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A Descriptive Study of the Experiences of Obese Pregnant Women

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A descriptive study of the experiences of obese pregnant women

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A dissertation submitted to the faculty of the Medical University of South Carolina in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Nursing.

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Abstract

Research has highlighted the growing prevalence of obesity across the age spectrum, including childbearing women. There have been numerous studies on maternal and fetal complications in mothers who are obese and pregnant; however, little is known about the experiences and feelings of the women who are pregnant and obese. This dissertation is a compendium of three manuscripts. The first manuscript is an integrative review that examines motivators and barriers in health behavior intervention studies in pregnant women who are obese, using the transtheoretical model stages of change. The second and third manuscripts are the result of a qualitative descriptive study that explored the experiences and feelings of the pregnant woman who is obese regarding her weight prior to and during pregnancy. The second manuscript details the women's experiences and feelings regarding the changes pregnancy has made and how it has impacted their opinions of their bodies. Pregnancy had allowed many of the women who participated in this study to gain a sense of achievement and embrace the changes they had seen in their bodies resulting from the pregnancy. The final manuscript explores how pregnant women who are obese relate to their identified support systems prior to and during pregnancy. The majority of the women in the study identified a solid support system to assist them through the pregnancy, including their partner, prenatal care providers, family, and friends and co-workers. Each of these social support groups had opportunities to provide support to the women which can impact the women's overall emotional health and well-being. Finally, the findings of the study are integrated at the conclusion of this dissertation. Pregnancy offers a unique time to implement positive health behavior

change interventions which can be more successful by identifying barriers and motivators to the women's participation prior to the start of the intervention.

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Introduction

The Centers for Disease Control and Prevention (CDC) (2018) has noted that the prevalence of obesity is increasing in adults. CDC describes obesity as a person with a body mass index (BMI) of $\geq$ 30 kg/m^2. In the United States, 39.8% of the adult population is classified as obese (CDC, 2018). The increasing prevalence of overweight and obese women of childbearing age is a growing public health concern (Siega-Riz & Laraia, 2006). The percentage of childbearing-age young adults who are obese is currently 35.7% (CDC, 2018). This population offers its own unique set of issues that can have life-changing effects (Vinayagam, Nair, & Chandraharan, 2012).

Obesity in pregnancy is defined as a maternal BMI of $\geq$ 30 kg/m^2 at the initial antenatal visit (Fitzsimmons, Modder, & Greer, 2009). Pregnant women who are obese have a 2-5 times higher risk for stillbirths when compared to normal weight women (Yao, Ananth, Park, Pereira, & Plante, 2014). Vinayagam, Nair, and Chandraharan (2012) conducted a study that determined the cesarean delivery rate was 41% for obese mothers, and only 23% for women with an average BMI. The same study indicated a significantly increased risk of post-partum hemorrhage in the obese mother. The obese maternal patient population needs further research to counter the problems they present.

Maternal obesity is a leading cause of high-risk pregnancies and affects as many as one in three pregnancies (Huisman, 2013). An obese patient can have chronic health problems related directly to the effects of weight on the human body, such as cardiovascular disease processes, hypertension, type- 2 diabetes, sleep apnea, and gallstones (Gilead, Salem, Sergienko, & Sheiner, 2012). In addition to the health issues facing the obese population, obesity during pregnancy is further complicated by

additional health risks such as pregnancy-induced hypertension, gestational diabetes, premature and operative deliveries, fetal injury during delivery, fetal demise, and miscarriage (Davis, Stange, & Horwitz, 2012).

Maternal obesity can impact the fetus in multiple ways. Infants born to women who are obese are more likely to be large for gestational age (LGA) or have macrosomia (>4500 g) at birth (Siega-Riz & Laraia, 2006). There is also an increased risk for neural tube defects, stillbirths, and neonatal deaths in babies born to women with an increased BMI (Magann, Doherty, Sandlin, Chauhan, & Morrison, 2013). There is an increased the risk of fetal injury during the delivery related to the high numbers of operative deliveries in this population. Premature delivery is also increased in this population, which can increase the length of the hospital stay due to infections and respiratory issues. Breastfeeding duration is also shorter for infants whose mothers have a BMI of $\geq$ 30 kg/m^2, limiting the benefits that infants receive from breastfeeding (Davis, Stange, & Horwitz, 2012).

Pregnancy and Changes in Appearance

Pregnancy causes rapid and significant physiological changes over a 40-week period, including gestational weight gain, fluid retention, and expansion of the maternal abdomen and breasts (Watson, Broadbent, Skouteris, & Fuller-Tyszkiewicz, 2016). These changes manifest in alterations in a woman's physical appearance that may or may not be perceived as positive by the woman. Women are likely to re-evaluate their body image over the duration of the pregnancy as their size increases and body shape changes (Skouteris, Carr, Wertheim, Paxton, & Duncombe, 2005). In the pregnant woman who is

obese, the pregnancy ideal of a slender woman with a pregnancy "bump," but otherwise unchanged body, is not achievable and may encourage body self-consciousness and surveillance during pregnancy (Rubin & Steinberg, 2011).

The importance of appearance in females has been promoted through the media and social media, even during pregnancy when there is evidence of a need for weight gain. Perhaps at no time in history have women been under so much pressure to look a certain way while producing human life. The media has promoted stars who attend red carpet events, flaunt their exposed abdomens, and stay remarkably in shape as the "ideal" pregnant shape, which can lead to unrealistic expectations in women with higher BMIs (Abraham, 2004). In addition, social media has created applications that allow a woman to document the changes in her body for the duration of the pregnancy. These applications use the "ideal" pregnancy abdomen to show the changes the women should expect in their bodies for the corresponding month of gestation. For women who do not meet the ideal image and shape, they may be encouraged to monitor how they look, change their appearance through diet and extreme exercises, or avoid situations where their bodies may be scrutinized (Watson, Broadbent, Skouteris, & Fuller-Tyszkiewicz, 2016).

The changes in pregnancy image and social media can be seen in maternity clothing designs. Maternity clothing has become more fitted, accentuating the new pregnancy ideal of a slim and angular body with a pregnancy "bump," with no additional body fat or curves (Rubin & Steinberg, 2011). Some women never wear maternity clothes during their pregnancies, but rather wear tight fitting, regular clothing that highlights their bodies. Chic maternity shops offer sizes and styles that are not the

roomier design of maternity clothing of old (Abraham, 2004). This image can cause women to have inaccurate expectations for the body changes related to pregnancy and exacerbate body image concerns (Watson, Broadbent, Skouteris, & Fuller-Tyszkiewicz, 2016).

Experiences Before and During Pregnancy

Experiences of women prior to pregnancy can also impact how the women feel about the changes pregnancy makes in their bodies. Thirty percent of non-pregnant adolescent girls who are 12-19 years of age have already reached BMIs that classify them as overweight. Younger and more severely obese girls are now reaching reproductive capabilities that will directly impact the number of pregnant women who are obese (Siega-Riz & Laraia, 2006). Girls who are overweight and obese have had interactions related to their weight and appearance from childhood and school that impact their feelings towards their current bodies and weight and may be further impacted by the changes pregnancy will cause in their bodies.

Pregnancy in the woman who is obese offers an opportunity for a woman to see her body not only in terms of weight and appearance, but also in terms of functionality (Rubin & Steinberg, 2011). A pregnant woman who is obese may experience a change in her feelings about her body and embrace the transformation she sees from the pregnancy. Other women may not appreciate the fluctuations in their weight and body shapes resulting from the pregnancy and have negative feelings regarding their bodies and the changes they see. Women who are pregnant and obese face a variety of obstacles during pregnancy that can impact the overall health of the mother and baby. In addition, women

who are obese receive a variety of information and images that are impossible for them to achieve in regards to their appearance and weight gain during pregnancy. By exploring how women feel about these varied messages regarding appearance and weight gain during pregnancy, we can promote better understanding and more compassionate care.

Pregnancy and Social Support

Social support has been broadly defined as resources, which can include emotional, instrumental, financial, or informational support, derived from one's social relationships (Orr, 2004). A woman's support system can have a positive or negative impact on a woman during pregnancy. Those women who receive positive emotional and instrumental social support generally have better health outcomes (O'Donovan & Hughes, 2008). Social support can also decrease depression, which in turn is associated with enhanced pregnancy and health outcomes (Orr, 2004). Stressful situations, such as childbirth, have also been perceived as less demanding with the addition of positive social support (Taylor, 2011).

Women who have negative or limited social support can experience a variety of issues that can impact their physical and mental well-being. Increased stress levels have been identified in those women who have limited social support. These women are also less likely to make positive lifestyle changes during the pregnancy and continue the resulting healthy habits in the post-partum time frame (Smith, Taylor, & Lavender, 2014). Support persons are not always identified as being "supportive" of healthy behaviors and often do not understand the appetite changes that occur during pregnancy. The support persons often promoted unhealthy ideals, such as cravings are feeding the

baby what he wants and criticized provider suggestions of exercise and gestational weight gain guidelines and instead offered advice related to generational or cultural practices (Kominiarek, Gay, & Peacock, 2015). One earlier study demonstrated that those who are most socially isolated or disconnected from social support are at increased risk of mortality (Berkman, 1995).

Women identify significant others, family members, friends, and coworkers as members of their support systems. The pregnant woman who has the support of a significant other is likely to experience better health outcomes than a woman who lacks a significant other or has a negative relationship with a spouse or partner (Orr, 2004). Family members offer an opportunity to support women who are obese during pregnancy, but often find generational differences that pose challenges (Kominiarek, Gay, & Peacock, 2015). These generational differences can include outdated information on gestational weight gain and colloquialisms such as "eating for two," which can have a negative impact on the pregnant woman who is obese.

In addition to significant others and families, the importance of a relationship with a close friend has been noted as an important aspect of emotional support (Orr, 2004). Smith, Taylor, and Lavender (2014) completed a study where pregnant women with a BMI of $\geq$30 kg/m^2 were evaluated for social support in the antenatal and postnatal time periods. The women in this study developed friendships with other pregnant women with similar BMIs and maintained a bond that continued into the postpartum time period that allowed them to support one another through the pregnancies and beyond. However, friends may not be positive support for the pregnant woman who is obese. This is reinforced by the unrealistic, thin ideal that is set for women to achieve, including

engagement in social situations where their pregnant bodies might be compared to their friends or other family members (Watson, Broadbent, Skouteris, & Fuller-Tyszkiewicz, 2016).

A pregnant woman who is obese can also have a different experience in maternity care than normal or underweight pregnant women. Providers often receive little to no formal training or guidelines in how to approach the issue of obesity with pregnant women. Health professionals are often unsure of how to support and advise this group of women and how to best talk to them about the issue of their weight (Smith & Lavender, 2011). Providers expressed discomfort discussing gestational weight gain and difficulty finding the right words for obesity for fear of offending the woman (Kominiarek, Gay, & Peacock, 2015). This discomfort with obesity can limit the information the pregnant woman who is obese receives in regards to exercise, nutritional guidance, and weight gain parameters. This can also decrease the woman's comfort level in asking specific questions related to these issues or make the woman feel that her weight is not an issue that can impact her pregnancy.

Gaps in Research

A multitude of studies have been conducted on the pregnant woman who is obese, with a focus on weight management and health behavior change during pregnancy (Brown & Avery, 2012; Heslehurst, 2011; Siega-Riz & Gray, 2013). Many of these studies are interventional studies where specific lifestyle modifications are implemented in the population during pregnancy to promote healthier eating and exercise (Bertz, 2015; Claesson, Klein, Sydsjo, & Josefsson, 2014; Renault, Norgaard, Nilas, Carlsen, Cortes,

Pryds, & Secher, 2014; Shirazian, Monteith, Friedman, & Rebarber, 2010). Other studies have focused on the risk of complications in pregnant women who are obese, including prenatal and intrapartum complications (Davis, Stange, & Horwitz, 2012; Magann, et al., 2013; Siega-Riz & Laraia, 2006).

Despite a body of research that addresses complications and health behavior change in pregnant women who are obese, there are many gaps that made this dissertation study necessary. The first gap is a lack of research on how the pregnant woman who is obese feels about her own body and the changes that pregnancy has caused in her body. While studies have been conducted on women who are obese and pregnant, they have explored the negative impact on the women's body image. The studies did not explore how the women felt about their bodies prior to being pregnant and if pregnancy has caused a change in their feelings.

The second gap in research occurs with a lack of information on how the support system of the pregnant woman who is obese impacts her feelings regarding her weight and the changes pregnancy causes in her body.

Manuscripts

This dissertation consists of three manuscripts related to maternal obesity during pregnancy. The first manuscript is an integrative review based on the transtheoretical model stages of change (Glanz, Rimer, & Viswanath, 2008). This review identified motivators and barriers that impact health behavior change and occur in the pre-contemplation and contemplation stages during pregnancy in the woman who is obese. The second and third manuscripts detail a descriptive qualitative study that explored the

feelings and experiences of pregnant women who are obese. The second manuscript focused on the women's feelings regarding the changes pregnancy made and how it impacted their opinions of their bodies. The third manuscript explored the social support system of pregnant woman who is obese.

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Manuscript 1

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Health Behavior Change in Pregnant Women With Obesity

Mary Beth McCloud

ABSTRACT

Objective: To identify various motivators and barriers in the pre-contemplation and contemplation stages of change that can occur during pregnancy, which can influence lifestyle interventions that are implemented during pregnancy.

Data Sources: An electronic search of the literature was conducted using Web of Science and all databases within EBSCOhost.

Study Selection: A study was included if the population was identified as pregnant women ages 13 to 44 years to include women of childbearing age and if it incorporated a lifestyle intervention that integrated nutrition and/or physical activity. Eleven manuscripts were reviewed, including nine quantitative studies, one qualitative study, and one mixed-methods study. Seven of the nine quantitative studies were randomized controlled trials.

Data Extraction: Articles were reviewed to identify barriers and motivators related to lifestyle interventions in pregnant women with obesity.

Data Synthesis: Data were analyzed according to the pre-contemplation and contemplation stages of change and how women felt during pregnancy in relation to making a positive behavioral change during this time period.

Conclusion: Pregnancy is an opportunity to address health behavior change. Recognizing both barriers and motivators during this time frame can allow for more focused interventions to be created and applied to the population.

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CLINICAL IMPLICATIONS

- Obesity can contribute to negative maternal and neonatal health outcomes.
- Pregnancy offers a time to make healthful lifestyle changes that can have a positive influence beyond childbirth.
- Positive lifestyle change during pregnancy can help improve the results of interventions created to reach pregnant women with obesity.
- Identifying barriers and motivators related to lifestyle change for pregnant women may confer better success for implementing lifestyle interventions.

Pregnant women with obesity have a higher prevalence of intrapartum and fetal complications and maternal health issues that can lead to negative effects and poor health outcomes (Vinayagam & Chandraharan, 2012). The Centers for Disease Control and Prevention (2018) has stated that obesity rates are increasing across the life span. In the United States, 35.7% of the adult population is obese (Yao et al., 2014). The American College of Obstetricians and Gynecologists (ACOG; n.d.) has defined women who have a body mass index of 30 kg/m^2 or greater before pregnancy as being obese. Although obesity rates are similar for both men and women, approximately 8% of women are considered to have extreme obesity, which is defined as a body mass index greater than 40 kg/m^2 (National Institute of Diabetes and Digestive and Kidney Diseases, 2017). ACOG recommends limiting gestational weight gain in this group to 5 to 9 kg, or 11 to 20 pounds (ACOG, n.d.).

Obesity in pregnancy can be associated with significant negative fetal and maternal health outcomes, including hypertension, preeclampsia, gestational diabetes, an increased incidence of mechanical birth interventions, and stillbirths (Shirazian, Faris, Fox, Friedman, & Rebarber, 2016). Interventions that enable obese women to avoid excessive or additional weight gain in pregnancy can positively affect a woman's health during the pregnancy but also in the long term by introducing healthful behavioral changes that may be maintained afterward (Davis et al., 2012).

The Centers for Disease Control and Prevention (2018) has determined that obesity is a complex problem requiring a multifaceted approach, including modifying behavior and environment to promote a lifestyle of healthful eating and physical activity. Olson and Blackwell (2011) and Shelton and Lee (2018) noted that significant lifestyle transitions, such as pregnancy, can act as motivators and offer a window of opportunity to implement new behavior changes into a person's life. Although improving gestational outcomes and decreasing gestational weight gain have been the emphases of multiple studies, identification of specific barriers for pregnant women with obesity could also help women achieve a positive lifestyle behavior change. A lifestyle behavior change can have a lifelong effect on the health of a woman and her family. By identifying primary motivators for making lifestyle changes, clinicians can focus interventions to promote sustainable changes. The purpose of this integrative review was to explore the literature to identify what motivators and barriers can influence health behavior change among women with obesity when they become pregnant.

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Obesity in pregnancy can be associated with significant negative fetal and maternal health outcomes

Theoretical Framework

This review is guided by the transtheoretical model (TTM), also called the stages of change model, developed by Prochaska and DiClemente in the 1970s (Prochaska, Redding, & Evers, 2002). TTM is an individual-level theory that posits that long-term change in health behaviors involves multiple actions and adaptations over a period of time (Glanz & Bishop, 2010). Glanz, Rimer, and Viswanath (2015) identified the core constructs for the TTM as the stages of change, processes of change, decisional balance, and self-efficacy. *Self-efficacy* is defined as a situation-specific confidence that allows an individual to cope with situations that would put him or her in jeopardy of reverting back to an unhealthful habit or lifestyle (Glanz et al., 2015).

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Stages of Change

The stages of change are delineated as pre-contemplation, contemplation, preparation, action, and maintenance. By identifying pregnancy as a significant lifestyle transition and using the stages of change, the barriers and motivators of a pregnant woman who is obese are understood to be dependent on the stage of change that she is in during this phase of her life (Olson & Blackwell, 2011).

The pre-contemplation stage begins the cycle as a time of consciousness-raising; however, self-efficacy is low, and the negatives seem difficult to overcome, which makes change unlikely (Nigg et al., 2011). The identification and elimination of barriers during this phase can assist in moving to the next stage of change. During the contemplation phase, a person is aware of the benefits of changing behavior but is also aware of the challenges of changing, which can cause ambivalent feelings toward modifying behaviors (Glanz et al., 2015). Motivation for a positive change is an important part of the contemplation phase that allows the person to move forward with a lifestyle change. The preparation phase allows for social liberation, during which time the pros begin to equal or outweigh the cons of making a significant lifestyle change, and self-efficacy increases. When a person reaches the action phase, there is a rapid increase of self-efficacy, the pros outweigh the cons, and self-liberation takes place (Glanz et al., 2015).

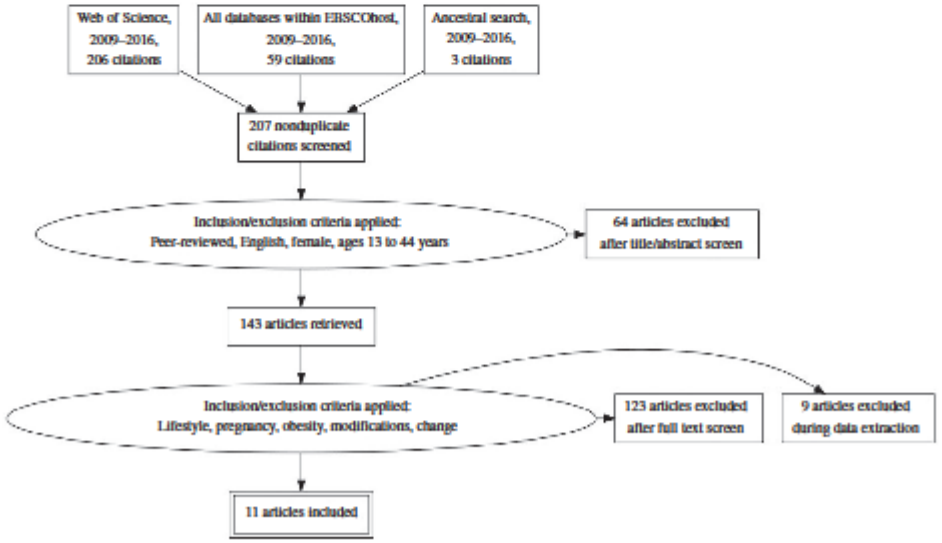
Identifying barriers and motivators for healthier lifestyle behaviors in a population of interest can help individuals in this population move through the stages of change (Glanz et al., 2015). Identifying barriers can also lead to the creation of a more successful intervention. Identifying barriers to change during the pre-contemplation stage and barriers and motivators during the contemplation stage can aid in creating focused interventions to promote positive health behavior change that leads to the action and maintenance stages of change (Glanz et al., 2015).

Review Methods

An electronic search of the literature was conducted using Web of Science and all databases within EBSCOhost, with the guidance of a research and educational informationist at the Medical University of South Carolina. The search was limited to articles written in English, with full-text availability, published from 2009 through May 2016. Search terms included *pregnancy*, *behavior*, *lifestyle*, *obesity*, *modifications*, and *change*. The initial search retrieved a total 265 articles (see Figure 1).

Fifty-eight duplicate articles were deleted. Titles and abstracts were screened for relevance to the topic, and 64 articles that did not identify the importance of lifestyle modification projects and trials in the population were excluded. Studies were included in this review if they identified a

FIGURE 1 ARTICLE SELECTION



Women reported that low self-esteem, tiredness, depression, and the physical constraints of pregnancy were barriers to making a lifestyle modification

population of pregnant women ages 13 to 44 years to capture females in the childbearing age range. The remaining articles were screened, and 123 articles were excluded after reviewing the full text. Articles were excluded if they did not specifically include pregnant women with obesity as part of the samples of participants and did not contain elements related to a lifestyle intervention that included nutrition and/or physical activity. Of the original 265 articles retrieved from the search, 8 met the inclusion criteria for this review, with an additional 3 studies included from an ancestral search. These 11 articles also included 2 articles that incorporated all weight groups and were not specific to women who were pregnant and obese (Cohen & Kim, 2009; Farajzadegan & Pozveh, 2013). All articles were reviewed for barriers and motivators in relation to the pre-contemplation and contemplation stages of change. Use of a matrix helped with data extraction of relevant elements, as summarized in Table 1.

Results

The 11 articles were analyzed, extracted, and organized based on the following attributes: type of study, population, pre-contemplation stage barriers to change, and contemplation stage motivators and barriers to behavioral change (see Table 1). Nine of the articles were quantitative studies, one was qualitative (Bertz, Sparud-Lundin, & Winkvist, 2015), and one was a mixed-methods study (Sui, Turnbull, & Dodd, 2013). Seven of the nine quantitative studies were randomized controlled trials (Bertz et al., 2015; Dodd et al., 2014; Farajzadegan & Pozveh, 2013; Kong, Campbell, Wagner, Peterson, & Lanningham-Foster, 2014; Nascimento, Surita, Parpinelli, Siani, & Pinto e Silva, 2011; Poston et al., 2013; Renault et al., 2014). In addition, three of the studies were conducted in the United States (Cohen & Kim, 2009; Kong et al., 2014; Shirazian et al., 2016); two in the United Kingdom (Poston et al., 2013; Sui et al., 2013); two in Sweden (Bertz et al., 2015; Claesson, Klein, Sydsjö, & Josefsson, 2014); and one each in Australia, Iran, Brazil, and Denmark (Dodd et al., 2014; Farajzadegan & Pozveh, 2013; Nascimento et al., 2011; Renault et al., 2014).

Pre-Contemplation Stage of Change

The pre-contemplation stage of change is identified as the time when people do not intend to take action or make a change in the near future (Glanz et al., 2015). This stage is further recognized as a time for consciousness-raising in

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which a person can experience negative emotions, such as worry and anxiety related to unhealthful behaviors and lifestyle. Glanz et al. (2015) noted that an environmental evaluation needs to occur through which the person can identify barriers to making positive lifestyle changes. The identification of barriers to making a lifestyle modification should occur during this stage. Barriers often have similarities in certain populations (Glanz et al., 2015).

Women participating in five studies identified barriers to achieving a positive lifestyle change that were specific to their own situations (Bertz et al., 2015; Claesson et al., 2014; Kong et al., 2014; Shirazian et al., 2016; Sui et al., 2013). A lack of time to make lifestyle modifications was identified in one study (Sui et al., 2013). A lack of awareness of the importance of routine care was identified as a barrier in another study (Shirazian et al., 2016). Stress, social norms, and a lack of structure and discipline were also identified as barriers to making a positive lifestyle change (Bertz et al., 2015). Women reported that low self-esteem, tiredness, depression, and the physical constraints of pregnancy were barriers to making a lifestyle modification (Claesson et al., 2014). Medical complications were identified as barriers to lifestyle change as well (Kong et al., 2014). Six of the studies did not include self-identified barriers for making lifestyle changes (Cohen & Kim, 2009; Dodd et al., 2014; Farajzadegan & Pozveh, 2013; Nascimento et al., 2011; Poston et al., 2013; Renault et al., 2014).

Contemplation Stage of Change

The importance of the contemplation stage of change is that it precedes a change in behavior within 6 months (Glanz et al., 2015). During this stage, people often waver between pros and cons of a lifestyle change. They experience ambivalence regarding a change in behavior. This ambivalence, or reluctance to change, can be overcome by identifying a motivator

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TABLE 1 SUMMARY OF ARTICLES REVIEWED

Authors (Date), Country	Type of Study and Design	Population, Age Ranges (if available), and Sample Size	Pre-Contemplation Stage Barriers	Contemplation Stage Barriers and Motivators
Bertz, Sparud-Lundin, & Winkvist (2015) **Sweden**	Transformative lifestyle change for postpartum diet and exercise intervention Randomized controlled trial	Overweight and obese before pregnancy *N* = 21	Stress, social norms, lack of structure/ discipline	No barriers identified Motivators were needed for improved health and well-being, appearance, increasing age, increasing number of children
Claesson, Klein, Sydsjö, & Josesson (2014) **Sweden**	Prospective intervention study	Pregnant women with obesity 20–44 years *N* = 155	Low self-esteem, depression, tiredness, physical constraints of pregnancy	Barriers were role limitation due to physical problems, bodily pain, general health perceptions, general mental health No motivators identified
Cohen & Kim (2009) **United States**	Weight loss cessation during pregnancy Quantitative study	Not specific to obesity; included pregnant women in all weight categories <35 years *N* = 8,036	No barriers identified	No barriers or motivators identified
Dodd et al. (2014) **Australia**	Antenatal lifestyle advice for women who are overweight or obese: the limit trial Randomized controlled trial	Overweight and obese pregnant women (mean age = 29.4 years) *N* = 2,212	No barriers identified	Self-identified barriers were included as part of the study but not specifically listed No motivators for participating in lifestyle modification were identified
Farajzadegan & Pozveh (2013) **Iran**	Maternal-centered lifestyle modification program on gestational weight gain management Randomized controlled trial	Not specific to obesity; included pregnant women in all weight categories *N* = 160	No barriers identified	No barriers or motivators identified, but main predictor was listed as self-efficacy
Kong, Campbell, Wagner, Peterson, & Lanningham-Foster (2014) **United States**	Walking intervention during pregnancy to decrease postpartum weight retention and improve infant outcomes Randomized controlled trial	Overweight/obese pregnant women 18–45 years *N* = 37	Medical complications	Barrier to completing program was scheduling conflicts No motivators identified

(continued)

TABLE 1 *CONTINUED*

Authors (Date), Country	Type of Study and Design	Population, Age Ranges (if available), and Sample Size	Pre-Contemplation Stage Barriers	Contemplation Stage Barriers and Motivators
Nascimento, Surita, Parpinelli, Siani, & Pinto e Silva (2011) **Brazil**	Antenatal physical exercise program on maternal/perinatal health outcomes and quality of life in obese and overweight pregnant women Randomized controlled trial	Specific to obese and overweight pregnant women, ≥18 years *N* = 82	No barriers identified	No barriers or motivators identified
Poston et al. (2013) **United Kingdom**	Diet and activity behavior change trial in obese pregnant women Randomized controlled trial	Pregnant women with obesity, mean age = 29.9 years 18–41+ years *N* = 183	No barriers identified	No barriers or motivators identified
Renault et al. (2014) **Denmark**	Physical activity intervention assessed by pedometer with or without dietary intervention on gestational weight gain Randomized controlled trial	Pregnant women with obesity 18–39 years *N* = 425	No barriers identified	No barriers or motivators identified
Shirazian, Faris, Fox, Friedman, & Rebarber (2016) **United States**	Lifestyle modification project Cohort study	Pregnant women with obesity 18–45 years *N* = 60	Lack of awareness of importance of routine care	Access and cost of child care, transportation, ability to take time off from work/fear of losing one's job No motivators identified
Sui, Turnbull, & Dodd (2013) **United Kingdom**	Antenatal intervention to limit gestational weight gain Mixed-methods study	Overweight and obese pregnant women <20–40+ years *N* = 464	Lack of time	No barriers identified Motivators were to feel better, personal health, infant's health

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to advance the individual through the final stages of change into the maintenance phase of a lifestyle change. Barriers in this stage are often related to implementing the change in lifestyle and are associated with the intervention requirements in the various studies (Glanz et al., 2015).

Two studies recorded motivators for working on a lifestyle change (Bertz et al., 2015; Sui et al., 2013). Bertz et al. (2015) identified the greatest number of motivators for a lifestyle change, which were the women's need for improved health and well-being, a desire to improve appearance, and increasing maternal age and number of children. The motivation to feel better was identified by the women who participated in an intervention to limit gestational weight gain (Sui et al., 2013). Sui et al. (2013) also reported that a concern for the infant's health was often a woman's cue to action. One study identified self-efficacy as a main predictor for participation in a lifestyle modification program (Farajzadegan & Pozveh, 2013). Eight of the 11 studies did not identify motivators for making a lifestyle change (Claesson et al., 2014; Cohen & Kim, 2009; Dodd et al., 2014; Kong et al., 2014; Nascimento et al., 2011; Poston et al., 2013; Renault et al., 2014; Shirazian et al., 2016).

Four studies noted barriers related to the contemplation stage of change (Claesson et al., 2014; Dodd et al., 2014; Kong et al., 2014; Shirazian et al., 2016). Scheduling conflicts appear in two studies that introduced interventions with set times for meeting, group or individual, to assist the women with the lifestyle modification program (Kong et al., 2014; Shirazian et al., 2016). Shirazian et al. (2016) identified the following barriers: access and cost of child care, transportation, and the ability to take time off from work. In another investigation, barriers identified included general health perceptions related to the pregnancy, body pain, and role limitations due to physical problems (Claesson et al., 2014). A fourth study that mentioned barriers did not specifically list the barriers but mentioned that the participants were encouraged to self-identify barriers and seek solutions to allow them to proceed with the lifestyle change (Dodd et al., 2014). Seven of the studies did not identify barriers for making a lifestyle change (Bertz et al., 2015; Cohen & Kim, 2009; Farajzadegan & Pozveh, 2013; Nascimento et al., 2011; Poston et al., 2013; Renault et al., 2014; Sui et al., 2013).

Discussion

Few studies addressed a woman's self-identified barriers to making a positive lifestyle change during the pre-contemplation stage of change. Barriers related to low self-efficacy, such as low self-esteem, physical constraints of pregnancy, and social norms, would need to be reduced through seeking ways to facilitate empowerment of women so that they can successfully make a positive lifestyle change. Lack of awareness of the importance of routine care can be alleviated by educating women about the risks associated with obesity during pregnancy and the need to incorporate healthful eating and physical activity into their lifestyles. Medical complications, depression, and tiredness would be the most difficult barriers to overcome to move women to the contemplation stage of change.

In the lifestyle modification projects presented in these studies, the information regarding barriers during the contemplation stage of change was not considered. Barriers such as access and cost of child care, transportation, ability to take time off from work, fear of losing one's job, and scheduling conflicts were all related to interventional studies that required the women to attend mandatory sessions, which were group or individual, as part of the modification. These barriers could be addressed by providing options other than required sessions, having sessions on multiple days and times for convenience, or incorporating child care as part of the sessions in the study design. As part of a lifestyle advice intervention, one study's protocol included asking the women to self-identify potential barriers to implementing their dietary and physical activity goals (Dodd et al., 2011). However, the results of that study do not include specific barriers that the women identified but rather a statement that the women identified perceived barriers and were assisted in developing individualized strategies to allow them to be successful in the implementation of the dietary and physical activity change (Dodd et al., 2014). The specifics of these barriers and the strategies to move past them were not included as part of the studies.

A wider range of barriers to health behavior change are reported during an interview as opposed to having the women choose from a list of suggested barriers on a questionnaire (Sui et al., 2013). Participants in the study by Sui et al. (2013) identified that a lack of time, being too busy caring for other children, not liking to cook or exercise, external environmental factors, personal health conditions, and pregnancy complications were barriers to making a change (Sui et al., 2013). These barriers are individual and are related to conditions within their own families or communities. Environmental barriers would need to be considered on an individual basis to determine if a problem is related to a lack of safe areas for exercise or limited access to healthy food. These factors would need to be addressed by the individual's community. Promoting farmers' markets and providing safe, well-lit walking areas to promote a successful lifestyle change would be ways to achieve safer walking areas and healthier food options in locations where these items are lacking.

Few studies examined the contemplation stage of change, in which a woman would be motivated to make a behavioral change within the next 6 months. Self-identified motivators for why pregnant women with obesity would want to make a lifestyle or behavioral change during this time were documented in two studies. Motivation to feel better and the need for improved health and well-being point to women being educated to some extent on the complications of obesity and having a desire to improve their health (Sui et al., 2013). Cues to action serve as a motivator to change. Sui et al. (2013)

indicated that physician's advice was not the most effective way to motivate their participants to make a health behavior change. The pregnant women who were overweight and obese in that study indicated during interviews and through completion of a questionnaire that the infant's health, encouragement from family, and a willingness to improve maternal health conditions were the top cues to action for health behavior change (Sui et al., 2013). The work of Sui et al. was the only study that identified the infant's health as a motivator for lifestyle change in this population.

Women in the study by Bertz et al. (2015) identified increasing maternal age and a greater number of children as motivators for participating in a transformative lifestyle change. However, it was not explained clearly why an older, multiparous woman would be more interested in participating in a modification program. Self-efficacy was identified as the main predictor of women participating in lifestyle modification programs geared toward gestational weight gain management (Farajzadegan & Pozveh, 2013). Although this study identified women who believed that they would be able to successfully complete the program as a predictor of those who enrolled, the authors did not list other possible motivators or delve further into why certain women had selfefficacy to enroll but others did not (Farajzadegan & Pozveh, 2013).

Use of the TTM and the stages of change serves as a useful model to evaluate the various barriers and motivators for making a lifestyle transformation in the population of pregnant women with obesity. The stage of change that a person is in during a significant lifestyle transition can affect his or her ability to make a positive behavior change (Glanz et al., 2015). Findings in this review indicate a need to further explore the barriers and motivators that are common to this population to allow for a smoother transition from the pre-contemplation stage to the contemplation and action stages. Limited attention was given to the sustainability of the lifestyle changes and their overall effects on women and their families.

Implications for Practice

Although some of these studies included women's perceptions of barriers and motivators, none of the researchers incorporated these findings into the design of the intervention. The use of intervention mapping, which includes steps to anticipate program adoption, implementation, and sustainability, can help address some of the barriers noted with the interventions (Melnyk & Morrison-Beedy, 2012). Nurses can play a vital role in helping women identify barriers that are preventing them from making positive lifestyle changes. By identifying barriers, nurses can then help women locate resources to bridge the barriers that are preventing a lifestyle change, such as securing travel needs and seeking alternative ideas for women who have limited time or scheduling difficulties. Although no single barrier will prevent a lifestyle change from occurring, it is necessary to identify population-specific barriers to create accommodations that

> **Ambivalence or reluctance to change can be overcome by identifying a motivator to advance the individual through the final stages of change and into the maintenance phase of a lifestyle change**

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will overcome the barriers, thereby allowing for changes to occur.

Likewise, motivators that are population specific can assist in initiating a positive lifestyle change. Identifying the most common motivators during pregnancy and applying them to an intervention design could assist clinicians in their efforts to help women achieve more sustainable lifestyle changes. Nurses who care for women during the preconception and prenatal time frames should use the identified motivators to promote lifestyle changes during this time. By encouraging the idea that improving health behaviors will help pregnant women promote their own health and well-being and that of their fetuses, nurses may find women more motivated to make positive changes in their lifestyles.

Gaps in Knowledge

Although a vast amount of literature is available on the prevalence of obesity in the United States, and many interventional studies of pregnant women with obesity are designed to attempt to reduce gestational weight gain, improve nutrition, and increase physical activity, limited data have been collected on what types of barriers prevent these women from moving forward with lifestyle change. In addition, there is limited information included in the studies about what would motivate individuals in this population to begin a lifestyle or behavioral change during this life transition period. Although more studies identified barriers to lifestyle modifications, many of these studies were directly connected to the designs of the programs that required the woman to attend specific sessions as part of the intervention. Transportation, securing child care, and a lack of time are all related to participating in a specific intervention that requires in-person classes or program participation at set times. Telehealth was not used in any of the intervention studies, although its inclusion could offer a potential option to increase remote participation without the need for participants to attend specific classes or secure child care. It is difficult to know if an intervention that does not require specific days and times for meetings would be more successful with this population. Limited data also exist on what pregnant women with obesity identify as motivators to making a lifestyle modification during pregnancy that can be sustained through the action and maintenance stages of change. The long-term effects of the behavior modification interventions in this population have not been well documented to determine if pregnancy plays a role in a lifestyle change that can continue beyond the pregnancy time period.

Implications for Future Research

Interventions created to use population-specific motivators are needed to be successful. Determining common motivators for this population can provide knowledge to improve an intervention's effectiveness. In addition, it is necessary to identify and alleviate the barriers that prevent women with obesity during pregnancy from making a lifestyle change. Creating interventions in which the barriers identified by women in these studies are addressed, such as using telehealth in place of in-person meetings or alleviating environmental barriers, could result in greater success rates for behavioral change. Studies in which researchers identify the barriers that occur during the pre-contemplation stage of change and the motivators for making a behavior modification during the contemplation stage of change will allow for more focused interventions to be effective.

Conclusion

Use of the TTM and the early stages of change provides opportunity to address the barriers and motivators to lifestyle and behavioral changes women experience during the life transition period of pregnancy. Barriers and motivators are important in the creation of successful lifestyle transformation programs. Results from this review indicate a need for further emphasis on barriers and motivators when planning lifestyle interventions in this population to promote success. Pregnancy should be considered as a potential opportunity to address health behavior change in future studies. Recognizing the barriers and motivators to making such a behavioral change during this time frame can assist with making more focused interventions. By addressing barriers and promoting the motivators for making a lifestyle change, clinicians can help women achieve sustainable and successful changes that can improve their lifelong health and potentially the health of their families. NWH

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Manuscript 2

Experiences of the Pregnant Woman who is Obese

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Abstract

Objective: The impact of how women view themselves while pregnant and obese has the potential to negatively affect their self-worth and relationships. The objective of this study was to learn about how pregnant women who are obese describe their experiences and feelings regarding the changes pregnancy has made and how it has impacted their opinions of their bodies.

Design: A qualitative descriptive design was used for this study to allow women who are obese to describe their bodies and their past and present experiences regarding their weight.

Setting: The study participants were recruited from various obstetric and gynecologic offices in a rural setting. The offices employed both physicians and midwives as prenatal care providers.

Participants: A purposive sampling technique was used to recruit a sample of 20 women. The following inclusion criteria were applied: pregnant women ages 18-35 with a pre-pregnancy BMI of >30 kg/m^2, in the third trimester of the pregnancy (28-40 weeks gestation) and receiving regular prenatal care from a licensed provider.

Intervention/measurement: A typology analysis chart was used to group participants' responses from their interviews in the areas of positive or negative feelings regarding their pre-pregnancy body and weight, and positive or negative feelings regarding their pregnant body.

Results: The data were analyzed utilizing a four square matrix, identifying those participants that felt positive about their pre-pregnancy body/weight and pregnant body (n=6); negative regarding pre-pregnant body/weight and pregnant body (n=3); negative feelings regarding their pre-pregnant body, but positive regarding their pregnant body (n=8); and positive feelings regarding their pre-pregnant body, but negative about their pregnant body (n=3).

Conclusion: Pregnancy had allowed many of the women to gain a sense of achievement, where the growth of the baby and subsequent weight gain was seen as a positive attribute and embraced the functionality of their bodies.

Precis statement: Pregnancy causes many changes in a woman's life and body which can affect her overall self-esteem.

Introduction

Maternal obesity has become a leading cause of high-risk pregnancy. Maternal obesity, defined as body mass index (BMI) of $\geq$ 30 kg/m^2 by the American College of Obstetricians and Gynecologists (ACOG) (ACOG, 2013), has been described as one of the greatest challenges facing maternity services today (CMACE, 2010). Obesity during pregnancy increases the risk of mortality and morbidity in both the mother and the unborn child and can adversely affect the gestational outcomes, including an increased risk of stillbirths and need for mechanical deliveries (Nascimento et al., 2011). Obesity is a known risk factor for numerous pregnancy complications such as gestational diabetes, gestational hypertension, and preeclampsia (Renault et al., 2014). One study reported that only 49% of pregnant patients who are obese recognized that obesity increases their risks during pregnancy (Kominiarek et al., 2010).

Brown and Avery (2012) acknowledged that the women in their study have struggled with their weight throughout their lives. Women often highlighted their fears of humiliation while being pregnant and obese (Furber & McGowan, 2011). Although it is universally accepted that pregnant women gain weight, and there are colloquial references to eating for two, pregnant women who are obese claim that they do not fit into the suggested normal pattern of weight gain and do not see pregnancy as an excuse to relax their diet (Brown & Avery, 2012). Pregnancy is a time when there is social emphasis on weight and weight gain. It has been argued that some stigmatization of being obese is decreased during pregnancy because of the value placed on the woman's reproductive role (Davies & Wardle, 1994). In Keely et al. (2011), all of the pregnant women who were obese were able to describe risks associated with being obese during

pregnancy, but they did not acknowledge that their weight contributed to any problems they had already encountered in their pregnancy, or to their feelings regarding the weight gain. The impact of how women view themselves while pregnant and obese has the potential to negatively affect their self-worth and relationships.

There is a lack of current research on how the body changes associated with pregnancy influences the feelings of pregnant women who are obese. This study allowed pregnant women who are obese to describe their experiences and feelings regarding the changes pregnancy has made and how it has impacted their opinions of their own bodies.

Method

Study Design

A qualitative descriptive design was used for this study, as it allowed the population to describe characteristics specific to them. Descriptive qualitative studies are used to provide a comprehensive summary of everyday events (Sandelowski, 2000). By utilizing this type of qualitative design, pregnant women who are obese were able to describe their bodies and their past and present experiences regarding their weight. In this study, the perceptions and experiences of pregnant women who are obese prior to pregnancy were examined qualitatively for their feelings regarding their weight prior to and during their pregnancy.

Setting and Participants

The participants were recruited from various obstetric and gynecologic offices in Allegany County, Maryland. The offices employ both physicians and midwives as prenatal care providers. A purposive sampling technique was used to recruit a sample of 20 women. The following inclusion criteria were applied: pregnant women ages 18-35

with a pre-pregnancy BMI of >30 kg/m^2, in the third trimester of the pregnancy (28-40 weeks gestation) and receiving regular prenatal care from a licensed provider. The exclusion criteria were as follows: a multiple gestation pregnancy, a pre-existing medical condition prior to pregnancy, did not speak English, or fetal demise/miscarriage during this pregnancy. Participants were accessed through posters and flyers at prenatal offices to ensure recruitment of pregnant women who were obese during their prenatal time frame and were receiving appropriate prenatal care. The women contacted the principal investigator via phone or email to indicate their interest, determine their eligibility for the study, and schedule an interview.

Data Collection

Consent was sought and interviews were completed in a private room at a local hospital to ensure the participant's privacy. Written informed consent was obtained from each participant prior to any data collection. Participants were given time to read the consent form and ask questions regarding the study. Participants then completed a demographic data information sheet. The demographic form included information on age, race/ethnicity, education level, height, weight prior to pregnancy, current weight, weeks gestation, number of prenatal visits, and main provider type. Participants then completed a 30-40-minute interview that was conducted using a semi-structured interview guide that explored the participants' experiences and perceptions. During the interviews, no attempt to direct the women occurred. Interviews were audio recorded and transcribed verbatim. A sample size of 20 was used to reach the depth of data saturation where few surprises are found in the data and no additional patterns or themes are emerging (O'Reilly & Parker, 2012).

Participants were asked how they would describe their third trimester pregnant body and then later asked how they felt about their body before they were pregnant. The women were given the opportunity to discuss if they had ever felt judged when eating something and other experiences that were related to their weight. This gave the women the opportunity to discuss their feelings regarding their bodies and the changes they had experienced during the pregnancy.

Data Analysis

Each transcribed interview was read for accuracy by the principal investigator. Memos of the perceptions of the researcher were completed following each interview. The responses were initially coded and rewritten in the researcher's own words. An expert in qualitative research initially reviewed the first five interviews, transcriptions, memos, and related coding and subsequently reviewed every other interview. These responses were then reduced into focused initial codes and analyzed for themes with input from the dissertation committee.

The transcriptions of the interviews allowed the principal investigator to understand the experiences and feelings of the pregnant women who are obese who participated in the study regarding their pre-pregnant and pregnant bodies and weight. The principal investigator completed the narrative analysis, with assistance from the qualitative research expert. A typology analysis chart was used to group participants' responses in the areas of positive or negative feelings regarding their pre-pregnancy bodies and weight, and positive or negative feelings regarding their pregnant bodies. Common themes and experiences, as well as differences, were identified for each group to show how the women viewed their bodies in a positive or negative way pre-pregnancy

and then evaluated how they felt about their bodies during the pregnancy. Initial themes were developed and shared with the investigator's chairperson and then more focused and descriptive themes were identified.

Confirmability was attained through maintaining notes from each interview and memos. Transferability was achieved over the course of the study by discussing the results with the members of the dissertation committee, colleagues, and other women who met the criteria of the study. Credibility and dependability were maintained by sharing data and checking in with the participants to validate themes and results.

Ethical considerations

The study received IRB approval through the Medical University of South Carolina. Participants were informed of the voluntary nature of the study and the option to withdraw at any time without explanation. All interviews were conducted in private conference rooms at a local hospital. The demographic data forms were coded for each participant. The linking document with the participant codes was maintained in the principal investigator's office in a locked file cabinet, separate from the study data. The transcripts, recordings, and all study materials were kept in a locked file cabinet in the principal investigator's office. In addition, the interviews and transcripts were stored on a password-protected network storage device. The recorder used for the interviews was kept secure and the interviews were uploaded to a secure device immediately following the interview. The demographic data information was entered and stored in the Research Electronic Data Capture (REDCap) database through MUSC (REDCap, 2019). The hard copies of the demographic forms, transcripts, and notes obtained during the interviews were kept in a locked file in the principal investigator's office.

Participant Demographics

Twenty women met the eligibility criteria and were interviewed. The mean age of the participants was 25.9 (see Table 1) and the average gestation at the time of the interview was 31.3weeks. The pre-pregnancy BMIs for the women ranged from a low of 30 kg/m^2 to a high of 51.6 kg/m^2, with an average BMI of 39.47 kg/m^2. The BMIs of the pregnant women at the time of the interview showed an increase in range from 30.7 kg/m^2 to 53.8 kg/m^2, and averaged 41.02 kg/m^2. Ethnicity was 95% white and 5% Black. Education included one participant with a GED, five with a high school diploma, five with some college education, and nine with a college degree. The average gestational weight gain of the participants was 9.1 pounds at the time of their interviews.

Table 1. Demographic Information (N=20)

Variables	Value	Percent (%)
Age (mean years)	25.9	
Ethnicity (n, %)		
White	19	95
Black	1	5
Educational level (n, %)		
GED	1	5
High school diploma	5	25
Some college	5	25
College degree	9	45
Obstetric provider (n, %)		
Midwife	5	25
Physician	15	75
Gestational age (mean weeks)	31.3	

Results

The participants' interviews were analyzed and classified using typologies. A typology is designed to create an arrangement from data reduction to help understand

complex events, processes, or constructs (Suter, 2012). The data were analyzed utilizing a four square matrix by identifying those participants that felt positive about their pre-pregnancy body/weight and pregnant body (n=6); negative feelings regarding pre-pregnant body/weight and pregnant body (n=3); negative feelings regarding their pre-pregnant body, but positive feelings regarding their pregnant body (n=8); and positive feelings regarding their pre-pregnant body, but negative feelings about their pregnant body (n=3). Themes were identified for each of the typology sections and include: I have pride in myself and how my body has changed with the pregnancy, I am frustrated with the changes pregnancy has made in my body, I have embraced the changes pregnancy has made in my body, and I am ashamed of my body (See Figure 1)

Figure 1. Typology Focused Themes

	Positive feelings about pre-pregnancy body/weight	**Negative feelings regarding pre-pregnancy body /weight**
Positive feelings regarding pregnant body	I have pride in myself and how my body has changed with the pregnancy	I have embraced the changes pregnancy has made in my body
Negative feelings regarding pregnant body	I am frustrated with the changes pregnancy has made in my body	I am ashamed of my body

I have pride in myself and how my body has changed with the pregnancy

Six of the women had a positive perception of their pre-pregnancy weight and bodies and these women remained positive regarding the changes in their bodies related to pregnancy. The women indicated that they had pride in themselves, their bodies, and the changes made in their bodies by the pregnancy. This group of women had the highest mean pre-pregnancy BMI at 43.4 kg/m^2. The women in this group also had the second lowest amount of weight gained during their pregnancy with an average of 10.6 pounds.

Participant 5 had recently lost 50 pounds prior to the pregnancy and stated she was "feeling good about her body." When asked about her pregnant body, she said that she "was continuing to hang in there and feeling good." She also stated that "overall, I love my body." Participant 10 stated that she "feels the same. I could have eaten better and made better choices," but acknowledged that her body "is amazing what it's done. How it's grown." Participant 13 stated that in pre-pregnancy she "felt overweight, but that is just me." Then when asked how she felt about her pregnant body, she said "pregnancy just made me feel more comfortable wearing tight clothes, because I have a tight belly now." Participant 19 acknowledged her acceptance of her pre-pregnancy body by saying "I've always been one of those people that's kind of like, be confident in yourself." When asked about her pregnant body, she responded, "I've gotten a little rounder, but I don't look a whole lot different." One participant summed up the collective feeling of taking pride in their appearance and changes related to pregnancy by stating, "I've been heavier my whole life, so being pregnant does not affect it. If anything, it makes me, like I said, a little more comfortable." Overwhelmingly, the women in this category accepted their pre-pregnancy bodies and continued to have positive thoughts

about their pregnant bodies and the changes they saw in themselves physically, related to the pregnancy.

I am frustrated with the changes pregnancy has made in my body

Three of the women interviewed had positive feelings about their pre-pregnancy bodies and weight and negative feelings regarding their pregnant body and the changes in their bodies related to the pregnancy. This group, with a mean of 21 years of age, included the youngest participants. The participants also had the lowest starting BMI of 32.6 kg/m^2, but had the largest weight gain during the pregnancy of 21.3 pounds. All three of the women were pregnant with their first child.

The women made positive statements regarding how they felt about their pre-pregnancy bodies, including statements such as "confident" and "active." One participant stated, "I was pretty confident (about my pre-pregnant body) and had a good self-esteem," and then when asked to describe her pregnant body stated, "I refer to my stomach as a whale and wonder where is my bump? I don't want to pack on too many pounds." Participant 15 also stated that she "felt confident" about her pre-pregnancy body. However, when asked about how she would describe her pregnant body, she said, "Every time I go back, I gain weight, but that makes me feel bad about myself, even though I know I have another human in me." When asked about how they would describe their current pregnant bodies, the women chose negative descriptive words, such as "weak," a "whale," and a "plum." The women in this category were confident in their weight and appearance prior to becoming pregnant. However, as their weight increased and their bodies changed with the growth of the baby, they experienced negative feelings towards their bodies and weight gain associated with the pregnancy which was indicated

by their negative descriptions of their bodies. Even though the women associated the weight gain with the growth of the baby in their statements, they still had negative feelings regarding the changes in their bodies.

I have embraced the changes pregnancy has made in my body

Eight of the participants had negative feelings regarding their bodies and weight prior to the pregnancy, but had positive feelings regarding their current pregnant bodies and the changes pregnancy had caused in their bodies. This category in the typology had the oldest mean age of the participants at 27.6 years of age. It also included the second highest BMI mean at 40.3 kg/m^2.

One participant summed up her transition from how she felt pre-pregnancy about her body by stating, "I was disgusted. I would look in the mirror and thought I looked nasty," to her pregnant body description: "I love it! I am carrying a baby so I know that gaining weight is a good thing." One participant indicated that "I've always shamed (sic) my own body," where another participant embraced her pregnancy by stating, "It (my weight) has always been a challenge, but I am finally looking pregnant." Participant 16 stated, "I never liked my body, so that's nothing new and if I had any testing, they always wrote that (obesity) somewhere," but when asked about her description of her pregnant body, she said, "I'm actually okay with it. It has made it a lot easier to know that I am gaining this weight to finally have this bundle of joy finally in my arms. It's my kid and my body and I just want him to be healthy. That's all I care about." Participant 17 showed the transition of her pre-pregnancy body to pregnancy by stating, "I don't feel ashamed about very many things, but in general, weight's something that (I do feel ashamed of), especially pre-pregnancy, not now, but pre-pregnancy," and then when

asked how she would describe her current pregnant body, she responded, “I love it, I absolutely love it. All I can think is happy, even with the stretch marks and changes. I love it because it is full. Yeah, beautiful is what I honestly see when I look in the mirror. I just keep thinking beautiful. I keep looking and I’m like, so nice and pretty.” This group of women had negative impressions of their pre-pregnancy bodies, but transitioned to positive thoughts with the pregnancy changes they observed in their bodies and related the changes to showing the pregnancy and the growth of the baby.

I am ashamed of how my body looks.

Three participants in the study had negative feelings regarding their pre-pregnant bodies and also their pregnant bodies. These participants had the second lowest mean age of 25.6 years of age, the second lowest average BMI of 36.1 kg/m^2, and the second highest weight increase with an average of 11.6 pounds gained during the pregnancy.

The women in this group had negative thoughts regarding their bodies both prior to pregnancy and during the pregnancy. When asked how the felt about their pre-pregnant bodies, the women answered with statements of, “I do have a negative self-image” and “why do I have to be shaped like this?” Pregnancy did not have any impact on these negative feelings and the women described their current pregnant bodies with the phrases, “I am as big as a house,” “pretty large,” and “cow-shaped.” Participant 2 noted that “I’m very self-conscious about my weight and I always have been because it’s always been a struggle,” and when asked how she felt about her current pregnant body she said, “I think I’m probably still as negative as I was before because I’m unhappy with my weight prior to becoming pregnant.” Participant 8 said about her pre-pregnancy body

that “I feel like people are staring at me because I’m already big and I’m eating more.” Then when asked to describe her current pregnant body, she said, “Poor condition. Really poor condition.” The women in this category were unhappy with their bodies and weight prior to becoming pregnant and did not identify any positive feelings related to the pregnancy and subsequent weight gain, nor did they identify the baby as the reason for the changes in their bodies.

Discussion

Maternal obesity has been described as one of the most significant challenges in maternity care today, and while many women are aware of the risks of being obese and pregnant (Keely, Gunning, & Denison, 2011), there is a lack of information on how these women perceive themselves and feel about the changes pregnancy brings to their bodies. While it has been suggested being comfortable with her body before pregnancy can assist a woman with accepting the changes that occur in her body during pregnancy (Office on Women’s Health, 2018), society continues to emphasize an unrealistic pregnancy shape and promotes negative personal feelings regarding changes that occur during pregnancy in the pregnant woman who is obese. The aim of this study was to explore how women who are obese prior to pregnancy feel about their bodies and the changes that occur in their bodies related to the pregnancy.

Four distinct categories were derived from the interviews with the participants using a typological analysis. The majority of women in this study had negative feelings related to their pre-pregnancy body. The women discussed how they hated their bodies and worried about how much weight they were going to gain when they became pregnant. Subsequently, many of the women were then able to identify positive attributes

when asked how they felt about their current pregnant bodies. This included such positive statements as the baby is growing and liking their pregnant bodies, which suggested a lessening of negative perceptions and a greater appreciation for their bodies' abilities to adapt to the changes related to pregnancy. In contrast, fewer women felt the changes from the pregnancy resulted in negative feelings towards their bodies, such as stating their body felt weak and was in poor condition.

The women in this study with the highest BMIs and average ages embraced the changes the pregnancy had made in their bodies. While some of the women had a negative perception of their bodies during the pre-pregnancy time frame, pregnancy appeared to have a diminishing effect on the negative feelings as they embraced the changes that pregnancy made, including showing the pregnancy in their abdomens and focusing their statements and emotions on the growth of the baby. The positive feelings related to the pregnancy changes impacted the way they viewed their bodies and allowed them feelings of accomplishment.

Conversely, the youngest participants, which also included those with the lowest pre-pregnancy BMIs, were frustrated with the changes pregnancy had made in their bodies. Additionally, this group had gained the most weight overall during the pregnancy. Some of these participants felt positive about their pre-pregnancy bodies and felt they had self-confidence in their appearance. The weight gain and body changes associated with pregnancy had caused feelings of shame, embarrassment, and dissatisfaction with their appearance. These participants were less likely to emphasize the baby and its growth when discussing their feelings regarding their bodies, but rather the negative impact of the pregnancy on their physical appearance. This included the women making negative

statements when they referred to their pregnant shape, including referring to the abdomen a whale and being upset when they had pictures taken because of their abdomens being bigger.

Obesity in pregnancy can cause a variety of complications in the mother and the infant. By understanding how women who are obese see their bodies during pregnancy, clinicians can better determine what education is needed by the women and which interventions would promote healthy eating and exercise to limit excessive weight gain during pregnancy and promote healthier outcomes for mother and infant.

Implications for practice

Nurses who care for pregnant women who are obese can play a vital role in supporting these women. By understanding the experiences the women have encountered, they can provide more compassionate care to the women during prenatal visits and in the intrapartum care areas. This can promote better relationships and communication between the women and nurses during this time period. Learning more about the experiences and feelings of the pregnant woman who is obese can also allow nurses to understand family dynamics that occur during prenatal office visits and during the perinatal and post-partum care periods. Likewise, by relating the growth of the baby with the changes in their weight and bodies, nurses can promote an improved sense of body appreciation and satisfaction in pregnant women who are obese.

Strengths and Limitations

A strength of this study was the range of BMIs of the participants, which allowed for perspectives of women who are obese through morbidly obese with BMIs ranging from 30 to 51 kg/m^2. A limitation of this small study was the recruitment took place

exclusively from one small area hospital. Ethnic diversity is also limited in Allegany County with an 88.2% White and 8.25% Black population (United States Census Bureau, 2015). This provides a limited look into the experiences of the Black population in this area. There was also the potential for participants to be more comfortable and willing to discuss their weight; thus, a selection bias could have occurred.

Conclusions

As the women who participated in this study shared their stories, the results allowed us to explore the perceptions of how pregnant women who are obese felt regarding their pre-pregnant and pregnant bodies. Pregnancy had allowed many of the women to gain a sense of achievement, where the growth of the baby and subsequent weight gain was seen as a positive attribute and embraced the functionality of their body. The older participants in this study had a more positive view of their body and were more accepting of the changes pregnancy had made in their bodies. The youngest participants had a harder time adapting to the changes pregnancy had made to their bodies.

Future research should focus on the negative perceptions of their pre-pregnancy bodies in this population, including their feelings of how their childhood impacted their weight, and also seek ways to promote appreciation of body functionality and healthier behaviors during pregnancy and into the post-partum timeframes. By utilizing the impact of pregnancy and its limiting of negative feelings towards one's body and by focusing on the functionality of the women's bodies, women can attain more positive feelings regarding their body and the changes made from pregnancy.

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Manuscript 3

Social Support and its Impact on Pregnant Women who are Obese

Abstract

Objective: The impact of social support on how women view themselves while pregnant and obese has the potential to negatively affect their own perceptions of their bodies and relationships. The objective of this study is to explore how pregnant women who are obese relate with their identified support systems prior to and during pregnancy.

Design: A qualitative descriptive design was used for this study to allow women who are obese to explore their experiences with their social support system during pre-pregnancy and pregnancy timeframes.

Setting: The study participants were recruited from various obstetric and gynecologic offices in a rural setting. The offices employed both physicians and midwives as prenatal care providers.

Participants: A purposive sampling technique was used to recruit a sample of 20 women. The following inclusion criteria were applied: pregnant women ages 18-35 with a pre-pregnancy BMI of >30 kg/m^2, in the third trimester of the pregnancy (28-40 weeks gestation), and receiving regular prenatal care from a licensed provider.

Results: The data were analyzed utilizing a concentric approach by identifying those members of the participants' social support system who had impacted their feelings regarding their weight and pregnancy changes. All but one of the women (n=19) indicated they were in a relationship and the majority had a supportive relationship with their partner (n=18). The women utilized various types of prenatal care providers, including physicians (n= 15) and midwives (n=5). Eighteen of the participants felt

supported by their prenatal care provider and had no issues discussing weight, weight change, and body image with their providers during prenatal visits. The women identified negative events from their families' experiences related to their weight and pregnancy changes. Four of the participants also identified negative experiences with friends and coworkers that occurred prior to and during the pregnancy.

Conclusion: Women who are obese have a variety of social support members who can impact how they feel about their bodies and weight changes associated with the pregnancy.

Precis statement: Pregnant women who are obese identify support systems that can impact their feelings regarding their weight and pregnancy in a positive or negative way.

The Centers for Disease Control and Prevention (2018) has noted that obesity rates are increasing across the lifespan. In the United States, 35.7% of the adult population is obese (Yao, Ananth, Park, Pereira, & Plante, 2014). The increasing prevalence of overweight and obese women of childbearing age is a growing public health concern (Siega-Riz & Laraia, 2006). Maternal obesity is a leading cause of high-risk pregnancies and affects as many as one in three pregnancies (Huisman, 2013). The woman who is obese during pregnancy has additional health risks such as pregnancy-induced hypertension, gestational diabetes, premature and operative deliveries, fetal injury during delivery, fetal demise, and miscarriage (Davis, Stange, & Horwitz, 2012). This population offers its own unique set of issues that can have life-changing effects, often with dire outcomes including increased maternal and fetal mortality (Vinayagam, Nair, & Chandraharan, 2012).

Society has been inundated with media messages that set predetermined standards for appearance, even during pregnancy. The pregnant woman who is obese has already moved away from society's thin-ideal body image and has experienced the effects of the notion "you are what you look like" (Rubin & Steinburg, 2011). As an example, "The Perfect Little Bump" discusses the new ideal of a skinny body and a pregnancy "bump" that is promoted in the media (Abraham, 2004). One woman in the article articulated that she realizes that women have different body types but is having a difficult time convincing herself that it is okay to get bigger because she is pregnant and larger than some of her thinner friends. The pregnant woman's social support system members have also been impacted by these messages from the media. Social media often shows a false presentation of the world and appearances, but it is often used as a measurement tool and

can increase the negative comparisons made between a woman's body and others on social media by the woman and her support system (Brown, 2016). The emphasis on a women's appearance from the media and her support system can lead women to internalize an outside observer's perspective on their body and appearance (Morris & Goldenberg, 2014).

Pregnancy can be a stressful time in a woman's life due to new experiences and lifestyle changes; however, social support is associated with improved physical and mental health outcomes during pregnancy (O'Donovan & Hughes, 2008). Social support has been defined as resources that are provided by others and can include the emotional and instrumental aid that can be acquired from one's social relationships (Orr, 2004). Emotional support, which allows women to feel loved and appreciated, often is secured from their significant others, families, and friends and coworkers. In contrast, instrumental support provides tangible assistance, such as a provider caring for the woman during her pregnancy (Orr, 2004). Social support can improve pregnancy outcomes, such as childbirth being perceived as less stressful, when positive social support is present (Taylor, 2011).

Social support during pregnancy plays an important role in the pregnant woman who is obese (Smith, Taylor, & Lavender, 2014). Not all women will receive the same level of support from their families and significant others, so it is important to evaluate women's perceptions of their support systems and its effects on their well-being (Smith, Taylor, & Lavender, 2014). Women have identified support persons for pregnancy as themselves, family members, friends, or partners; however, they are not always supportive of the changes of pregnancy, including appetite changes and gestational

weight gain (Kominiarek, Gay, & Peacock, 2015). Prenatal care providers also have a unique role in social support of the pregnant woman who is obese (Smith, Taylor, & Lavender, 2014). Office visits at frequent intervals offer a time when education, discussions, and instrumental support can be given to the woman and her partner.

The data reported here are part of a larger study which explored the feelings of pregnant women who are obese regarding the changes pregnancy made and how it impacted their opinions of their own bodies. During the analysis, a common theme of social support was noted. Thus, the purpose of this paper is to explore how pregnant women who are obese relate with their identified support systems prior to and during pregnancy.

Method

Study Design

A qualitative descriptive design was used for this study. Descriptive qualitative studies are used to provide a comprehensive summary of everyday events (Sandelowski, 2000). By utilizing this type of qualitative design, participants were able to share their perceptions and experiences with their support system members and how they positively or negatively impact the women during pregnancy. By conducting individual qualitative interviews, sensitive issues such as obesity and support system interactions can be explored with the participants without fear of judgement or stigma.

Setting and Participants

The participants were recruited from various obstetric and gynecologic offices in Allegany County, Maryland. The offices employ both physicians and midwives as prenatal care providers. A purposive sampling technique was used to recruit a sample of

20 women. The following inclusion criteria were applied: pregnant women ages 18-35 with a pre-pregnancy BMI of >30 kg/m^2, in the third trimester of the pregnancy (28-40 weeks gestation), and receiving regular prenatal care from a licensed provider. The exclusion criteria were as follows: a multiple gestation pregnancy, a pre-existing medical condition prior to pregnancy, did not speak English, or fetal demise/miscarriage during this pregnancy. Participants were accessed through posters and flyers at prenatal offices to ensure recruitment of pregnant women who were obese during their prenatal time frame and who were receiving appropriate prenatal care. The women contacted the principal investigator via phone or email to indicate their interest, determine their eligibility for the study, and schedule an interview.

Data collection

Consent was sought and interviews were completed in a private room at a local hospital to ensure the participant's privacy. Written informed consent was obtained from each participant prior to data collection. Participants were given time to read the consent form and ask questions; then they completed a demographic data information sheet. The demographic form included information on age, race/ethnicity, education level, height, weight prior to pregnancy, current weight, weeks gestation, number of prenatal visits, and main provider type seen. Participants then participated in a 30-40 minute interview that was conducted using a semi-structured interview guide that in part explored the participants' experiences and perceptions of their support systems. During the interviews, no attempt to direct the women occurred. Interviews were audio-recorded and transcribed verbatim. Data saturation was reached with 20 participants where few surprises and no additional patterns or themes were emerging from the data (O'Reilly & Parker, 2012).

Participants were asked if they had a significant other and how the significant other felt about the woman's pregnant body. The women were given the opportunity to discuss if they had ever heard negative comments regarding their body size prior to being pregnant and if this had occurred since they had been pregnant. This gave the women the opportunity to discuss their interactions with others and their reactions to such comments. The participants were also asked how they felt discussing weight change and body image with their providers and if they had experienced any negative feelings, such as anxiety or shame, during their prenatal visits.

Data analysis

Each transcribed interview was read for accuracy by the principal investigator. Memos of the perceptions of the researcher were completed following each interview. The responses were initially coded and rewritten in the researcher's own words. The researcher's dissertation chairperson initially reviewed the first five interviews, transcriptions, memos, and related coding, and subsequently reviewed every other interview. These responses were then reduced into focused initial codes and analyzed for themes with input from the dissertation committee.

The transcriptions of the interviews allowed the principal investigator to understand the importance and impact of the support systems of pregnant women who are obese regarding their pre-pregnant and pregnant bodies and weight. A concentric approach was utilized to determine who had the greatest impact on the women during this life-changing event. With the woman identified at the center of the diagram (see Figure 1), each circle that expands from the woman shows the influence each group has on her. The data were grouped according to the women's significant others, families, prenatal

care providers, and friends and coworkers, all of whom have significant interaction with the women during this time frame. Initial themes were developed and then more focused and descriptive themes were identified.

Confirmability was attained through maintaining notes and writing memos from each interview. Transferability was achieved over the course of the study by incorporating a variety of participants that utilized various provider types, were aged 18-35 years old, had pre-pregnancy BMIs that ranged from 30-51.6 kg/m^2, and a variety of educational levels from high school through college graduates. Credibility was retained by sharing data and checking in with five participants (25%) and with the members of the dissertation committee to validate themes and results. Dependability was maintained through retaining the notes and memos from the interviews, the interview guides and demographic forms, and analysis summaries including charts and graphs pertinent to each identified support system

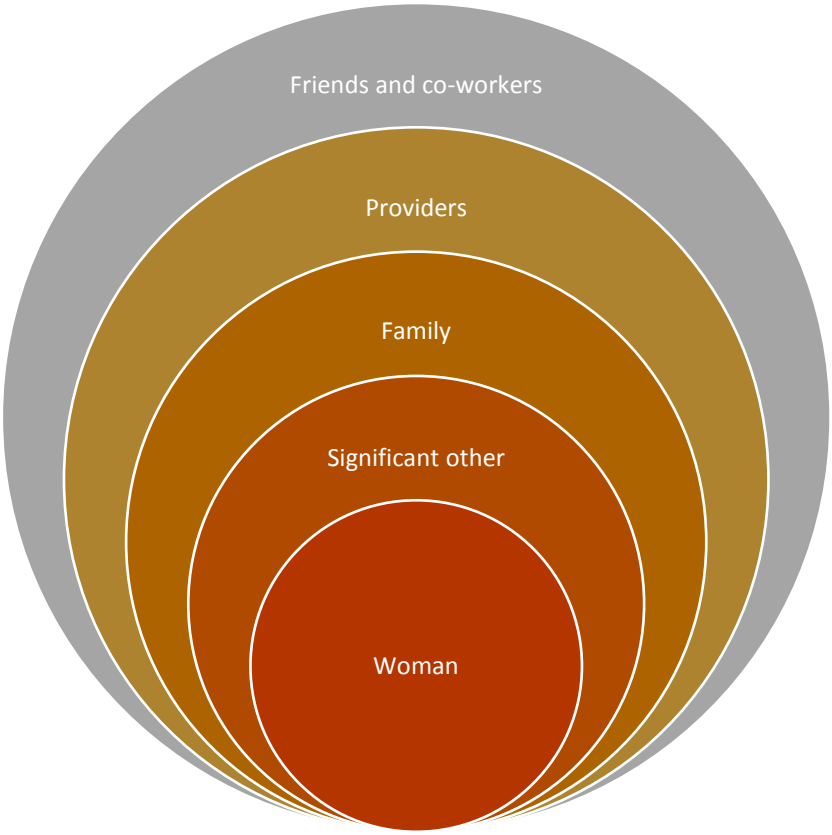

Figure 1. *Support System Concentric Figure*

Ethical considerations

The study received IRB approval through the Medical University of South Carolina (MUSC). Participants were informed of the voluntary nature of the study and the option to withdraw at any time without explanation. All interviews were conducted in private conference rooms at a local hospital. The demographic data forms were coded for each participant. The linking document with the participant codes was maintained in the principal investigator's office in a locked file cabinet, separate from the study data. The transcripts, recordings, and all study materials were kept in a locked file cabinet in the principal investigator's office. In addition, the interviews and transcripts were stored on a password-protected network storage device. The recorder used for the interviews was kept secure and the interviews were uploaded to a secure device immediately following

the interview. The demographic data information was entered and stored in the REDCap database through MUSC (REDCap, 2019). The hard copies of the demographic forms, transcripts, and notes obtained during the interviews were kept in a locked file in the principal investigator's office.

Participant Demographics

Twenty women met the eligibility criteria and were interviewed. The mean age of the participants was 25.9 years (see Table 1) and the average gestation at the time of the interview was 31.3 weeks. The pre-pregnancy BMIs for the women ranged from a low of 30 kg/m^2 to a high of 51.6 kg/m^2, with an average BMI of 39.47 kg/m^2. The BMIs of the pregnant women at the time of the interview showed an increase in range from 30.7 kg/m^2 to 53.8 kg/m^2, and averaged 41.02 kg/m^2. Ethnicity was 95% white and 5% Black. Education included one participant with a GED, five with a high school diploma, five with some college education, and nine with a college degree. The average gestational weight gain of the participants was 9.1 pounds at the time of their interviews.

Table 1. Demographic Information (N=20)

Variables	Value	Percent (%)
Age (mean years)	25.9	
Ethnicity (n, %)		
White	19	95
Black	1	5
Educational level (n, %)		
GED	1	5
High school diploma	5	25
Some college	5	25
College degree	9	45
Obstetric provider (n, %)		
Midwife	5	25
Physician	15	75
Gestational age (mean weeks)	31.3	

Results

The data were analyzed utilizing a concentric approach. A concentric approach identified the woman as the focal point and showed that each group of people impacts the woman and her feelings regarding the changes in the pregnant woman who is obese. Starting with the pregnant woman, the significant other has the greatest influence on the woman and how she feels about her pregnant body and changes related to the pregnancy. Next, the woman's family can contribute to how the woman views her body. Then, the obstetric providers frequently develop a relationship with pregnant women with scheduled regular appointments, which allow the provider time to share information and provide feedback on weight gain and body changes. Finally, the friends and coworkers of the women also provide input and can provide support to the woman during this time.

The data were analyzed utilizing a matrix by identifying those participants that felt they had a supportive or non-supportive support system for four different groups: significant others, family, prenatal care providers, and friends and coworkers. Participants were asked if their prenatal office visits with their providers caused any feelings of anxiety or shame and how they felt discussing weight change and body image with their providers. They were also asked if they currently had a significant other involved with the pregnancy (n=19) and how their significant other felt about their pregnant body. Participants were asked if they had ever felt judged by someone for eating something, if they had ever received negative comments made about their body size, and since becoming pregnant, had they had negative comments regarding their body size. Themes identified included: My significant other supports me during my pregnancy and with my weight, my family makes me feel bad about my weight, my prenatal provider is

supportive of my pregnancy, and my friends and coworkers make me feel ashamed of my body.

My significant other supports me during my pregnancy and with my weight

All but one of the women interviewed indicated that they were in a relationship with their significant other. Seventeen of the women stated their partners were supportive of the changes in their bodies related to the pregnancy. Even if the woman was ambivalent regarding changes in her body, the partner focused on the positives of the baby's growth and the changes related to the pregnancy. One participant stated, "Surprisingly, he does not mind. I don't know if it's because it's the third time around now and you just get used to it, but he's always supportive. So, any time I've tried to do exercise specifically for weight loss he would exercise with me, or support me, or those kinds of things. I always ask my husband that (how my clothes look) and he's usually, thankfully, very honest, and it doesn't upset me." Another participant said her significant other was "really very supportive actually. He was like, no, you're beautiful. He said it's just the baby growing. It's going to happen that your belly gets bigger and your clothes aren't fitting because of that. He's really supportive though." Another stated, "He loves it. I apologize frequently for the shape of my belly because I don't have your typical round, pregnant belly. And he just keeps saying, you're beautiful and you're perfect and you're pregnant. He's wonderful." When asked how their partner felt about the changes in the woman's body related to the pregnancy, statements such as "he thinks I am the most beautiful creature in the world" and "he loves it" confirmed that partners are very positive regarding the body transformation pregnancy had made in the women.

Only two of the women had negative experiences with their partner regarding the pregnancy-related changes in their body. One woman said her partner was "not big on the weight gain," while another said her partner "makes fat comments" to her.

My family makes me feel bad about my weight

The women in the study identified eight separate incidents involving family members where negative comments were made regarding their weight and body. Four of these occurred prior to the pregnancy. The participants were asked if they had ever felt judged by someone for eating something and if so, if they could they provide an example of such statements. The women were also asked about their experiences of negative comments that occurred prior to pregnancy regarding their body size. One woman said that when living with her stepmom and dad as a child, her stepmom would "make fun of me and my sister because of how overweight we were. They would hide cookies and stuff from us. But she'd let her kids eat it because they were perfect, but we weren't in her eyes." Another woman said, "Yeah, because my first pregnancy I gained over sixty pounds, so then after I had the baby, I couldn't lose any of it and my stomach was real saggy. I've had my parents make comments to me about it (my weight), my mom and them. Just about how big I got, and you know, they ordered me wraps, it was kind of like ignorant in a way. It was like stomach wraps." Another woman addressed her mother's comments about her size by stating, "I just remember even growing up, my mom would say, I'm not gonna buy you such and such size jeans. If I was in whatever size jeans, I'm not buying the next size up. Or you know, your thighs are getting big." Another participant said, "It's kind of bad. My family does that (judge) a good bit, my dad and brothers. They do that sometimes. They've done that since I was a kid, but I was the

chunkier sibling growing up in a house with a brother, and anything that I would eat would just plump me up. So, I think that's where I got my complex from since I was younger."

Pregnancy did not seem to have an effect on the negative comments made to the women by their families. When asked about the feedback the women received from other people regarding the changes in their bodies related to pregnancy, the women discussed family comments and criticism regarding those changes. One woman stated that her husband's grandmother asked, "Are you supposed to be eating that much?" and then added, "You're a big enough person as is." One woman said, "So anytime I eat something, they always ask me why I'm eating that, especially when I'm pregnant. So, it's kind of hard. Yeah. They still make jokes like my dad says, 'Hey, Tubbo, what's up?'" Another participant said, "My mother is a hard critic and thinks she knows everything," and states, "You know you shouldn't be eating that, you don't need that. Just whenever she says a few things, and then she compares me and my sister-in-law. She's showing sooner, or whatever."

My prenatal provider is supportive of my pregnancy

Fifteen of the women in this study utilized physicians for their prenatal care, while the other five women used midwives for their care. Eighteen of the women indicated that they felt supported and comfortable when discussing their weight with their care provider. One woman stated, "I don't feel judged by them. I feel very comfortable. I don't think they've ever made me feel like I'm less of a person because I weigh more." Another participant noted that, "I feel pretty comfortable (with my provider). I like her. She's really nice. Very calming." One woman, who had not gained any weight while

pregnant, tied her positive relationship with her provider to her lack of weight gain by stating, “Pretty good, since I haven’t gained any weight. I always felt a little heavy beforehand, and so I’m very conscious of it. I don’t want to gain excess weight. I was hopeful for that.” Statements such as, “He makes you feel very comfortable. He lets you know if there is a problem,” show that the providers can offer support and be approachable, even with uncomfortable topics such as weight.

The two women that noted that they were uncomfortable with discussing weight change and body image with their providers felt that the provider did not “really understand it (weight).” One participant said, “Uncomfortable. That’s always been an uncomfortable question, topic.” The other participant stated, “I don’t know, every time I go to the doctor’s I get angry. No, he doesn’t really say much about it (my weight), he just said, you know, being more overweight is going to be harder trying to even get pregnant or sometimes during delivery.”

Friends and coworkers make me feel ashamed of my body.

Four of the women described negative encounters with their friend or coworkers. One woman stated, “I actually got called fat two weeks ago in McDonald’s. Actually, I posted a status on Facebook about it and I was like, you know, I was just kind of a mess, and I wasn’t even getting food for myself. I was getting my son a Happy Meal. Well, I knew him (a person at McDonald’s) from school and you know I hadn’t seen him in a while, and so me and my boyfriend were standing there and they were just talking about how different and how bigger I had gotten.” When asked if people have made any negative comments regarding their weight since they have been pregnant, another woman said, “My friends, I’ve lost friends over it. People that I thought were my good friends

have made comments about my weight and made fun of me behind my back and it's eventually gotten back to me. I've been told that because I'm so big, my baby's going to be big. My baby's not going to have a healthy lifestyle. My baby's just going to be overweight. So, I've just pushed them all out." Another participant noted, "Friends of friends that we went out to eat with. They just look at you like why are you eating the worst thing on the menu or why are you ordering soda when you're pregnant." Another stated, "I've had some negative comments from friends of my family or something. One lady made the comment, 'Are you sure you aren't having twins?' A lot of people are saying that, and it's bad enough I look in the mirror and I'm like, 'Is it me that's gaining this weight or is it just because he's that big?' I mean he is a big baby, and they've told me that, but I wish people would just say, 'You're glowing,' or 'You look happy,' or anything positive versus, 'My god. Look how big your belly is.'"

Prior to becoming pregnant, five of the women also identified incidents where they had negative comments made about their weight or bodies. One participant said that someone told her, "She has a really pretty face, but if she lost some weight, she'd be more of a 10." Another woman said, "One time it was…-I remember because I don't forget it. It was like two or three years ago. It was at a Halloween party, and I was eating some chicken dip or something. One of our friends came up and he was like, 'You should really watch how much of that chicken dip you're eating.' I was shocked. I was like okay. I just kind of ignored him. It made me angry, but I didn't really show it." Participant 11 noted that, "High school is rough. Everybody calls you fat if you're not a size 2. I felt when I'm eating certain things, some of my friends who are smaller who can drink a gallon of soda a day and eat 50 pounds of Bagel Bites and still be a size one. It weighs on

you a little bit. I've learned to cope." One participant gave this example: "Oh yeah. When I was getting my ID done for the prison, and I know this woman didn't mean anything by it. I know. They have to put your height, your weight, what you are. Yeah and I watched her do someone in front of me and they were 5'6", 110 pounds. They did their thing and went out. I stepped up next. I said 5'6", 250-260 pounds. I said probably 260 right now. And she goes, 'Oh that's okay, honey. We won't put your weight on there. We will just put zero.' And I just thought, I appreciate that, but I didn't feel fat before. Now I definitely feel fat."

Discussion

The women in this study had positive support systems that encouraged them during the changes that had resulted from the pregnancy, including weight gain and body changes. The significant other had the strongest influence on the woman and how she felt about her pregnant body and changes related to the pregnancy. The women's significant others were overwhelmingly supportive, and even appreciative of the changes pregnancy had made in the body of the woman who is obese. The significant other provided positive feedback, encouragement, and focused on the positive aspects of the pregnancy changes, including the growth of the baby. This relationship seemed to have a positive effect on the women's negative feelings about weight gain and changes in their bodies associated with the pregnancy. The negative comments made by the partners about the women and their bodies can have an undesirable impact on the women and their own view of their bodies and the pregnancy

Kominiarek, Gay, & Peacock (2015) noted that significant others are not always supportive of healthy behaviors or understand the common appetite changes during

pregnancy. Since the women's families continues to have a relationship with them during pregnancy, they can also contribute to how the woman views her body. However, the women's families in this study were often not as supportive as the significant others; this may be from having a long-term relationship with family and feeling that they are providing feedback to help the woman maintain her weight, by suggesting she curb her intake or even lose weight. These negative comments were considered hurtful by the women and suggest deeper problems in the relationships. Sadly, the women's mothers were mentioned more often than any other family member when asked about negative comments or situations regarding their weight.

The prenatal care providers developed a relationship with the pregnant women who are obese through regular office visits. This offered a unique situation where the provider can offer support and provide needed information and guidance during a distinctive time frame in the women's lives. The women who felt positive regarding their providers found the providers to be supportive and they were comfortable asking questions and receiving information overall. The women who identified negative feelings and relationships can have a limited amount of support from the prenatal care provider.

Friends and coworkers offered the least amount of positive support to the pregnant women who are obese through negative conversation that had occurred with these groups. The women noted events from childhood and school through current comments that occurred while they were pregnant. The comments made by these members of the women's support system were considered hurtful and negative by the women. Negative encounters from the friends and coworkers of the women had also

occurred prior to the pregnancy. Once again, the familiarity of these members of the support system seemed to embolden the negative interactions and comments.

Strengths and Limitations

A strength of this study was the range of BMIs of the participants, which allowed for perspectives of women who are obese through morbidly obese with BMIs ranging from 30 to 51 kg/m^2. A limitation of this small study was the recruitment took place exclusively from one small area hospital. Ethnic diversity is limited in Allegany County with an 88.2% White and 8.25% Black population (United States Census Bureau, 2015). This provides a limited look into the experiences of the Black population in this area. There was also the potential for participants to be more comfortable and willing to discuss their weight; thus, a selection bias could have occurred.

Conclusion

A solid support system during a life-altering event such as pregnancy can have a positive effect on the woman and how she deals with the changes from the event. The women who participated in this study in this study indicated they had both emotional and instrumental supports involved in their pregnancies. The significant other provided the closest and strongest emotional support for the pregnant woman who is obese. The women's families, while maintaining an impact on the woman and her emotional feelings regarding the pregnancy, weight gain, and changes in her body related to the pregnancy, were not always positive in their interactions with the pregnant woman who is obese. The women did indicate that they received positive instrumental support from their prenatal care provider. Friends and coworkers were not identified as supportive of the women prior to the pregnancy or during the pregnancy. Pregnancy is a time in a woman's life

when social support is necessary and can either positively or negatively impact a woman's emotional state.

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Summary and Conclusions

This dissertation compendium consists of three manuscripts. The first manuscript was an integrative review of articles that examined motivators and barriers to health behavior change in pregnant women who are obese (McCloud, 2018). The second and third manuscripts detail a descriptive qualitative design to explore the experiences of pregnant women who are obese. The second manuscript explored the women's overall feelings regarding their bodies and the changes related to the pregnancy that they were experiencing, particularly with regard to their weight. The third manuscript examined the women's social support prior to and during the pregnancy related to their weight and body changes related to the pregnancy.

The first manuscript used the transtheoretical model to identify motivators and barriers for health behavior change intervention studies in pregnant women who are obese in the pre-contemplation and contemplation stages of change. During these two stages of change, a person becomes conscious of a need to make behavioral change and then is aware of the benefits of making a positive behavior change. Women identified that a lack of structure and time, awareness of a need to make healthier choices, increased stress, and low self-esteem were all barriers to making positive health behavior changes. Women noted that they were motivated to make health behavior change during pregnancy as they aged, had more children, recognized a need for improved health and well-being for themselves and their babies, and felt a need to improve their appearance. By understanding the women's barriers and motivators, interventions can be planned to promote the motivators and combat the barriers to make successful health promotion changes in this population (McCloud, 2018).

The focus of the studies included in the first manuscript was not on the motivators and barriers to promoting the health behavior change interventions, but rather on the overall effectiveness of the interventions. Approximately half of the studies described the women's self-identified barriers in the pre-contemplation stage (Bertz, 2015; Claesson et al., 2014; Kong et al., 2014; Shirazian, et al., 2016; Sui, Turnbull, & Dodd, 2013), while very few of the studies identified barriers or motivators for the women participating in health behavior interventions during the contemplation stage of change (Bertz, 2015; Shirazian, et al., 2016; Sui, Turnbull, & Dodd, 2013). The interventions implemented in the studies did not take into account the women's self-identified barriers and motivators. Five of the studies did not identify any barriers or motivators for the women participating in the interventions (Cohen & Kim, 2009; Farajzadegan & Pozveh, 2013; Nascimento et al., 2011; Poston et al., 2013; Renault et al., 2014) The success rates of the interventions can be improved by providing solutions to barriers prior to initiating the interventions, such as travel and child care for interventions that required the women to participate in group activities at set dates and times. The use of telehealth, social media, and smart phone applications to track data and provide information and support to the participants could be viable options for these barriers for the specific interventions. Motivators, such as increasing age and other children, could be promoted by focusing interventions towards the population of older, multiparous women, thus increasing success rates of the interventions and longer participation of the health behavior. By first identifying barriers and motivators to women making positive health behavior changes, particularly during the pre-contemplation and contemplation stages of changes, then adapting interventions

to bridge those barriers and promote the motivators will be more successful in pregnant women who are obese.

The descriptive qualitative study (manuscripts 2 and 3) explored the experiences of pregnant women who are obese. The first manuscript explored how the women felt about their pre-pregnancy bodies and then how the changes they had experienced from the pregnancy made them feel. The majority of women who participated in the study had negative perceptions of their pre-pregnancy bodies and were unhappy with their appearance and weight overall. Many of the women had a positive change in perception of their pregnant bodies and attributed the changes to the growth of the baby and feelings of accomplishment. The women in the study who had the highest BMIs were more likely to embrace the changes pregnancy made in their bodies. However, the participants with the lowest BMIs, who were also the youngest, were unhappy with the weight changes related to pregnancy.

Studies have shown that many women have struggled with their weight from a young age (Brown & Avery, 2012). Body image issues during pregnancy can negatively impact a woman's health and well-being (Fuller-Tyszkiewicz, Skouteris, Watson, & Hill, 2012). Therefore, it is important to the pregnant woman who is obese and her baby to know how she views her body and the changes related to pregnancy as they can be vital to her overall health. Many of the women in this study embraced the changes they had seen in their bodies from the pregnancy, regardless of how they viewed their bodies prior to pregnancy. They related the weight gain and body changes from the pregnancy to the growth of the baby. Even if they had negative feelings about their bodies prior to the pregnancy, pregnancy provided a positive change in their views of their own bodies. A

few of the women in the study indicated they felt frustrated with the weight gain and body changes from the pregnancy. These women were also the youngest and had the lowest BMIs of the participants. It is difficult to identify if this negative view of the pregnancy changes is due to the younger age of the participants or the fact that their lower BMIs would allow weight gain and body changes to be easier to visualize. However, a study conducted in college age students indicated that increasing BMIs and excess flesh can challenge individuals in this group to acknowledge and respect their bodies (Tylka & Wood-Barcalow, 2015), which could support the younger participants in this study having more negative feelings attributed to pregnancy weight gain and body changes. Only a few of the women in the study indicated they were ashamed about their bodies prior to and during pregnancy and used negative terms when asked to describe their bodies. These women embodied the lack of a visible belly or the "in between" notion where they felt "fat," not pregnant (Nash, 2012), and therefore, did not identify the baby as a reason for the changes in their bodies.

The second manuscript explores the social support system of the women. The women identified various people who provided them with support during the pregnancy. Most of the women had partners who were involved with the pregnancy and had a solid, positive relationship with their significant other, and this person provided support for the changes pregnancy was causing in their bodies. The significant others encouraged the women by focusing on the growth of the baby and its relationship to the changes in the women's bodies. Family members were second in providing social support to the women. The family members, particularly the mothers, were not always as supportive of the women's weight and changes from the pregnancy. The women discussed several negative

comments and statements made regarding their weight which occurred both prior to and during the pregnancy. Prenatal care providers were also identified by the women as positive support for their pregnancies. The women felt very comfortable with the providers when discussing weight, body image, and weight change related to pregnancy. Friends and coworkers often made negative comments to the women regarding pregnancy changes. The women sought support from their social support system to help them adapt to the changes in their bodies from the pregnancies. Positive feedback from providers and significant others provided encouragement and comfort to the women as they adapted to the changes in their bodies from the pregnancies. Negative observations from families, in particular the women's mothers, and friends and coworkers, caused negative feelings in the women about their bodies and changes related to the pregnancies.

The mother-daughter relationship has been highlighted in the social sciences and public health literature as an important part of social support networks, in particular to maternal and child health. Women who live close to their mothers, but who did not find them to be a primary source of support had increased chances of infant death and low birth weight infants, while those whose mothers were close to them in proximity showed positive health outcomes (Scelza, 2011). Several of the women in this study discussed negative comments from their mothers that had occurred both prior to and during the pregnancy regarding their weight, clothing, and eating habits. However, Cramer and McDonald (1996) found that a major source of conflict between the mother and daughter occurs because the daughter anticipates more support than she actually receives. The actual effects of mother-daughter conflicts on infant outcomes are still largely understudied (Borgerhoff Mulder, 2007). It is difficult to know how the negative

comments and experiences with their mothers has impacted the women in this study; more studies would be indicated to look more closely at the mother-daughter relationship and support in this population.

Social support is often used as part of behavior change techniques and interventions due to reports that social support can help women cope with psychological stressors related to new experiences and lifestyle changes, such as pregnancy, and extend the success of the health promotion interventions. Not all women receive the same level of social support from peers, and other types of support may be more important to women during pregnancy (Smith, Taylor, & Lavender, 2014). Most of the women in this study indicated that their strongest support came from their partners, with the partner emphasizing the growth of the baby and the positives of the pregnancy to the woman with regard to her appearance. Also, the care providers were identified as positive support for the women during their prenatal visits by providing them support and information during these visits. Many of the women felt comfortable when discussing weight change and body image with their providers. Healthcare professionals have a unique opportunity to provide social support that can act as a buffer to psychosocial stressors and as encouragement for lifestyle behavior change. They must ensure they speak to women about who and where they are receiving their social support from during the pregnancy (Smith, Taylor, & Lavender, 2014).

Health care professionals should understand the feelings regarding weight and the changes related to pregnancy in women who are obese, while continuing to provide current information on weight gain and nutritional guidelines. The information from this study will allow nurses and providers to provide more compassionate care and education

to this population. By learning more about the experiences of women and their support system, they can better understand and predict the family dynamics that might occur during the pregnancy and delivery time periods. It can provide insight in to how these relationships can change during life-changing events, such as pregnancy.

Regardless of the woman's BMI, weight loss during pregnancy is not recommended (Siega-Riz & Gray, 2013); however, pregnancy can be a time to promote healthier eating habits and begin physical activity to limit gestational weight gain and promote a healthier lifestyle after the birth of the baby (Shirazian et al. 2016). Since obesity is a high-risk factor for several pregnancy and delivery complications such as gestational hypertension, gestational diabetes, and preeclampsia (Renault et al., 2013), pre-conceptual counseling of women who are obese would be advised where providers could emphasize the issues that can occur with obesity and pregnancy. This offers providers an opportunity to promote weight loss prior to pregnancy in women who are obese. Obesity prevention has been a desirable focus of many preventative programs that have targeted children and high-risk young adults, including intervention programs that are culturally tailored to target high-risk groups, such as African-American and Hispanic women (Davis, Stange, & Horwtiz, 2012). By promoting weight loss through healthier eating and exercise prior to conception, women who are obese can decrease their BMIs and lower their risk of health problems related to being pregnant and obese.

Future research should be conducted with the pregnant woman who is obese to explore how negative perceptions of her pre-pregnancy body relates to her childhood experiences. Additional research into the relationship between the adult, obese woman who is pregnant and her mother would also be beneficial to give insight into how the

women interact during pregnancy and how weight is discussed and approached in the relationship. Additional studies should seek ways to promote appreciation of body functionality during pregnancy rather than focusing on weight gain. Intervention studies that promote positive health behaviors during pregnancy should identify barriers that would decrease participation and continuance of the intervention through pregnancy and following the birth. By identifying and limiting these barriers and promoting motivators, more successful and focused health promotion interventions could be applied to this population.

Finally, the limitations of this dissertation study need to be noted. The women who responded to participate in the study could be more comfortable discussing sensitive issues related to weight; consequently, a selection bias could have occurred. The study was conducted in a rural area with limited diversity. The sample for the study was indicative of that limitation with 95% of the participants being White. The participants were also educated, with 70% having some college or a college degree. Most of the participants were pregnant with their first child, which limits the experiences the women might have with subsequent pregnancies, a lack of knowledge of post-partum weight loss challenges, and relationship changes related to the stress of having a child or multiple children in the home. Despite these limitations, this dissertation study contributes to literature related to pregnant women who are obese and their experiences during pregnancy.

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Appendix A: IRB Approval

Institutional Review Board for Human Research (IRB)
Office of Research Integrity (ORI)
Medical University of South Carolina

Harborview Office Tower
19 Hagood Ave., Suite 601, MSC857
Charleston, SC 29425-8570
Federal Wide Assurance # 1888

APPROVAL:

This is to certify that the research proposal **Pro00063716** entitled:
Experiences of Pregnant Women who are Obese

submitted by: **Mary Beth McCloud**
Department: **Medical University of South Carolina**

for consideration has been reviewed by the IRB and approved with respect to the study of human subjects as adequately protecting the rights and welfare of the individuals involved, employing adequate methods of securing informed consent from these individuals and not involving undue risk in the light of potential benefits to be derived therefrom. No IRB member who has a conflicting interest was involved in the review or approval of this study, except to provide information as requested by the IRB.
Continuing Review Approval Date: **3/23/2018**
Approval Expiration: **3/22/2019**

Type: **Expedited**

Vice Chairman, **IRB-I - Medical University of South Carolina**
∗ **Susan Newman, Ph.D., RN, CRRN**

Statement of Principal Investigator:

As previously signed and certified, I understand that approval of this research involving human subjects is contingent upon my agreement:

1. To report to the Institutional Review Board for Human Research (IRB) any adverse events or research related injuries which might occur in relation to the human research. I have read and will comply with IRB reporting requirements for adverse events.
2. To submit in writing for prior IRB approval any alterations to the plan of human research.
3. To submit timely continuing review reports of this research as requested by the IRB.
4. To maintain copies of all pertinent information related to the research activities in this project, including copies of informed consent agreements obtained from all participants.
5. To notify the IRB immediately upon the termination of this project, and/or the departure of the principal investigator from this Institution and the project.

∗ ***Electronic Signature****: This document has been electronically signed by the IRB Chairman through the HSSC eIRB Submission System authorizing IRB approval for this study as described in this*

Appendix B: Recruitment Materials

VOLUNTEERS NEEDED FOR A RESEARCH STUDY ON PREGNANT WOMEN WITH OBESITY

Study overview

We are looking for volunteers 18-35 years old, in their third trimester of pregnancy, to complete an interview about their experiences during pregnancy. As a participant in this interview, you will be asked about your experiences during pregnancy and how it affects your relationships and eating habits. The interview will take approximately 60 minutes to complete. In appreciation of your time, you will receive a gift card.

MUSC

IRB Number: Pro00063716
Date Approved 4/11/2017

Pregnant and in your third trimester (28-40 weeks)?

Were you considered obese prior to becoming pregnant?

18-35 years of age?

Receiving regular prenatal care from your provider?

Consider sharing your experiences and story!

If you are interested, please contact: Mary Beth McCloud, MSN, RNC-OB, BC, CNE mccloudm@musc.edu or 304-790-1614

A Research Study at the Medical University of South Carolina.

Appendix C: Interview guide

Weight change- aim1

Tell me about how your provider has discussed your weight and weight change during pregnancy?

How do you feel when discussing your weight change, body image, etc. with your provider?

Can you tell me how getting weighed at each visit makes you feel about your body?

Do you feel that you are responsible for your appearance, in regards to your weight?

Do your prenatal visits with your provider cause any feelings of anxiety or shame? Can you tell me more about these feelings?

Nutritional intake- aim 3

What information has your health care provider shared with you regarding your diet, such as how many calories, certain foods to eat, or avoid?

What about exercise, any limitations, etc.?

Can you describe a typical day of eating for you?

How has being pregnant in general impacted your eating habits as a whole? Have they changed and how?

Have you ever felt judged by someone for eating something? Can you give me an example?

Has the fact that you have regular office visits where you will be weighed made you change your eating habits?

If so, how?

Do you eat differently the day before or of your scheduled office visit? If so, can you describe how you eat differently?

Objectification-aim 2

Do you think your provider should discuss your weight status with you throughout the pregnancy? What information would you like for them to share with you?

In what ways do you feel you have the right to make decisions for yourself (autonomy) regarding your pregnancy with regards to weight gain? Nutritional intake? Physical activity?

Do you have a significant other at this time? If so, how does your significant other feel about your pregnant body?

How does feedback you receive from others affect how you feel about your body changes that are related to the pregnancy?

What do you think others base their perceptions of your pregnant body on (media, family, friends…)? Why do you think they feel you should look like these other people?

Before you were pregnant, have you had negative comments made about your body size? Can you give me an example?

Since becoming pregnant, have you had negative comments regarding your body size? Can you tell me more about this?

Self-objectification- aim 2

Now that you are in your last trimester of pregnancy, how would you describe your body?

How do you feel that your perceptions of body size have changed since you became pregnant? In what ways?

How did you feel about your body before you were pregnant?

How do you currently feel about your body?

Have you ever compared yourself to the way other pregnant women look? In what ways?

Are you concerned with how you look to other people? Has this changed since you became pregnant? In what ways?

How have you felt emotionally throughout the pregnancy? Has this changed from before you were pregnant?

How would you describe your energy level?

Do you ever feel dissatisfied with how you look? Is this a change from before you were pregnant?

Appendix D: Demographic Worksheet

Age:

Race/ethnicity:

Education level (high school, some college, college degree)

Height:

Pre-pregnancy weight in pounds:

Current weight from last office visit:

Weeks of pregnancy gestation:

Number of prenatal visits during pregnancy:

Type of pregnancy: Single Twin Triplets

Type of obstetric provider (Midwife, physician):

Any known health issues: