics committee and the Research and Development department in this hospital.

What happens next?

If you are interested in taking part, return your contact details in the stamped addressed envelope provided and you will be contacted by the researcher by telephone to discuss the research further. If you do wish to take part after you have had your baby the researcher will contact you again by telephone within 2 weeks of giving birth and a mutually convenient date and time for the interview can then be arranged. The interview will take place when your baby is between 4 and 8 weeks old.

Further information and contact details

For more information on this research please contact the researcher Angela Pascall by email a.m.pascall@stir.ac.uk or telephone 01517024355. You can also contact Professor William Lauder, Department of Nursing and Midwifery, University of Stirling, Stirling FK9 4LA Tel: 01786 46 6345 william.lauder@stir.ac.uk He is acting as the independent contact for this study.

Thank you for taking time to read this information sheet

Reply slip

Please return this reply slip in the envelope provided.

1. Print your name

I would like to take part

Estimated date of delivery

Please provide your contact details below.

Telephone number:

Email:

When is the best time to contact you:

Morning

Afternoon

Evening

No preference

Appendix 13 – Study 3 interview schedule

Obesity and intrapartum care: Women's views

Interview questions (Version 2. 20/05/12)

- 1) What information were you given to prepare you for labour? What did you do to prepare yourself for labour?
- 2) How would you like to receive information about labour and birth in the future? Probe.
Classes, written, etc
- 3) What information were you given about the risks of being overweight during pregnancy?
Was this information adequate/acceptable?
- 4) Were you given any information about active birth? Where did you get this information from?
- 5) During your labour were you supported to achieve a normal birth? If so, how?
- 6) Is there anything that you think should be changed or improved about maternity care?

Appendix 14 – Study 3 ethical approval letter



Health Research Authority National Research Ethics Service

NRES Committee North West - Haydock

HRA NRES Centre - Manchester
3rd Floor - Barlow House
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0161 625 7819/7832
Facsimile: 0161 237 9427

03 October 2012

**Mrs Angela Pascall
Research Midwife/PhD Student
Liverpool Women's NHS Foundation Trust
Crown Street
Liverpool
L8 7SS**

Dear Mrs Pascall

Study title: Obesity and intrapartum care : Women's views
IRAS project number: 95927
REC reference: 12/NW/0631

Thank you for your letter of 28 September 2012, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair (Professor Ravi S Gulati – Consultant Physician).

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

A Research Ethics Committee established by the Health Research Authority

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Covering Letter		09 August 2012
REC application: 95927/352325/1/391		08 August 2012
Protocol	3	16 July 2012
Investigator CV for Mrs Angela Pascall		07 August 2012
Investigator CV for Professor Brian Williams		24 July 2012
Investigator CV for Dr Helen Cheyne		23 July 2012
Participant Consent Form: Interviews	1	11 June 2012
Interview Schedules/Topic Guides	2	20 May 2012
Thank You Letter	1	17 July 2012
Letter from Sponsor from Carol Johnstone, Research Development Manager, University of Stirling		01 August 2012
Evidence of insurance or indemnity from Carol Johnstone, Research Development Manager, University of Stirling		01 August 2012
Response to Request for Further Information		28 September 2012
Participant Information Sheet: Interviews	3	28 September 2012

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

12/NW/0631

Please quote this number on all correspondence

Yours sincerely



On behalf of:-
Professor Ravi S Gulati
Chair

E-mail: noel.graham@northwest.nhs.uk

Enclosures: "After ethical review – guidance for researchers"

Copy to:

Dr Helen Cheyne
NMAHP Research Unit
Iris Murdoch Building
University of Stirling
FK9 4LA

Mrs Gillian Vernon
Liverpool Women's NHS Foundation Trust
Crown Street
Liverpool
L8 7SS

Appendix 15 – Intervention workshop summary

Maternal Obesity and Normal Birth Intervention Workshop

1st June 2015

Background

Obesity, defined as a body mass index (BMI) over 30, affects one-fifth of women in the UK with the prevalence increasing in both the general and pregnant population. Maternal obesity can have a direct influence on mode of birth and postnatal morbidity. Obese women were more likely to receive medical interventions, including caesarean birth and general anaesthesia which also put them at increased risk of severe morbidity. The rate of induction of labour is reported to be doubled for obese pregnant women. Delay in the first stage of labour is significantly more common and obese women also have a significantly increased risk of caesarean section, with the most common reason for caesarean section being delay during the first stage of labour, even after augmentation with oxytocin. Caesarean section also carries additional risks for obese women and has a considerable impact on postnatal morbidity, with obesity being an independent risk factor for post-caesarean infection.

Recent publications on the clinical management of obesity during pregnancy emphasise medical care for obese pregnant women, with the primary aim to promote safety. Whilst acknowledging that safety is of paramount importance, increasing medical intervention for these women may also increase the risk of complications, which could itself have detrimental effects. For example, the use of continuous electronic fetal monitoring has shown an association with an increased rate of both caesarean birth and operative vaginal birth.

Research Methods

The overall aim of the PhD research is to develop an intervention to promote normal birth amongst obese women. The Medical Research Council framework for the development of complex interventions forms the basis of this research. The work has been conducted in 3 parts.

Part 1 – A telephone survey of practice to ascertain current practices for the care of obese women and assess the availability of clinical guidelines was conducted using stratified sampling. Data was analysed using descriptive statistics and document analysis of clinical guidelines.

Part 2 – The aim of this study was to explore health professionals' experiences of providing intrapartum care to obese women. A qualitative methodology was used and audio-recorded focus groups and individual interviews were conducted with health professionals. This included midwives, obstetricians and anaesthetists. The data was analysed using a framework approach.

Part 3 – The aim was to explore obese women's views on their preparation for labour and their intrapartum care. A qualitative methodology was adopted and individual interviews were conducted with obese women who had recently given birth. Data was analysed using a framework approach.

Key Findings

Part 1 – The survey found that the majority of hospitals had clinical guidelines for the management of obese women during the intrapartum period. However, the majority of the content on intrapartum care focussed on obstetric care. Only three guidelines made any direct reference to midwifery care during labour or normal birth. The survey indicated that health professionals supported the development of an intrapartum intervention that may influence normal birth rates amongst obese women.

Part 2 – 24 health professionals participated; 6 obstetricians, 2 anaesthetists and 16 midwives. Three key themes emerged from the data: promotion of normal birth; medicalisation of obese birth; and the complexities and contradictions in staff attitudes and behaviours towards caring for obese women.

Midwives and obstetricians described the promotion of normality and normal birth as an integral part of their role when caring for obese women during labour. The promotion of mobility during labour was viewed as an essential aspect of their care, in order to minimise the associated risks of prolonged labour. Antenatal education was viewed as a key factor in the promotion of normal birth.

The medicalisation of obese women during labour and the challenges to providing care was discussed and it was widely acknowledged that continuous fetal monitoring was one of the biggest challenges and led to the medicalisation of birth. Many practitioners challenged this practice and were unable to recall the evidence on which this practice is based. The use of continuous monitoring was viewed as very restrictive for women and it was felt to be detrimental to the promotion of normality and mobility during labour.

Conflicting attitudes and behaviours towards caring for obese women influenced the clinical management of labour and birth of obese women. Maternal BMI was reported to influence clinical management both in the prohibition and facilitation of normal birth. Obese pregnant women are currently classified as 'high risk' in obstetric terms, however, some midwives and obstetricians felt that labelling them as 'high risk' was particularly negative and could be detrimental to their care. There was a lack of consensus surrounding the clinical management of labour for obese women, particularly caesarean section. Some obstetricians reported a much lower threshold for making a decision to proceed to caesarean section than they would with a non-obese woman, based on the time of day and the availability of consultant staff, whilst other obstetricians reported actively trying to avoid a caesarean section because of the increased associated risks of operative birth in this population.

Negative attitudes towards obese women directly influenced clinical decision making and with obese women commonly viewed as problematic, assuming they will encounter difficulties during labour and therefore staff did not utilise opportunities to promote normality and maximise opportunities for normal birth. The routine stereotyping of obese women led to fatalistic staff attitudes and a pre-emptive medicalisation of birth.

Part 3 – Eight postnatal women were interviewed. Four in England and four in Scotland. The findings showed that the information women received about the risks associated with obesity during labour varied significantly, with some women receiving in-depth information and others given very little information. There was no consistency in the amount, content or detail of the information that women were given.

Women reported mixed feelings surrounding pregnancy and birth, with the over-riding feeling being one of fear. Women were very fearful of what may happen during both pregnancy and birth. Many women knew the implications of being obese and pregnant and the info they received from health professionals on the risks compounded these fears, although they were glad they had been given the information. Women were very fearful of how their labour and birth would be. This was based on the information they received during pregnancy, what they had read themselves and a general dread of caesarean section.

Women spoke a lot about antenatal education. The concept of tailored antenatal classes was discussed. Some women viewed the idea of classes aimed specifically for obese women as a form of segregation and felt that they were being targeted in a negative way because of their size, whilst others felt it would make them more appealing to bigger women and felt that they could be very successful, making obese women feel more comfortable

attending. Classes like aquanatal and pregnancy yoga were specifically mentioned as classes where obese women may feel more comfortable if there were only obese women present, purely based on physical appearance and body confidence.

The two main things that were referred to regarding intrapartum care and active birth was that there were inconsistencies between antenatal advice about active birth and what they actually experienced during their labour. Women who attended antenatal classes reported gaining advice about active birth and were educated on the benefits of both but reported that this was not translated into the care they received during labour, either by the midwife simply not addressing active birth or them actively discouraging it because of the need for maternal and fetal monitoring equipment. Finally, some women felt excluded from using hydrotherapy because of their BMI.

Implications

Maternal obesity is associated with a number of complications during labour and birth. This work has demonstrated that there is limited guidance available on 'normal birth' for obese women and the care of obese women during labour is often medicalised and focussed on the associated risks, with practitioners facing many challenges when providing intrapartum care. Midwives play a key role in 'normalising' labour and birth for obese women and should actively encourage normality in order to optimise the chance of normal birth. Although obese women are sometimes stereotyped and conflicting views exist on how best to care for obese women, some practitioners do strive to promote normality during childbirth. The inconsistencies in antenatal education for obese women and the fear that obese women have surrounding labour and birth need to be addressed in order to educate and motivate them to maximise their potential for normal birth and improve their experiences.

Obesity is a major and growing health problem and a major cause of morbidity and mortality for pregnant women. Addressing the intrapartum management of obese women is of paramount importance in order to reduce the associated morbidities. It is essential that more positive proactive guidelines are available to maximise normal birth if the postnatal health of obese women is to be improved.

Purpose of the workshop

The aim of the workshop is to use a multi-disciplinary approach to reach a consensus on a suitable and acceptable intervention that can be implemented into care, in order to improve obese women's preparation for labour and birth, instil confidence in health professionals to challenge practice and utilise alternative techniques and practices to increase 'normality' and

maximise the opportunity for normal birth for women who are obese. The programme of research will be presented, with findings from each part reported in detail, in order to demonstrate the scale of the problem. A proposal for a two-part intervention will then be presented, with the related theory and rationale. The multi-disciplinary group will then discuss the practical implementation of such an intervention, its advantages and disadvantages, related behaviour change and change management theory and other possible solutions, before reaching a multi-disciplinary consensus.



Obesity and normal birth: A qualitative study of clinician's management of obese pregnant women during labour

Angela Kerrigan^{1*}, Carol Kingdon² and Helen Cheyne¹

Abstract

Background: Currently one-fifth of women in the UK are obese. Obese, pregnant women are at an increased risk of experiencing complications of labour and serious morbidity. However, they are also more likely to undergo medical interventions such as induction of labour and caesarean section which in themselves confer additional health risks for obese women such as wound infection and deep vein thrombosis. Reducing unnecessary interventions and increasing normal birth rates for obese women would substantially improve their postnatal health and wellbeing and reduce the burden of NHS resources required to care for them post operatively. This research aimed to explore practitioners' experiences of and strategies for providing intrapartum care to obese women.

Method: A qualitative methodology was adopted, focus groups and individual interviews were conducted with health professionals. Audio recordings were transcribed verbatim and data analysed using a framework approach.

Results: Twenty-four health professionals participated; Six Consultant Obstetricians two Consultant Anaesthetists and 16 midwives. Three key themes emerged from the data: medicalisation of obese birth; promotion of normal obese birth; and the complexities and contradictions in staff attitudes and behaviours. The overall interpretation is that positive approaches to obese birth offer opportunities to promote normal birth. However, many health professionals find the provision of intrapartum care to obese women challenging, and attitudes and behaviours towards the promotion of normal birth are heterogeneous, complex and contradictory.

Conclusion: The care of obese women during labour is generally medicalised and focussed on the associated risks. However, although there are conflicting views on how to care for obese women, some practitioners do strive to promote normality and optimise the potential for normal birth by challenging current practices and utilise some 'interventions' in order to facilitate normality and mobility during childbirth. Obesity is a major and growing health problem and a major cause of morbidity and mortality for pregnant women. It is essential that more positive proactive guidelines are available to maximise normal birth if the postnatal health of obese women is to be improved.

Keywords: Obesity, Normal birth, Intrapartum care, Challenges, Health professionals

Background

Obesity is emerging as one of the greatest health problems in the developed world. Rates of obesity vary, with the highest rates currently in the Pacific Islands (45–75 %) and Kuwait (42 %). In the United Kingdom (UK) approximately 27 % of adults are currently obese [1].

Obesity, defined as a body mass index (BMI) over 30, affects one-fifth of women in the UK [2] with the prevalence

increasing in both the general and pregnant population.

Obesity is a significant contributor to maternal deaths and women with a high BMI remain over-represented in all maternal deaths [3, 4]. Obese pregnant women also have a higher risk of a number of pregnancy complications, including miscarriage, pre-eclampsia, gestational diabetes, fetal macrosomia and stillbirth [5–14]. Maternal obesity can have a direct influence on mode of birth and postnatal morbidity. Obese women are more likely to receive medical interventions, including caesarean delivery and general anaesthesia [5]. The rate of induction of labour is

* Correspondence: a.m.pascall@stir.ac.uk

¹NMAHP Research Unit, University of Stirling, Stirling FK9 4LA, United Kingdom
Full list of author information is available at the end of the article



© 2015 Kerrigan et al. **Open Access** This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.

reported to be doubled for obese pregnant women, compared to non-obese women [15, 16]. Delay in the first stage of labour is significantly more common [17–20], with the risk ranging from 1.5 times to 3 times more likely. Obese women also have a significantly increased risk of caesarean section of between 2-fold to more than 3-fold [13, 15, 18, 19, 21–25], with the most common reason for caesarean section being delay during the first stage of labour, even after augmentation with oxytocin [17–19]. Caesarean section also carries additional risks for obese women and has a considerable impact on postnatal morbidity, with maternal obesity being an independent risk factor for post-caesarean infections [26].

Little is known about the benefits of delaying a decision for caesarean section to promote normal birth from women's or clinicians' perspectives. In 2011–12, there were 813,200 births in the UK [27]. In the UK the National Institute for Health and Care Excellence (NICE) have published guidance on caring for low-risk women and their babies during the intrapartum period. This offers evidence-based advice on the care of healthy women with uncomplicated pregnancies at low-risk of developing complications during labour and birth [28].

Additional publications specifically focussed on maternal obesity provide advice on the clinical management of obesity during pregnancy [29, 30]. They emphasise medical care for obese pregnant women, with the primary aim to promote safety. Whilst acknowledging that safety is of paramount importance, increasing medical intervention for these women may also increase the risk of complications, which could itself have detrimental effects. For example, the use of continuous electronic fetal monitoring has shown an association with an increased rate of both caesarean delivery and operative vaginal delivery [31] and caesarean section subsequently carries an increased risk of postpartum haemorrhage [7] and post-operative infection [26].

In the UK maternity care is provided through a network of birth settings, either consultant-led or midwifery-led. Midwives are involved in the provision of care to pregnant women during pregnancy, during labour and birth and in the postnatal period, in all birth settings. A telephone survey of 41 hospitals, conducted by the lead author prior to the commencement of this study explored to what extent guidelines for the intrapartum care of obese women were available in maternity hospitals across the UK. That survey found that the majority of hospitals had clinical guidelines for the obstetric management of obese women during the intrapartum period, however, only a small number made reference to midwifery care during labour. The majority of the content of the guidelines focussed on obstetric care, for example, recommending that birth take place on the consultant-led unit, the anaesthetist be informed on arrival to the labour ward, and continuous electronic

fetal monitoring during labour. Only three guidelines made any direct reference to normal birth. The dual problem of increasing birth rates and increasing rates of obesity makes this a significant problem for women's health and for NHS resources. It is imperative to improve both obese women's experience and outcomes of childbirth. However, there is evidence that midwives experience difficulties supporting obese women to have a more normal, physiological birth. Midwives find caring for obese women during labour challenging, in particular, the loss of 'normality' and the physical difficulties of providing care [32]. Obese pregnant women themselves report negative experiences of maternity care overall, experience feelings of guilt and many report prejudice and negative attitudes from staff when accessing maternity care [33, 34].

This study aimed to explore practitioners' experiences of providing intrapartum care to obese pregnant women. The specific objectives were;

- To obtain practitioners' experiences of caring for obese pregnant women,
- To identify the issues that practitioners face when caring for obese pregnant women,
- To identify how these issues impact on patient care,
- To identify possible solutions that could decrease the impact on care.

Method

The study used a qualitative methodology. Focus groups and individual interviews were conducted with health professionals who provided antenatal and/or intrapartum care to obese women, including Midwives, Obstetricians and Anaesthetists. The study was carried out in two National Health Service Hospitals, one in England, a large tertiary unit, with an annual birth rate of approximately 8000 and one in Scotland, a district general hospital with an annual birth rate of 5000 births. These two hospitals were chosen because they both served a large obese population and were willing to participate in the research. The local guidance for the care of obese women was similar at both hospitals. Ethical approval was gained prior to commencement of the study from the Health Research Authority, National Research Ethics Service Committee (12/NW/0631).

All midwives who provided antenatal and/or intrapartum care to obese women were sent an information pack about the research and were asked to indicate whether or not they were willing to participate using a reply slip. The response rate 30 %. Consultant Obstetricians and Anaesthetists were also sent a research information pack. This was followed up with a telephone call to ascertain if they wished to participate and arrange a mutually convenient time for an interview.

Focus groups were conducted with midwives and individual interviews were carried out with Obstetricians and Anaesthetists. Focus groups were chosen as an appropriate method for midwives as they usually work in teams and focus groups allow for more discussion and a larger sample size. Obstetricians were interviewed individually as they generally work individually and interviews were more convenient to arrange around obstetricians workload. Midwives who were unable to attend the focus groups, but wished to participate, were interviewed individually. An interview guide was used to guide the discussions and they were audio-recorded with consent (see Additional file 1).

The audio-recordings were transcribed verbatim by a professional transcription service. Transcripts were checked for accuracy against the audio recordings by AK. Data was analysed using a framework approach [35]. This involved a five stage process of (1) familiarisation, where the transcripts and study notes are read several times to identify recurrent themes; (2) identification of a thematic framework, where the main themes and sub-themes are sorted into a detailed framework; (3) indexing, where the thematic framework is applied to the data in order to label or index it; (4) charting, where the data is grouped according to the part of the framework they relate to, creating a series of charts and (5) mapping and interpretation, where the charts are used to define concepts, create typologies and identify associations between the themes. Two authors (AK and HC) undertook the lengthy processes of familiarisation and identification of an initial thematic index. This thematic framework was subsequently refined by two authors (AK

and CK) during the processes of charting, mapping and interpretation. Consensus was reached through discussion. Figure 1 depicts the relationship between emergent themes (and sub-themes) that lead to the overarching conceptual framework, which comprises three themes resulting in two key propositions. Table 2 shows the thematic framework of the findings

Results

Twenty-four health professionals participated across the two hospitals. Six Consultant Obstetricians and two Consultant Anaesthetists were interviewed individually. A total of 16 midwives participated in either a focus group or an individual interview, all of whom were regularly provided intrapartum care to obese women. See Table 1 below.

Table 2 shows the thematic framework of the findings. The overall interpretation 'Different approaches to obese birth offer opportunities to promote normal birth' was underpinned by three key emergent themes; Medicalisation of obese birth; promotion of normal obese birth; and the complexities and contradictions in staff attitudes and behaviours. These three themes and their sub-themes are presented in Table 2, with examples of some of the codes used during the analysis and some excerpts from the data.

The relationships between emergent themes (and sub-themes) are shown in Fig. 1. The lines depicting causation were informed by what is known in existing literature, with the final iteration originating directly from the data. These led to the overarching conceptual framework comprising of two key propositions. First, the routine

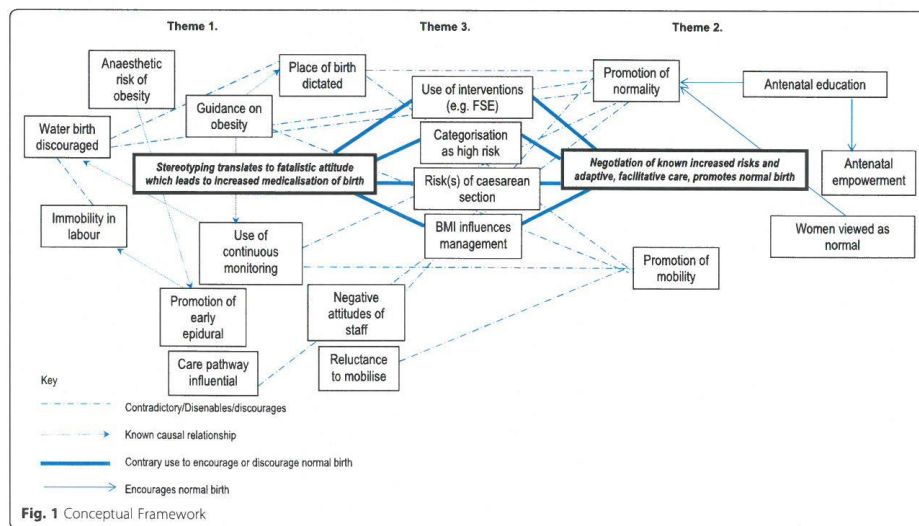


Table 1 Participant profile

	England	Scotland
Obstetrician	3	3
Anaesthetist	1	1
Midwife	10	6
Focus Group 1	3 midwives	-
Focus Group 2	4 midwives	-
Focus Group 3	-	4 midwives
Focus Group 4	-	2 midwives
Interviews	3 midwives	-

stereotyping of women categorised as obese leads to fatalistic staff attitudes and a pre-emptive medicalisation of birth as abnormal. Secondly, the care of women categorised as obese can be facilitative and adaptive to promote normal birth whilst negotiating known increased risks. These two propositions co-exist and are held in tension, but at the same time are not mutually exclusive, or associated with a particular professional group, leading to an element of fluidity. Moreover, as evident in theme 3 (middle ground) both could afford opportunities to promote normal birth.

Medicalisation of 'obese' birth

Place of birth

The current guidance [29] states that women with BMI over 35 should give birth in a consultant led unit and this was echoed by the midwives.

"Nationally the recommendation is that anyone with a BMI of 35 or more should be in consultant-led"
(M/W FG)

Whilst acknowledging the guidance, some midwives felt that although women with a raised BMI were 'not allowed' to give birth on the Midwifery Led Unit (MLU), they did sometimes achieve a normal birth.

"I had a woman that had a raised BMI that wasn't allowed on the MLLU because of a certain cut off that they had a long time ago, who came in, mobilised and pretty much delivered herself" (MW Int)

Negative attitudes of staff

The attitudes of staff towards obese women was discussed by both obstetricians and midwives and it was acknowledged that caring for obese women, particularly during the intrapartum period was viewed negatively, with many staff displaying a negative attitude towards the prospect of providing care.

"The minute you see somebody come through delivery suite who's very large you hear people 'oh, I don't want to look after her, don't give her to me.....so immediately they are negative.....so I don't know how they're going to be when they get the woman in the room" (MW Int)

One midwife expressed concern as to how the negative attitudes of staff affected the women they were caring for.

"They're already feeling negative about caring for her, so I don't know how that would then come across to the woman...." (MW Int)

Several reasons were suggested for this common attitude, and included the physical difficulties that are encountered for example:

Challenges monitoring the fetal heart

The practice of using continuous electronic fetal monitoring when caring for obese women during labour is common and was discussed and challenged by both midwives and obstetricians. Many practitioners were not able to recall any evidence for this use of continuous fetal monitoring.

"I can't remember it [obesity] being one of the things that we put down as an indicator for continuous monitoring" (Obs Int)

"Continuous monitoring...I don't think there is any evidence that says so" (Obs Int)

The use of continuous monitoring during labour was viewed as very restrictive for women and it was felt that this was detrimental to the promotion of normality and mobility during labour. Midwives felt that continuous fetal monitoring was more likely to restrain a woman to a bed during labour and medicalise their labour.

"...Continuous monitoring, that's going to put somebody on a bed before they've even started" (MW FG)

The challenges of both intermittent auscultation and continuous monitoring were acknowledged, with the need for the use of ultrasound to locate a fetal heart being common.

"Even intermittent auscultation is more difficult for the midwives to physically perform when the women are obese....You end up having to do ultrasounds to locate the heart...." (Obs Int)

One midwife described the difficulties she had performing continuous monitoring, being unable to confidently distinguish between the fetal heart rate and the maternal pulse rate.

Table 2 Thematic Framework

Interpretation: Different approaches to obese birth offer opportunities to promote normal birth					
Theme 1	Theme 2		Theme 3		
Medicalisation of obese birth	The promotion of normal 'obese' birth		Complexities and contradictions in staff attitudes and behaviours		
Place of birth	Place of birth impacts on mobility	Antenatal education	Importance of information-giving antenatally	Use of fetal scalp electrodes	FSE used to aid mobility
"We had a woman who wanted to sit on a ball because she was a home delivery, but had to be continuously monitored and they (staff) were unhappy to do it at first"	Normality influenced by place of birth	"I think we should be educating them about mobility and being mobile and trying to get them to the MLU"	Antenatal education about mobility	"I would preferably, be able to monitor the babe, put the FSE on, to make sure that if she wanted, she could be mobile to help the labour as well".	FSE viewed as an intervention by some but used to promote mobility by others
Negative attitudes of staff	Negative attitudes about women's size	Promotion of normality during labour	Acknowledge risk but promote normality same as anyone else	Risk of caesarean section	Risk of caesarean can influence care
"And the delivery of those patients, I think it's probably looked at negatively by the midwifery staff as well to an extent, because they are overweight they see them as 'oh, this person's going to be a problem'"	Caring for obese women viewed negatively	"We should be treating them the same, if not more so promoting normality"	Pro-active approach to normality	"I think people tend to play safe. I don't think I personally would agree with that...It's best to have a normal delivery and if it can be, you know, pushed to that stage, without taking much risk, I will do that. Rather than doing something, like ding a section for example"	Not all obese women have a caesarean
Challenges monitoring fetal heart	Technically difficult monitoring fetal heart	Promotion of mobility during labour	Promote mobility regardless of size	BMI influencing clinical management	BMI may influence decision-making for caesarean section
"I just had to stand there and I was trying to get something and half the time you didn't know if it was maternal pulse, it was very difficult"	Fetal heart monitoring is difficult	"I think basic care should be managed exactly the same. Like, cos any woman should be mobile in labour, you know, regardless of what they weigh"		"I don't feel that I do, but I do feel that some people probably make decisions where the lady's weight influences their decisions"	BMI may influence decision making positively
Reluctance to mobilise	Obese women less mobile in labour			Classification as high risk	High risk classification can be detrimental
"I think they're generally more difficult. They're more reluctant"	General reluctance to mobilise			"I think putting somebody in a high risk category actually doesn't do anybody any favours because then people tread very carefully and they start to think 'oh God, she's high risk.....I better make sure that nothing wrong happens here'"	Women view themselves as 'normal'
Discouragement of use of water	Water birth contraindicated because of size				
"Because at the moment women are excluded from water birth aren't they, who have a BMI over 35"	Water birth not an option				

"I just had to stand there and I was trying to get something and half the time you didn't know if it was maternal pulse....it was very difficult" (MW FG)

Women's reluctance to mobilise

One of the major difficulties encountered by midwives when caring for obese women during labour was motivating them to be mobile during labour and have an active birth, with many women wishing to be relatively immobile

during their labour. They found motivating them to get off the bed and move around to be particularly challenging.

"It's hard to get them up, it's hard to move them about" (MW FG)

The physical size of the women and the extra effort that it took to be able to mobilise was seen as a reason for the reluctance.

"I think sometimes that the very biggest ladies do tend to be a little bit more reluctant to do that [mobilise], only because you can see it just takes so much more effort for them to move" (MW Int)

However, some midwives recognised that although obese women were more likely to be less mobile during labour, they also acknowledged that some obese women were embarrassed that they found it more difficult to mobilise and even though they were less mobile, it was not necessarily through choice.

"I don't think they like being immobile. I think they find it embarrassing" (MW FG)

Discouragement of water birth

Finally, the discouragement of hydrotherapy and water birth for obese women was an important factor that contributed to the medicalisation of obese birth.

"No I don't think they are allowed in the pool" (MW FG)

The reasons for obese women being discouraged from using hydrotherapy for either analgesia or birth were commonly related to manual handling risks, in particular the need to evacuate the pool in an emergency

"I had a large lady a few weeks ago and she said to me 'oh I was told I could have a pool birth' and I said 'no, because it would be difficult to hear your baby and to get you out in an emergency" (MW FG)

Contrary to this, the multiple benefits of hydrotherapy for obese women were acknowledged, in particular the benefits of relative weightlessness and buoyancy to aid mobility during labour.

"One of the difficulties that people with high BMIs have is difficulty in changing positions...and to have somebody like that buoyant in water takes all the pressure off their pelvis....." (Obs Int)

"That's the difficulty with water birth isn't it? Because they are the ideal sort of group to benefit...the weightlessness" (MW FG)

The promotion of normal 'obese' birth

Contrary to the fatalistic attitudes of some midwives and obstetricians towards obese women in labour, the promotion of normal birth was widely discussed.

Antenatal education

Antenatal education was viewed as a key factor in the promotion of normal birth. Informing women during

pregnancy about normal birth and preparing them for labour was viewed as a fundamental part of antenatal education, in order to make women aware of what to expect.

"It's also about education isn't it? So that she knows what's coming, that she needs to be doing all the right things" (MW FG)

Some midwives spoke of the importance of educating women about mobility during labour, in order to prevent immobility on beds during labour.

"I think we should be educating them about mobility and about being mobile and trying to get them to the MLU" (MW Int)

Promotion of normality

Promoting normality during labour in an integral part of the midwife's role, regardless of the obstetric, medical or demographic history of the woman. The encouragement and promotion of normal birth was viewed as fundamental in the care of obese women. One midwife, whilst acknowledging the guidance, felt it was the midwife's role to actively promote normality birth for obese women, in order for them to optimise their chance of normal birth.

"I think we should be encouraging them to have more of a normal birth" (Obs Int)

"Rather than sitting back and just saying the guidelines say this; let's encourage it, let's promote it" (MW FG)

Promotion of mobility

Similarly, the promotion of mobility during labour was acknowledged as an essential part of intrapartum care for obese women.

"I'd try to keep her either active on a ball or active over the side of the bed...I would keep her as upright as possible" (MW Int)

Midwives felt that mobility has benefits for all women in labour, with obese women in particular, benefitting significantly from being mobile during labour and birth in order to overcome the risks of prolonged labour and operative birth.

"I think possibly if you keep obese pregnant women upright and mobile you're probably going to get a better outcome, you're probably going to get a nice delivery" (MW FG)

"I think it wouldn't be difficult to promote, I think it's the best thing to promote mobility in that population, they need to be upright" (MW FG)

Complexities and contradictions in health professionals' attitudes and behaviours

The final theme is that of the complexity surrounding the conflicting attitudes to some of the associated risks of obesity and the use of some medical technologies when caring for obese women during labour and birth. Several contradictions existed towards the use of medical interventions and the associated risk of caesarean section for obese women, as these were viewed as either prohibitive to or facilitative of normal birth.

The use of a fetal scalp electrode

The use of a fetal scalp electrode (FSE) to monitor fetal heart rates in obese women was widely discussed and there were two very distinct attitudes towards their use in practice. The use of an FSE was commonly seen as a medical intervention associated with high-risk care and could potentially prohibit the promotion of normality

"Unless they've put an FSE on, which is very interventional really, isn't it, when you're trying to promote normality" (MW FG)

There was also a common assumption that the application of an FSE would lead to a higher incidence of immobility during labour and it was often cited as a reason why women were not mobile in labour.

"They tend to end up with fetal scalp electrodes on and you're automatically medicalising labour in a group of women that we know, probably don't labour as well, so would benefit greatly from being more mobile" (Obs Int)

"Although theoretically if you've got a scalp clip on you are supposed to be more mobile, but I don't necessarily see that transferring into practice" (Obs Int)

Contrary to the negative attitudes surrounding the use of FSE, some midwives and obstetricians viewed their usage positively and whilst acknowledging it as an intervention, felt that they could be used as a catalyst for normal birth, in particular, saw the use of an FSE as an effective way to increase mobility.

"We tend to use FSEs quite a lot if we've got somebody that's on continuous monitoring, so that we can get them up" (MW FG)

"Put an FSE on, to make sure that if she wanted, she could be mobile" (MW Int)

This was because it is a more accurate way of recording the FH compared to an abdominal transducer and did not lose the contact when women were mobile.

Risk of caesarean section

The risks of and the decision for caesarean section were discussed widely amongst obstetricians. Some obstetricians reported a much lower threshold for making a decision for caesarean section than they would with a non-obese woman, basing decisions on the safety of the woman. One obstetrician felt that decisions to proceed to caesarean section during labour varied widely between each individual obstetrician, with some obstetricians trying to avoid the need to perform a caesarean section, because of the increased risks associated with operative birth.

Conversely it was felt that some obstetricians make decisions for caesarean section based on the time of day and the availability of consultant staff, with decisions made earlier than they would normally do for a non-obese woman.

"I do feel that some people probably make decisions where the lady's weight influences their decision. So whether they don't do a caesarean as soon as they should do because they are trying to avoid doing a caesareanor they do it sooner than they should do because they want to do it when the consultant staff are available" (Obs Int)

Interestingly, one obstetrician suggested that they would in fact allow more time for an obese woman to labour before making a decision for caesarean section, in order to avoid the need for caesarean section and the associated risks, with an aim to facilitate normal birth.

"No I think we'd give it the same, in fact I might even give it longer, it's not much fun doing a caesarean section on a very obese patient, so no, I don't think we jump in early" (Obs Int)

BMI influencing clinical management

The influence that a woman's BMI had on the clinical management of labour and birth was discussed by a number of obstetricians. This was another area that demonstrated the presence of contrasting views, with maternal BMI seen to influence clinical management both in the prohibition and facilitation of normal birth.

"I do feel that a woman's size can influence your management and it's very difficult to do that because

obviously the woman's safety is paramount, but it probably does then affect the way you manage her"
(Obs Int)

The attitude towards obese woman directly influenced the decision making process, with perceptions that obese women could be potentially problematic and therefore had significantly influenced clinical decision-making

"I would suspect it is a way in which we manage their care and I suspect we do see them as a problem..."
(Obs int)

Classification as 'high-risk'

Obese, pregnant women are currently widely regarded as 'high risk' in obstetric terms, because of the higher likelihood of a number of antenatal, intrapartum and postnatal complications, but this can significantly impact on the management of intrapartum care. It was felt amongst Obstetricians that classification as 'high-risk' is appropriate for women with raised BMI because of the increased risk of intrapartum complications.

"They are at higher risk of complications of labour, so I would think yes, yes they are [high risk] (Obs Int)

Interestingly, although some obstetricians and midwives did not disagree that obese pregnant women were at higher risk of complications, some felt that labelling them as 'high risk' was particularly negative and could be detrimental to their care and ultimately their chances of normal birth

"I think putting somebody in a high risk category actually doesn't do anybody any favours" (MW FG)

Some midwives felt that this classification directly affected the woman's attitude and motivation for normal birth.

"I think a lot of them come in and they've been told, the risk is this, the risk is that, so they have the mindset, then that's what's going to happen to me"
(M/W Int)

Whilst others acknowledged that although the risks were higher for obese women, women should be encouraged to have a positive attitude to birth and ultimately empowered to try and overcome the risks and achieve a normal birth. The way the information on the associated risks was delivered was seen as a crucial factor in this.

"I know the risks are much higher, but they don't all and if you get it across to people that, think positively, you know" (MW Int)

Discussion

The aim of this study was to explore practitioners' experiences of providing intrapartum care to obese pregnant women. Our findings described the experiences of health professionals, when caring for obese women during labour, including the medicalisation of obese birth, the promotion of normality for obese women and the complexities of health professionals' behaviour surrounding obese women in labour.

Promotion of normal birth

In the UK, successive policy documents have explicitly promoted normal birth for healthy women and their babies for over two decades [36, 37]. Our earlier survey found the promotion of normal birth is not included in the majority of clinical guidelines for the care of obese pregnant women. However, despite this, midwives and obstetricians who participated in this study described the promotion of normality and normal birth as an integral part of their role when caring for obese women during labour. Antenatal education for obese women was viewed by midwives as an essential aspect in this, in order to allow women to have realistic expectations of labour and birth and promote normal birth. This is supported by Schott & Priest who suggest that if you prepare women for the physical and emotional realities of labour and birth, they will be confident that what they are actually experiencing is normal and are more equipped and able to cope [38]. The national guidance on obesity recommends that women should be informed of the risks associated with obesity during pregnancy and advised on how to minimise them. It states that women should be made aware of the potential difficulties with caesarean section, but offers no guidance on how to minimise the need for caesarean section [29]. This is not just specific to obese women, as currently there is no guidance available on minimising the risk of caesarean section, regardless of Body Mass Index, however, all pregnant women are offered the opportunity to attend antenatal education in order to prepare for labour and birth.

The promotion of mobility during labour was viewed as an essential aspect of their care, in order to minimise the associated risks of prolonged labour and operative birth and midwives felt that if women were advised during the antenatal period of the importance of mobility during labour, they would be more likely to mobilise from the outset. Mobilisation during labour is widely acknowledged as a way of optimising the likelihood of normal birth [39, 40] and this is reflected in the practices and attitudes described by the midwives, who viewed it as an integral part of their care, despite the challenges faced with this population. Interestingly, Singleton & Furber found that although midwives advocated the need for mobilisation, they felt obese women were not able to remain mobile during labour because of the associated

risks of obesity during labour, which restricted their options [32].

In order to support and encourage mobilisation during labour and the promotion of normal birth, techniques used to promote normal birth were described. Techniques such as the use of an FSE to allow women to be fully mobile during labour, whilst continuously monitoring the fetal heart rate are commonly utilised with obese women, with many seeing their usage as a positive intervention and a potential catalyst for normal birth. However there was conflicting views of this practice, with some practitioners viewing the use of an FSE as a medical intervention, with the potential to inhibit mobility and normality. The wide spread use of FSE in obese women reflects the national guidance that suggests that fetal scalp electrodes should be utilised if adequate fetal heart monitoring proves challenging [29]. Many midwives adopted this guidance into their practice and whilst acknowledging the use of an FSE to be an intervention, they utilised this method of fetal monitoring to prevent women becoming immobile in order to adequately monitor the fetal heart.

Conflicting attitudes

The apparent lack of consensus surrounding the clinical management of labour and birth for obese women, particularly caesarean section, is interesting. Some obstetricians reported a much lower threshold for making a decision to proceed to caesarean section than they would with a non-obese woman, whilst other obstetricians reported actively trying to avoid a caesarean section because of the increased associated risks of operative birth in this population.

It could be argued that the increased risk of caesarean section in obese women [18–20], should be used to encourage the facilitation of normal labour and birth. The most common reason for caesarean section is delay during the first stage of labour, even after augmentation with oxytocin [17–19] and therefore, the facilitation of mobility during labour and the use of mobility aids may prevent delay during labour and therefore the need for caesarean section. Some obstetricians reported trying to avoid a performing a caesarean section on an obese woman, unless absolutely necessary and would often allow more time for labour to progress before making a decision that operative delivery was necessary. The facilitation of mobility during labour, would minimise the risk of delay and therefore the need for caesarean section [41].

At the same time it was evident that negative attitudes towards obese women were directly influencing clinical decision making processes with obese women commonly viewed as problematic and decisions to proceed to caesarean section were made a lot earlier compared to non-obese women, in order to attempt to minimise additional intrapartum or postnatal complications. In this situation, it could be argued that the increased risk of

caesarean section encouraged obstetricians to proceed to caesarean section sooner than they would with a non-obese woman, preventing women from optimising their chance of normal birth. Interestingly the negative attitudes towards caring for obese women was attributed to colleagues. None of the participants admitted to displaying negative attitudes themselves.

Medicalisation of birth

The medicalisation concept has been variously theorised in medical sociology in general [42, 43] and in relation to childbirth in particular [44, 45]. Whilst early medicalisation of childbirth literature was almost exclusively critical, by the mid-1980s there was increasing recognition of how these processes are co-constituted by clinicians' and women themselves. Over the last two decades there has been a dearth of medicalisation theorising in relation to childbirth [46]. The present study highlights the need to revisit the medicalisation concept in relation to different groups of women's contemporary experiences of childbirth. This study challenges the old medicalisation of childbirth dichotomy between medical and natural (midwifery) models of childbirth for all women. Our findings demonstrate the complex and contradictory use of technology to promote normal birth by midwives and obstetricians, specifically for obese women.

The medicalisation of obese women during labour and the challenges to providing care was discussed. Some participants expressed the view that obese women should be viewed as 'high-risk' and the care should be medicalised, reflecting the UK national guidance. However, some midwives expressed an opposing view and viewed the promotion of normality to be an integral part of the care they provide to obese women, challenging the medicalisation of care advised in the national guidance. It was widely acknowledged that continuous monitoring of the fetal heart was one of the biggest challenges and led to the medicalisation of labour and birth. Many practitioners challenged this practice and were unable to confidently recall the evidence on which this practice is based. The national guidance on the management of obesity during pregnancy (page 12) is quite ambiguous, suggesting that fetal heart rate monitoring in obese women can be challenging and 'close surveillance is required with recourse to fetal scalp electrode or ultrasound assessment of the fetal heart if necessary.' [29], however, it does not explicitly state that continuous monitoring is necessary. The accepted practice of continuous monitoring could be questioned and challenged as it has a significant impact on the management of labour and may lead to unnecessary intervention and medicalisation of birth.

The discouragement of water birth for obese women was viewed as a contributing factor to the medicalisation of care for obese women. The reasons for obese women

8. Stephansson O, Dickman P, Johansson A, Cnattingius S. Maternal weight, pregnancy weight gain and the risk of antepartum stillbirth. *Am J Obstet Gynecol*. 2001;184(3):463–9.
9. Cedergren MI. Maternal morbid obesity and the risk of adverse pregnancy outcome. *Obstet Gynecol*. 2004;103(2):219–24.
10. Kristensen J, Vestergaard M, Wisborg K, Kesmodel U, Secher NJ. Pre-pregnancy weight and the risk of stillbirth and neonatal death. *Br J Obstet Gynaecol*. 2005;112(4):403–8.
11. Nohr EA, Bech H, Davies MJ, Frydenberg M, Henriksen TB, Olsen J. Prepregnancy, obesity and fetal death. *Obstet Gynecol*. 2005;106(2):250–8.
12. Robinson H, O'Connell C, Joseph K, McLeod N. Maternal outcomes in pregnancies complicated by obesity. *Obstet Gynecol*. 2005;106(6):1357–64.
13. Heude B, Thiebaugeorges O, Goua V, Forhan A, Kaminski M, Foliguet B, et al. Pre-pregnancy body mass index and weight gain during pregnancy: relations with gestational diabetes and hypertension, and birth outcomes. *Matern Child Health J*. 2011;16:335–63.
14. Scott-Pillai R, Spence D, Cardwell C, Hunter A, Holmes V. The impact of body mass index on maternal and neonatal outcomes: A retrospective study in a UK obstetric population, 2004–2011. *BJOG*. 2013;120(8):932–9.
15. Kiran TS, Hemmadi S, Bethel J, Evans J. Outcome of pregnancy in a woman with an increased body mass index. *BJOG*. 2005;112:768–72.
16. Dennison FC, Price J, Graham C, Wild S, Liston WA. Maternal obesity, length of gestation, risk of postdates pregnancy, and spontaneous onset of labour at term. *BJOG*. 2008;115:720–5.
17. Vahatian A, Zhang J, Troendle JF, Savitz DA, Siega-Riz AM. Maternal prepregnancy overweight and obesity and the pattern of labour progression in term nulliparous women. *Obstet Gynecol*. 2004;104(5):943–51. Part 1.
18. Zhang J, Bricker L, Wray S, Quenby S. Poor uterine contractility in obese women. *BJOG*. 2007;114:343–8.
19. Kerrigan AM, Kingdon C. Maternal obesity and pregnancy: A retrospective study. *Midwifery*. 2010;26:138–46.
20. Bogaerts A, Witters I, Van den Bergh B, Jans G, Devlieger R. Obesity in pregnancy: Altered onset and progression of labour. *Midwifery*. 2013;29:1303–13.
21. Crane SS, Wojtowycz MA, Dye TD, Aubry R, Artal R. Association between pre-pregnancy obesity and the risk of caesarean delivery. *Obstet Gynecol*. 1997;89(2):213–6.
22. Kaiser PS, Kirby RS. Obesity as a risk factor for caesarean section in a low-risk population. *Obstet Gynecol*. 2001;97(1):39–43.
23. Sheiner E, Levy A, Menes TS, Silverberg D, Katz M, Mazor M. Maternal obesity as an independent risk factor of caesarean delivery. *Paediatr Perinat Epidemiol*. 2004;18(3):196–201.
24. Dempsey JC, Ashiny Z, Qiu CF, Miller RS, Sorensen TK, Williams MA. Maternal pre-pregnancy overweight status and obesity as risk factors for caesarean delivery. *J Matern Fetal Neonatal Med*. 2005;17(3):179–85.
25. Chu SY, Kim SY, Scmid CH, Dietz PM, Callaghan WM, Lau J, et al. Maternal obesity and risk of caesarean delivery: A meta-analysis. *Obes Rev*. 2007;8:385–94.
26. Myles TD, Gooch J, Santolaya J. Obesity as an independent risk factor for infectious morbidity in patients who undergo caesarean delivery. *Obstet Gynecol*. 2002;5(1):959–64.
27. Office for National Statistics. Statistical bulletin: Annual mid-year population estimates 2011 and 2012. 2013. Accessed at <http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk%2Dengland-and-wales%2Dscotland-and-northern-ireland/mid-2011-and-mid-2012/stb-%2Dmid-2011-%2Dmid-2012-uk-population-estimates.html>.
28. National Institute for Health and Care Excellence. *Intrapartum care: care of healthy women and their babies during childbirth*. London: National Institute for Health and Care Excellence; 2014.
29. Centre for Maternal and Child Enquiry and Royal College of Obstetricians and Gynaecologists. *Management of women with obesity in pregnancy. CMACE and RCOG joint guidance*. London: CMACE and RCOG; 2010.
30. National Institute for Health and care excellence. *Weight management before, during and after pregnancy. NICE public health guidance 27*. London: National Institute for Health and Care Excellence; 2010.
31. Thacker S, Stroup D, Chang M. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring for fetal assessment during labour. *The Cochrane Library* issue 3. Oxford: Update software; 2006.
32. Singleton G, Furber C. The experiences of midwives when caring for obese women in labour, a qualitative study. *Midwifery*. 2014;30:103–11.
33. Nyman VM, Prebensen AK, Flesner GEM. Obese women's experiences of encounters with midwives and physicians during pregnancy and childbirth. *Midwifery*. 2010;26(4):424–9.
34. Mulherin K, Miller Y, Barlow F, Diedrichs P, Thompson R. Weight stigma in maternity care: women's attitudes, experiences and care providers' attitudes. *BMC Pregnancy Childbirth*. 2013;13:19.
35. Ritchie, J. & Spencer, L. Qualitative data analysis for applied policy research in Bryman, A., Burgess, R. G. [eds.] *Analyzing qualitative data*; London: Routledge 1994. pp.173- 194.
36. Department of Health. *National Service Framework for Children, Young People and Maternity Services: Maternity Services*. London: Department of Health; 2004.
37. Department of Health. *Maternity Matters: Choice, access and continuity of care in a safe service*. London: Department of Health; 2007.
38. Schott J, Priest J. *Leading antenatal classes*. 2nd ed. Oxford: Books for Midwives; 2002.
39. Kennedy H, Grant J, Walton C, Shaw-Baltista J, Sandall J. Normalising birth in England: A qualitative study. *J Midwifery Womens Health*. 2010;55:262–9.
40. Newburn M. Promoting and protecting normal birth. *Pract Midwife*. 2009;12:4–6.
41. Lawrence A, Lewis L, Hofmeyr GJ, Dowswell T, Styles C. Maternal positions and mobility during first stage of labour. *Cochrane Database Syst Rev*. 2009;2:CD003934.
42. Zola IK. Medicine as an institution of social control. *Social Rev*. 1972;20(November):487–504.
43. Conrad P. *The medicalisation of society: On the transformation of human conditions into treatable disorders*. Baltimore: Johns Hopkins University Press; 2007.
44. Oakley A. *The captured womb: A history of the medical care of pregnant women*. New York: Basil Blackwell Inc; 1984.
45. Van Teijlingen, E. A Critical analysis of the medical model as used in the study of pregnancy and childbirth *Sociological Research Online* 10 (2). 2005. Accessed at www.scoresonline.org.uk/10/2/teijlingen.html
46. Brubaker SJ, Dillaway HE. Medicalisation, natural childbirth and birthing experiences. *Sociology Compass*. 2009;3(1):31–48.
47. Swann L, Davies S. The role of the midwife in improving normal birth rates in obese women. *Br J Midwifery*. 2012;20(1):7–12.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

