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**An exploratory Interpretative Phenomenological Analysis (IPA) of childbearing women's perceptions of risk associated with having a high Body Mass Index (BMI)**

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## **An exploratory Interpretative Phenomenological Analysis (IPA) of childbearing women's perceptions of risk associated with having a high Body Mass Index (BMI)**

### **Abstract**

**Background:** In 2016, the World Health Organization (WHO) labelled 13% of the world's adult population as obese. This increase in obesity is accompanied by mortality and morbidity problems, with *maternal obesity* and its accompanying *risk* for mother and infant requiring to be carefully managed.

**Aim:** To explore childbearing women with a high BMI (>35kg/m<sup>2</sup>) perceptions of risk and its potential impacts upon pregnancy and outcome.

**Method:** Qualitative Interpretative Phenomenological Analysis (IPA) was used to gain deeper understanding of the lived experiences of childbearing women with a BMI>35kg/m<sup>2</sup> and perceptions of their risk and potential pregnancy outcome.

**Findings:** One of the superordinate themes that emerged was (1) *Risk or no risk*, and its associated three subthemes of (1a) *Emotional consequences of her risky position*, (1b) *Recognition of high-risk complications-finally sinking in*, and (1c) *Accepting the risk* **body**.

**Recommendations for practice:** In general, health care professionals are uncomfortable about discussing obesity-associated risks with pregnant women. The participants in this study did not classify themselves as obese, with this absence of acknowledgement and 'risky talk' leaving participants' unaware of their obesity-associated risk. This downplaying of obesity related talk requires to be corrected, simply because women in denial will perceive no need to engage with health promotion messages. In response, directives are required to be embedded into policy and practice.

**Conclusion:** Specific training is required to teach maternity care professionals how to have difficult, sensitive conversations about obesity related risks with childbearing women with high BMI's. In addition, this risk information needs to be accompanied by relevant advice and support.

**Key words:** Body Mass Index (BMI), childbearing women, Interpretative Phenomenological Analysis (IPA), midwives, obesity

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## Introduction

In 2016, 13% of the world's adult population (11% of men/15% of women) were labelled obese (WHO, 2018) . Obesity is associated with an increased risk of mortality and morbidity for both mother and baby (Scott-Pillai et al., 2013), maternal obesity and risk require to be carefully managed by midwives. The Foresight Report (Butland et al., 2007) predicts that by 2050, 70% of girls in the UK will be overweight or obese, with just 30% in the healthy Body Mass Index (BMI) range. One challenge surrounding this will be the impact upon reproductive health for girls with a high BMI (>35kg/m<sup>2</sup>). Data from England, Scotland and Wales indicates an increasing trend towards obesity in early pregnancy, with just 47.3% of pregnant women having a BMI within normal range (18.5-25) and 21.3% having a booking BMI of >30 (Royal College of Obstetricians and Gynaecologists, 2017) .

Obesity during pregnancy creates higher risk of developing gestational diabetes (Andreasen et al., 2004; Linne, 2004; Marchi et al., 2015; Scott-Pillai et al., 2013) , hypertension, thromboembolism, miscarriage (Linne, 2004; Scott-Pillai et al., 2013) , requirement for caesarean section, instrumental delivery, postpartum haemorrhage, and wound infection (Marchi et al., 2015; Scott-Pillai et al., 2013) . Women with BMI's (>35mg/M<sup>2</sup>) are also less likely to breastfeed and discontinue early (Donath and Amir, 2000; Marchi et al., 2015). For the infant, maternal obesity increases risk of pre-term birth, being large-for-dates, developing congenital anomalies (e.g., spina bifida and heart defects), and incurring perinatal death (Heslehurst et al., 2008; Marchi et al., 2015; Scott-Pillai et al., 2013). Scott-Pillai et al. (2013) demonstrate correlations between increasing BMI and adverse outcome, which is more likely to result in prolonged hospital stay and increased infant admission rates to the neonatal unit. Managing problems associated with obesity during childbearing also has cost implications for the National Health Service (NHS) (Heslehurst et al., 2008).

The NHS Litigation Authority Clinical Negligence Scheme stipulates that NHS Health Boards/Trusts must demonstrate actions taken to reduce risks for obese women (McGlone and Davies, 2012) , which are based upon joint CMACE/RCOG *Management of Women with Obesity in Pregnancy* guidelines (Modder and Fitzsimons, 2010) . This document provides guidance about how to manage these women throughout their pregnancy journey, with an accompanying recommendation that women with a BMI (>35kg/m<sup>2</sup>) give birth in a 'consultant led unit.' In response,

women with high BMI's in Scotland are labelled 'high-risk' and are managed within a consultant led 'medical model' designed to ensure close surveillance (NHS Quality Improvement Scotland, 2009) . Hence, the pregnancy journey is labelled 'high-risk' for these women, with discussions surrounding 'risk' commencing at booking, which is a time when trusting relationships begin to develop with midwives (Modder and Fitzsimons, 2010).

Smith and Lavender (2011) conducted a meta-synthesis, which focused upon women with a high BMI experiences of maternity care, with this paper highlighting that many experience depersonalization through medicalization of care. Also, Nyman et al. (2010) found that the participants with a high BMI in their IPA study held perceptions that their maternity care focused upon physiological risk, which increased their awareness of their high-risk status. This finding is important precisely because women's self-perception of risk may affect subsequent decisions they make during pregnancy. Of relevance to the study herein, is the dearth of evidence surrounding pregnant women with a high BMI perceptions of their own risk status. It has been shown that women's appraisal of 'risk to self' is influenced by information received from health care professionals (Cannella et al., 2013) , with Keely et al. (2011) highlighting certain challenges encountered by health professionals around how to have 'sensitive discussions' about risk and weight management.

Studies which have focused upon understandings of obesity related risk during pregnancy, indicate that women generally lack awareness (Brooten et al., 2012; Gaudet et al., 2011; Kominiarek et al., 2010; Nitert et al., 2011; Okeh et al., 2015; Shub et al., 2013). Both objective and subjective elements surround risk perception, with individuals rarely processing statistical odds (Tversky and Kahneman, 1974). Only two studies were found to focus upon risk perception (de Jersey et al., 2015; Keely et al., 2011) , from which it is apparent that pregnant women with high BMI's do not accurately interpret their high-risk label. Also at the time of this study, there were no longitudinal studies identified that have examined women's changing perceptions of risk from having a high BMI across differing time points during pregnancy. Despite this dearth of evidence, there is an expectation that all pregnant women with high BMI's will comply with standardized pathways of maternity care provision. Before assuming that women with a BMI (>35kg/m<sup>2</sup>) will comply with maternity care on offer, midwives must first understand what their perceptions of risk are and of developing complications during their pregnancy

journey. With this in mind, the aim of this study was to explore childbearing women with a high BMI (>35kg/m<sup>2</sup>) perceptions of risk and its potential impacts upon pregnancy and outcome.

Commented [DA2]: Really nice introduction.

## Method

A qualitative Interpretative Phenomenological Analysis (IPA) was used to identify women with a high BMI (>35kg/m<sup>2</sup>) perceptions of risk and what this meant to them. Phenomenology is a philosophical approach to the study of experience and is concerned with the study of experience as it occurs for that individual person (Smith, Flowers & Larkin 2009). There are two main different schools of thought in phenomenological philosophy, namely Edmond Husserl's (1859-1938) descriptive or eidetic phenomenology and Martin Heidegger's (1889-1976) hermeneutics or interpretative phenomenology. Husserl's own epistemological belief placed more emphasis on describing the "essence" or structure of that experience, rather than how it was experienced by the individual (Smith et al., 2009). In contrast Heidegger was more concerned with the ontological question of being in the world embodied in the social world surrounded by people, language and culture. Heidegger (1889-1976) rejected notion of separating consciousness from the lived world and as a result took a more interpretative stance and in efforts to answer the question of being (Smith et al., 2009). In recognition that risk is not a static objective phenomenon, with an assumption that perceptions of vulnerability may change across time, a longitudinal IPA approach was taken (Lupton, 1999). The IPA approach was selected because it places the individual at the heart of the experience and acknowledges how they can be influenced by culture, history, social interactions, and language (Shinebourne, 2011; Smith et al., 2009). IPA provided an opportunity to uncover the embodied experiences of high-risk childbearing women with BMI's (>35kg/m<sup>2</sup>) perceptions of risk, with a rich interpretative account uncovering beliefs surrounding level of obstetric risk (the phenomenon). IPA draws on three key areas of philosophy, which includes phenomenology, hermeneutics and idiography. Phenomenology is made up of two parts, is derived from the Greek "*phenomenon*" and "*logos*", and is about examining meaning that is perhaps not obvious (Smith et al., 2009). IPA methodology is idiographic, given that it is committed to uncovering in depth phenomena. Hermeneutics is the study of theory and interpretation which involves generating a deeper understanding of the meaning of the phenomenon

under study (Smith et al., 2009). Ethics approval was granted by the University Research Committee, NHS Ethics and the local Research and Development Committee.

Participants

Purposive sampling was used to recruit (n=7) primigravida and multiparous women from a community midwife led clinic in Scotland. Inclusion criteria incorporated the woman having a BMI (>35kg/m<sup>2</sup>) at time of booking and being >18 years of age. Those with a known fetal abnormality or psychological disorder were excluded. To view participants' demographic data (see *Table 1*).

TABLE 1 Demographics of study participants

Participant Pseudonym	BMI	HADS	Parity	Occupation
Participant 1- Ellis	35.5 kg/m <sup>2</sup>	A = 0 D=4	Primigravida	Bank Clerk
Participant 2 Erin	38.3 kg/m <sup>2</sup>	A=5 D=1	Primigravida	Mental health Practitioner
Participant 3- Clare	35.5 kg/m <sup>2</sup>	A= 4 D= 2	Para 1	Full time mother
Participant 4- Anna	38 kg/m <sup>2</sup>	A=2 D=0	Para 1	Full time mother
Participant 5- Emily	43 kg/m <sup>2</sup>	A=2 D=2	Primigravida	Bar Manager
Participant 6- Stephanie	35.9 kg/m <sup>2</sup>	A=1 D=1	Para 1	Care support worker
Participant 7- Mirren	36.7 kg/m <sup>2</sup>	A=2 D=2	Para 1	Full time mother

(A= anxiety, D = depression) \*Pseudo names have been used

### Data-collection

Study information sheets were issued at booking and the woman contacted 3–5 days later by telephone. Post informed consent, an appointment for interview was organized and the GP and Community Midwifery Team informed, so if needed they could provide additional support. Since underlying anxiety and/or depression can influence an individual's perception of risk (Zigmond and Snaith, 1983), the Hospital Anxiety Depression Scale (HADS) was issued for purpose of excluding individuals with mild-severe anxiety and/or depression. Women with scores (8-10) or above in each subscale (anxiety & depression) were excluded from participating in the study, with only one potential participant disqualified.

### The interviews

A longitudinal approach was taken, which involved semi-structured interviews being conducted at 3 time points:

- (1) Between 18-22 weeks of pregnancy.
- (2) Between 34-36 weeks of pregnancy.
- (3) Between 10-15 postnatal days.

The interview schedule was designed to be inductive in nature, utilizing broad, open-ended questions such as *Did you see yourself as high-risk? What does high-risk mean to you?* The schedule was designed to be flexible in nature to enable the participants to direct the content of the interview. Clarification was sought as necessary. Interviews were conducted in the woman's home, lasting between 28-51 minutes, on average of 40 minutes long, and were recorded.

### Data-analysis

Data was transcribed and analyzed according to Smith et al. (2009), with use of the hermeneutic circle providing opportunity to move back and forth across case studies to identify emerging themes. Transcripts were read and re-read, whilst synchronously listening to the audio file and appraising field notes. First, semantic content and language was explored. Second, an interrogative approach was taken to analyze comments. Third, the emerging theme and connections were linked, with the superordinate theme identified and patterns drawn. This proved to be challenging, with a large amount of data generated. This stage manifested one hermeneutic



circle, where the data were broken into smaller parts and represented in the form of exploratory comments. From the data set produced, emergent themes were identified and documented in the left hand margin. The development of the emergent themes involved more interpretation on my part of the researcher. Smith et al. (2009) acknowledge that emergent themes are a representation of a cylindrical process, whereby we understand the whole by breaking the data down into smaller parts, but within the hermeneutic circle. As such the smaller parts are best understood by looking at the whole. The aim during this stage was to avoid being too descriptive, but to provide a deeper level of analysis, which demonstrates a combination of hermeneutics of empathy and suspicion (Smith et al., 2009). For each case study, the superordinate theme and sub-themes were established across time point one, then time points two and three. The three time points were then closely examined for changes. The key superordinate themes across all seven case studies were mapped. A second researcher was shown the superordinate themes identified in just one case study and was asked to examine the remaining six case studies to categorize connections. Finally, the superordinate themes were examined across the three time points to examine for changes in perceptions across time, and convergence and divergence between findings (Smith et al., 2009). To enhance rigor, comprehensiveness and credibility, the consolidated criteria for reporting qualitative research (COREQ) checklist (Tong et al., 2007) was used during the write-up to report relevant aspects of the research team, study findings, context, analysis and interpretation.

Shaw (2010) concurs that research with the power to influence changes has the responsibility to employ reflexivity as each and every one of us experiences and interprets the world from our own particular lens. Therefore, a reflexive diary was employed throughout the study to illustrate the researcher's journey throughout the data analysis stage. The interpretative process of data analysis was circular, given that to understand the women's' experiences the researcher had to move back and forth between their own standpoint and understanding and what emerged from the research process, to illuminate a shared understanding (Wojnar & Swanson,2007).

## Findings

There were four superordinate themes that emerged from the data collection including *Choice, Continuity and Control, Me and My body, No Risky Talk and Risk or no Risk*. Herein this publication will focus on the superordinate theme *Risk or no Risk*, as the subtle changes in risk perception captured by the longitudinal approach taken were more visibly apparent here. Hence (1) *Risk or no risk*, and 3 subthemes of (1a) *Emotional consequences of her risky position*, (1b) *Recognition of high-risk complications - finally sinking in*, and (1c) *Accepting the risk body* will be discussed. Pseudonyms were used to protect participants' identity (see *Table 2*).

**Commented [DA3]:** Gail, I think you should say that there were multiple superordinate themes which emerged from data collection including X, Y and Z. Herin, you focus on one of these and say why this particular one is important and that the results of the others will be presented elsewhere?

TABLE 2 Superordinate theme and sub-themes

Superordinate theme	Sub-themes
(1) Risk or no risk?	(1a) Emotional consequences of her risky position (1b) Recognition of high-risk complications - finally sinking in? (1c) Accepting the risk body

### (1) *Risk or no risk*

Six out of seven participants experienced complications, many of which are associated with increased BMI (*Table 3*).

TABLE 3: Participants Birth Outcomes

Participant	BMI	Parity	Outcome	Complications
Participant 1 Ellis	35.5kg/m <sup>2</sup>	Prim gravida	Emergency caesarean section, live male 3.628 kg, bottle feeding	Induction of labour for reduced fetal movements and unexplained episodes of vaginal bleeding, wound infection
Participant 2 Erin	38.3kg/m <sup>2</sup>	Prim gravida	Emergency caesarean section, live male 4.173 kg, bottle feeding	Induction of labour for reduced fetal movements, Increased blood pressure, postpartum haemorrhage > 1000ml blood loss, baby admitted into neonatal unit for weight loss, breastfeeding unsuccessful
Participant 3 Claire	35.5kg/m <sup>2</sup>	Para 1	Spontaneous vaginal birth, live female 3.683 kg, bottle feeding	Induction of labour for reduced fetal movements, vaginal bleeding and separation of symphysis pubis dysfunction
Participant 4 Anna	38 kg/m <sup>2</sup>	Para 1	Spontaneous vaginal birth, live female 3.583 kg, bottle feeding	No complications
Participant 5 Emily	43kg,m <sup>2</sup>	Prim gravida	Elective caesarean section, live male 3.686 kg, breast feeding	Pre –eclampsia ,Obstetric cholestasis, baby admitted into neonatal unit for infection
Participant 6 Stephanie	35.9 kg/m <sup>2</sup>	Para 1	Emergency caesarean section, live male 4.218 kg, bottle feeding	Post-partum haemorrhage > 1000mls blood loss
Participant 7 Mirren	36.7 kg/m <sup>2</sup>	Para 1	Elective caesarean section, female 2.857 kg, breast feeding	Pre-eclampsia

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Having a high-risk label restricted participants' choice of place of birth, with all seven booking to give birth in the local consultant led maternity unit. Four participants acknowledged their label of high-risk, which was reinforced by a sticker being placed on their case-notes. All seven participants reported lack of communication from health professionals surrounding their risk label, with three perceiving that there was no risk. For several participants', reflections of their body image was not congruent with an 'obese body', and hence they refuted the 'obesity label'. Despite the unpredictability of participants high-risk status and for some failure to acknowledge their 'risk or no risk' status, all experienced emotional consequences.

(1a) Emotional consequences of her risky position

Participants wished to feel empowered, yet once they experienced complications, they were willing to render personal responsibility. In response, these participants oscillated between feeling in control and loss of control. Loss of control was experienced by six participants, who disclosed that they felt emotionally affected by their high-risk label. Mixed emotions were expressed, which included guilt, shock, self-blame, guilt and acceptance of responsibility. Self-blame was expressed by the following participant:

*"I feel a bit panicky, thinking he's [baby] that big, they're going to leave me to full term and that I'm not going to be able to deliver him.... And then thinking, that I've then been thinking that I've caused him to be too big. And then I was thinking, oh my god does that mean that I've given him health problems before he's even born.... I don't think it causes diabetes in the baby but I wasn't sure. I don't think it does. But obviously there, blood sugar will need to be monitored closely and stuff" (Erin 34-36 weeks).*

Erin's panic was influenced by fear of having to personally deliver her baby, at the same time as acknowledging self-blame through saying, "I've caused him to be too big". This narrative suggests a shift towards Erin accepting responsibility for her baby's health, through saying "I've given him health problems before he's even born". Erin is accepting culpability and also realizes the implications of her weight. It is as though the consequences of her risky position has finally sunk in. For Erin, concern is expressed that both herself and her baby are now paying the price.

Guilt and self blame is also reflected in the following narrative from Emily:

*“Like I’d, cause I’d done something wrong now. Cause I didn’t look after myself and I wasn’t the skinny kid that I had to be, to have the child. And then I was going to give it not a great start, because you know, I can’t make it properly as a fat kid”. (Emily, 18 – 22 weeks)*

Emily’s narrative is poignant “*I’d done*”. From this it could be inferred that she was feeling some self-blame and guilt for doing “*something wrong*”. She appears to be internalizing her blame, she was culpable. It could be postulated that Emily felt guilty, as she was never the “*skinny kid*”, she was never the normal kid, always the “*fat*” one. Now she was pregnant but still feeling guilty, potentially for being a failure because she was “*obese*”, and harming her unborn baby by programming it for a “*fat future*”. In addition, some participants felt initially felt shocked and upset that they were even classified as obese.

(1b) Recognition of high-risk complications - finally sinking in

Participants with complications experienced their care as being governed by intense medical surveillance of both self and baby. Three participants (Ellis, Erin & Claire), experienced episodes of reduced fetal movement, which requires an increase in medical surveillance (i.e., fetal monitoring). Four participants, (Ellis, Erin, Stephanie & Emily) were diagnosed with ‘large for dates’ babies, and in response experienced an increase in medical surveillance (i.e., abdominal scans to monitor fetal growth). Participants’ acknowledgement of having a ‘large for dates’ diagnosis was centered around their own risk and fear of pain associated with giving birth to a sizeable infant. Erin was the only participant who linked her obesity classification with potential health risks for her infant. Erin’s associated diagnosis of high blood pressure and decreased fetal movements were complications she was aware of, but never actually thought she would personally experience:

*“Being part of it made me more aware of the risks, I think. But still I think until something happened. I still just thought, well it’s not going to affect me. Something like that it’s not. Yes, I know that exists, but it’s not necessarily going to happen to me” (Erin 34-36 weeks).*

Erin's words displayed unrealistic optimism, where she was aware of the risks, but chose not to acknowledge them. Clearly, many childbearing women do not identify with the obesity label or its associated risks, which is evidenced by the participants in this study failing to acknowledge complications they ultimately experienced (i.e., postpartum haemorrhage, caesarean section, wound infection, pre-eclampsia & obstetric cholestasis). It became evident that participants' social worlds influenced their perception and acceptance of risk, which was expressed through references to family and friends with normal BMI's who had experienced similar complications during their pregnancies:

*"...My cousin had two sections, she was rushed to theatre cause they couldn't get the heart rate properly, and she wasn't high BMI or anything, she was healthy again, so not anything like that, I was more, I think you are at more risk for your health in general in your pregnancy, and the baby... anybody is at risk, anybody is, regardless of your BMI"* (Claire, Postnatal).

Claire's words "*she wasn't high BMI or anything, she was healthy*" again implies belief that obesity is a pathological disease. This may explain why Claire was keen to avoid the obesity label and why she did not perceive that it was the cause of her complications, expressed in the words "*they could happen to anyone*". Anna's quote below, supports Claire's belief that obesity may not be the causative factor should complications arise.

*"When I've been walking about and that, I've seen bigger, and I mean bigger women than me, and I'm like Christ, if I'm at risk, I wonder what they are like. But, it doesn't, like I said I tend not to think about it all the time, because if something's going to happen then it's going to happen, regardless of me being bigger, or more at risk...."* (Anna, 34 – 36 weeks)

Anna like other participants, demonstrates the downward comparison with women much, much bigger than herself. It could be postulated that by appearing smaller in size, negates her from taking any responsibility if anything happens, after all it's down to fate, not her size. This misalliance exonerated them from taking personal responsibility. Despite, the complications that participants experienced, all gave birth

to live healthy infants with no serious long-term maternal or neonatal morbidity problems.

(1c) *Accepting the risk body*

Despite being labelled high-risk at the beginning of pregnancy, five participants did not perceive themselves to be high-risk. Two participants (Claire & Anna), although accepting their risk status, did not in fact believe they were in the high-risk category of developing obesity related complications:

*"I didn't feel as though, I didn't feel as though I was high-risk"*  
(Claire, Postnatal).

For both Claire and Anna, this perception remained static post-birth. Another participant (Stephanie) refused to accept her risk status and maintained this belief across the 3 interview time points:

*"I don't look at myself in the mirror and go I'm high-risk, I don't"* (Stephanie).

Stephanie's words, "I don't", reinforce her rejection of this inconceivable notion of being high-risk. Communication from health professionals had never reinforced her risk status:

*"I was quite angry and upset at the fact that's never been mentioned before, this is my second pregnancy, if I knew beforehand I could have maybe changed things, been more active"* (Stephanie, 34 – 36 weeks)

In contrast, Ellis and Emily stated at the first interview that they knew they were high-risk, with subtle changes in how this perception changed over the subsequent two time points. At the first time point, Emily's high-risk label affected her emotionally:

*"If they maybe just said like, your overweight, you know, you might have a few issues, or this is what could happen. That would have been fine, but saying high-risk, well as I said I thought I was going to die kind of thing"*  
(Emily 18-22 weeks).

Hearing the label that Emily was “high-risk”, was experienced as a sudden hard-hitting reality that she interpreted as a death sentence. Emily expressed that she had been forced to face her own mortality. At time point two, mid-way through her pregnancy, Emily’s perception of risk was beginning to alter:

*“... I don’t think high-risk, to me, high-risk would be if I was 20 tons and, you know. But, not to be horrible, I’ve seen some of the ladies in there. Like, I don’t think... to me they’re more high-risk than I am, if that makes sense. If they just said it... there was a risk that would have made the whole thing so much easier” (Emily, 34-36 weeks).*

Post pregnancy, Emily’s interpretation of high-risk was very different to what she had articulated at first time point.

*They say that I am high-risk, but I don’t feel high-risk, high-risk if you know what I mean. Like at first I thought I was like you know, that’s heart attack death” (Emily, Postnatal).*

Postnatally, Emily no longer felt “*high-risk*”, since she had not succumbed to the pre-conceived “*heart attack death*”. Both Emily and Erin had co-operated with the requested frequent hospital appointments to have their complications safely managed. As they saw it, their risks were managed, resulting in them being alive and well.

### **Discussion**

The findings of this study have provided a unique opportunity to explore seven childbearing women’s interpretations of having a high BMI (>35kg/m<sup>2</sup>) and its associated risks. Findings are paradoxical, with all of the participants’ risk perceptions contrasting with that ascribed by their care providers. Six participants did, in fact, experience complications associated with their high BMI status. Findings reinforce the premise that women do not construct risk appraisal based solely upon clinical diagnosis, instead contextualizing it relative to their life circumstances (Bayrampour et al., 2013) . This approach involves participants’ interpreting risks in line with the opinions of family and friends, over and above facts provided by their



health care professionals (Heaman et al., 2004; Lee et al., 2012). In contrast, health professionals view risk in line with mortality and morbidity figures associated with diagnosis (Lupton, 1999).

At the last interview point, all participants contested their high-risk status, with two participants articulating opposite perceptions of risk at end of pregnancy compared to beginning. This disconnect between labelling of self as high-risk can be explained through cognitive factors, such as dread, controllability, familiarity, seriousness, cognitive heuristics, availability and representativeness, with juxtapositions underpinned by the two dynamics of dread/non-dread and known/unknown risk (Lichtenstein et al., 1982). These dimensions are influenced by how much the person knows about the risk, with high levels of knowledge activating the dread factor. The more catastrophic the risk, the higher the perception of risk (Lichtenstein et al., 1982). In contrast, risks viewed as non-dread are controllable, with associated risk perception lower (Lichtenstein et al., 1982). The more known or familiar to the risk, which in this case involves having a high BMI ( $>35\text{kg/m}^2$ ), the less likely the woman is to perceive the danger as serious. Despite lack of risk communication by participants health care professionals, awareness of obesity-associated risks were communicated in the study information leaflet. In spite of this, five participants did not consider themselves to be high-risk, with this perception explained by people more often rating their risk as lower in comparison to general risk (Sjöberg, 2000). Findings can also be attributed to unrealistic optimism, with participants believing themselves to be at less risk compared with others (Weinstein, 1980). Unrealistic optimism is often founded upon lack of information from which to make an accurate assessment, which in this study was surrounded by lack of knowledge about potential obesity related risks (Weinstein, 1980). In addition, the past positive pregnancy outcomes of four participants may have made it easier to sustain positivity as measured against prior experience (Weinstein, 1980), with the availability heuristic explaining the ease with which these participants recalled their assured experiences (Heaman et al., 2004; Patterson, 1993; Tversky and Kahneman, 1974). People can be unrealistically optimistic when they perceive an event to be controllable, with steps outlined increasing likelihood of having a desirable outcome (Weinstein, 1980). This concept may explain why five participants who perceived themselves to be low risk were compliant with planned care, especially when induction of labour and caesarean section were advised.

In addition, a link has been identified between perceived control and lower perception of risk (Audrain et al., 1997), which is explained through participants using the cognitive heuristic of representativeness (Tversky and Kahneman, 1974). When referring to the term unrealistic optimism, which is explained by Weinstein (1980) as the process of judging an event and whether the individual's related characteristics fit with a particular stereotype? Where individuals do not perceive themselves as fitting with the stereotype, the representativeness heuristic promotes the idea that the person will conclude that the related event will not in fact happen to them. This concept is particularly relevant to this study, given that the participating women rejected the idea that they were overweight, and by doing so, this precluded the obesity label. In keeping with this denial, they also did not associate themselves as being at risk of obesity-associated complications. In its place, the women referred to events (i.e., having a caesarean section), which had been experienced by pregnant family and friends who had normal BMI's (quote: "*it could happen to anyone*").

The longitudinal nature of this study afforded opportunity to consider perception of risk change over time. For the two participants who were interviewed at all three time points, being high-risk became evident to them post biomedical risk scoring and BMI classification. Receiving a diagnostic label initially heightened their perception of being high-risk, followed by close surveillance and repeated hospital admissions reassuring them that risks will be diagnosed and treated early (Gray, 2006). As such, the constant reassurance of close surveillance inspires optimism. Also as pregnancy progressed, risk of preterm birth disappears (Bayrampour et al., 2013). This idea is supported by Öhman et al. (2009) who explored risk perception post ultrasound screening for Downs syndrome, and demonstrated a decline in worry as pregnancy progressed.

Maternal responsibility was evident in all seven participants, evidenced by frequent references to their emotional state. Emotions experienced included worry, anger, guilt and fear, accompanied by a refusal to accept their high-risk status. Yet, it could be argued that these participants were not in denial, because they complied with their care plans. Instead, what emerged in the narratives were attempts to alleviate anxiety through submission to technological assessment to ensure safe delivery of their baby (Stainton et al., 1992). It is important to acknowledge that compliance is not necessarily denial of one's high-risk status, with Stainton (1992) acknowledging

that the focus of health care professionals is upon fixing the medical problem, whilst for women it is about being a good mother.

#### Strengths and limitations

This study contributes to the existing body of knowledge in a number of ways. First, it is the only study to date that has considered how childbearing women perceive their level of risk from having a high BMI (>35kg/m<sup>2</sup>). Another strength has been the longitudinal design of this study. Limitations possibly include the small sample size of women recruited from just one clinic in Scotland. Nonetheless, the data yielded an in-depth idiographic focus that can now be used to inform a larger study. A mixed social and ethnic sample may have yielded more diverse findings. A further strength is the recognition that women's perceptions of risk are influenced by their past pregnancy experiences.

#### Implications and recommendations for Clinical practice

The findings of this study have implications for policy and practice, with participants constructing their level of risk from personal experience, interaction with health care professionals and outcome. Ultimately, participants' fear of risk in this study was unfounded, being confirmed by their positive experience of delivering a live healthy baby. In the absence of 'risky talk' between women and their health care professionals, participants are left to construct their own personal ideas about their obesity-associated risks. This reluctance of health care professionals to discuss weight and its associated pregnancy risks, is not unique to this study (Herring et al., 2010; Wilkinson et al., 2013) , with evidence-based education requiring to be delivered consistently and clearly by those involved (Furness et al., 2011) . Downplaying of problems associated with a high BMI (>35kg/m<sup>2</sup>) requires to be corrected, because women who do not classify themselves as being overweight (as happened in this study) will perceive no need to engage with related health promotion messages.

Risk information should never be delivered merely on its own, and instead be accompanied by achievable advice and support (Furness et al., 2011). This involves striking the balance between avoiding uncomfortable conversations surrounding weight management and its associated risks. Midwives need to promote women's acknowledgement of their obesity status and provide risk information and what to do about it. It is also important to teach midwives how to communicate this information

sensitively and effectively (Smith et al., 2012). Specific training is required to increase midwives' knowledge about how to specifically manage obesity related risks and what services are available to support weight management, with guidelines and policy documents required.

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**Table 1:** Demographics of study participants

Participant Pseudonym	BMI	HADS	Parity	Occupation
Participant 1- Ellis	35.5 kg/m <sup>2</sup>	A = 0 D=4	Primigravida	Bank Clerk
Participant 2 Erin	38.3 kg/m <sup>2</sup>	A=5 D=1	Primigravida	Mental health Practitioner
Participant 3- Clare	35.5 kg/m <sup>2</sup>	A= 4 D= 2	Para 1	Full time mother
Participant 4- Anna	38 kg/m <sup>2</sup>	A=2 D=0	Para 1	Full time mother
Participant 5- Emily	43 kg/m <sup>2</sup>	A=2 D=2	Primigravida	Bar Manager
Participant 6- Stephanie	35.9 kg/m <sup>2</sup>	A=1 D=1	Para 1	Care support worker
Participant 7- Mirren	36.7 kg/m <sup>2</sup>	A=2 D=2	Para 1	Full time mother

(A= anxiety, D = depression) \*Pseudo names have been used

**Table 2:** Superordinate theme and sub-themes

Superordinate theme	Sub-themes
(1) Risk or no risk?	(1a) Emotional consequences of her risky position (1b) Recognition of high-risk complications - finally sinking in? (1c) Accepting the risk body



**Table 3: Participants Birth Outcomes**

Participant	BMI	Parity	Outcome	Complications
Participant 1 Ellis	35.5kg/m <sup>2</sup>	Prim gravida	Emergency caesarean section, live male 3.628 kg, bottle feeding	Induction of labour for reduced fetal movements and unexplained episodes of vaginal bleeding, wound infection
Participant 2 Erin	38.3kg/m <sup>2</sup>	Prim gravida	Emergency caesarean section, live male 4.173 kg, bottle feeding	Induction of labour for reduced fetal movements, Increased blood pressure, postpartum haemorrhage > 1000ml blood loss, baby admitted into neonatal unit for weight loss, breastfeeding unsuccessful
Participant 3 Claire	35.5kg/m <sup>2</sup>	Para 1	Spontaneous vaginal birth, live female 3.683 kg, bottle feeding	Induction of labour for reduced fetal movements, vaginal bleeding and separation of symphysis pubis dysfunction
Participant 4 Anna	38 kg/m <sup>2</sup>	Para 1	Spontaneous vaginal birth, live female 3.583 kg, bottle feeding	No complications
Participant 5 Emily	43kg,m <sup>2</sup>	Prim gravida	Elective caesarean section, live male 3.686 kg, breast feeding	Pre –eclampsia ,Obstetric cholestasis, baby admitted into neonatal unit for infection
Participant 6 Stephanie	35.9 kg/m <sup>2</sup>	Para 1	Emergency caesarean section, live male 4.218 kg, bottle feeding	Post-partum haemorrhage > 1000mls blood loss
Participant 7 Mirren	36.7 kg/m <sup>2</sup>	Para 1	Elective caesarean section, female 2.857 kg, breast feeding	Pre-eclampsia