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Obesity in Pregnancy: A Qualitative Approach to Inform an Intervention for Patients and Providers

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Abstract

Objective—To investigate perceptions of minority pregnant women and providers about obesity and gestational weight gain (GWG), and to explore strategies to improve management of obesity in pregnancy with an emphasis on group prenatal care.

Methods—Sixteen primarily non-Hispanic black pregnant women with a body mass index ≥30kg/m^2 and 19 prenatal care providers participated in focus groups. Discussion topics included GWG goals, body image, health behaviors, and group prenatal care with additional emphasis on provider training needs.

Results—Women frequently stated a GWG goal >20lbs. Women described a body image not in line with clinical recommendations (“200 pounds is not that big.”). They avoided the term “obese.” They were interested in learning about nutrition and culturally-acceptable healthy cooking. Women would enjoy massage and exercise in group settings, though definitions of “exercise” varied. Family members could help, but generational differences posed challenges. Most had to “encourage myself” and “do this for me and the baby.” Providers expressed discomfort discussing GWG and difficulty finding the right words for obesity, which was partially attributed to their own weight. They noted the challenges they faced during prenatal care including time constraints, cultural myths, and system issues. Providers considered a group setting with social support an ideal environment to address health behaviors in obese women.

Conclusions—Culturally-tailored programs that use acceptable terms for obesity, provide education regarding healthy eating and safe exercise, and encourage support from social networks may be effective in addressing GWG in obese minority women. Provider training in communication skills is necessary to address obesity in pregnancy.

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Keywords

prenatal care; obesity; provider education; health disparities

Background

Obesity is one of the most challenging chronic diseases to manage. The impact of obesity on health is staggering – no organ system is spared from its effects. In the United States, 35.8% of reproductive age women (20-39 years) were obese in 2009-2010.(1) Profound racial-ethnic differences related to obesity in women are known: 40.7% of Hispanic and 58.6% of non-Hispanic black women were obese compared to 33.4% of non-Hispanic whites in 2009-2010.(1) Compared to men and women in all racial-ethnic groups, non-Hispanic black women consistently have the highest prevalence of obesity.(1, 2)

The combination of obesity and pregnancy introduces additional complications. Although the etiology is not always known, obese women are more likely to have a fetus with a birth defect, develop preeclampsia and gestational diabetes, experience a stillbirth, and deliver by cesarean.(3-8) Cesarean deliveries also increase risk in obese women as postpartum hemorrhage and compromised wound healing more frequently complicate their postpartum course.(8, 9) According to the recent recommendations from the Institute of Medicine (IOM), several of these complications can be minimized when obese women limit their weight gain in pregnancy to between 11 and 20 pounds (5-9kg).(10) However, up to 83% of obese pregnant women exceed these recommendations.(11-13) Given that most women are motivated to have “healthy pregnancies,” gestational weight gain (GWG) is potentially modifiable through behavioral interventions that target physical activity, nutrition, etc. Accordingly, the IOM report stated that interventions will be needed to assist obese women to meet the GWG goals.(10) However, guidance is lacking with regard to a safe and effective approach to meet the GWG recommendations. According to meta-analyses and systematic reviews, interventions that have focused on a combination of dietary counseling, weight monitoring, and exercise programs for overweight or obese women to date have had moderate to no influence on GWG or other perinatal outcomes.(14-16) Most importantly, nearly 100% of the women who participated in these behavioral interventions were non-Hispanic whites.(17-22)

The vast majority of programs addressing GWG for obese women are individual-level interventions (e.g. one-to-one nutrition consults and exercise advice). Few have used a group approach (21-24) despite substantial evidence from programs that are pregnancy-related (e.g., CenteringPregnancy™) and non-pregnancy-related (e.g., Weight Watchers). These programs have demonstrated that socialization through groups can help persons achieve goals that would not be reachable by individuals alone and that support from attending meetings enhances feelings of control and confidence.(25-27) It seems quite plausible that a behavioral intervention in a group setting might be an effective way to achieve GWG goals.

Another limitation of existing behavioral interventions for GWG is that they have focused only on the pregnant woman rather than on the prenatal care provider. Providers often administer only routine prenatal care for obese women and ignore obesity as a clinical

concern for several reasons including discomfort or lack of training in discussing weight issues (28-31), perceived futility regarding weight counseling (29, 32), a provider's own difficulties with body weight and image (33-37), and lack of time in a routine prenatal visit to address this complex issue.(38) If prenatal care providers do not feel comfortable addressing obesity and GWG, they may be giving inconsistent messages to their patients either by ignoring the issue or providing incorrect information.(39) The importance of the provider's involvement in behavioral interventions for GWG in obese women is underscored by the fact that patients successful at weight loss outside of pregnancy commonly report that the initiating event was either an explicit warning from a doctor or the discovery of a risk factor on routine screenings.(40)

To summarize, obesity is a serious problem in pregnancy. Prior efforts at interventions have not been very effective in assisting obese women to meet GWG goals which may be attributed to failures of these interventions to adapt their content for minority women, consider group interventions, or involve prenatal care providers. In order to design a behavioral intervention that addresses these shortcomings and proves effective in improving perinatal outcomes for obese minority women, preliminary steps need to be taken to explore both the patients' and providers' perspectives on obesity, GWG and intervention characteristics. In this study, focus groups are used to gather this information. Focus groups are a form of qualitative research that can obtain opinions, beliefs and attitudes even in situations that involve sensitive issues such as obesity.(41) Focus groups have been successful in engaging participants from culturally diverse backgrounds.(41, 42)

The objectives of this study were two-fold: (1) To examine and describe obese racial-ethnic minority women's knowledge, beliefs, and attitudes about nutrition, exercise, and healthy lifestyles during pregnancy, their perceptions about facilitators and barriers to improving health behaviors during pregnancy, and their thoughts about the desirability of a group prenatal care model that might help women meet their GWG goals; (2) To assess prenatal care providers' strategies for and perceived barriers to providing prenatal care to obese, racial-ethnic minority women, including management of obesity in pregnancy and attainment of GWG goals, and providers thoughts about the promise of a group format for delivering GWG interventions. Institutional review board approval was obtained from the University of Illinois at Chicago for both the patient and provider focus groups. The long-term goal for this study is that it will inform future intervention research efforts, including larger quantitative studies of pregnant women and provider perspectives on obesity and GWG and the design and evaluation of GWG interventions in a group prenatal care setting. (43)

Methods

A. Patient Sample

English-speaking pregnant women of any gestational age with a prepregnancy BMI ≥ 30kg/m^2 were recruited from the University of Illinois Hospital & Health Sciences System's (UI Health) Women's Health Clinic (WHC). They either responded to a recruitment flyer posted in the waiting rooms and patient exam rooms (n=3) or were recruited by study personnel after eligibility was confirmed from the electronic patient scheduling system

(Cerner Powerchart®) and the obstetrical database (Maternal Record System, MARS) on the day of a prenatal visit in the clinic (n=57). Recruitment continued until 10-15 participants were scheduled for a particular focus group. Study personnel briefly described the content of the focus group discussion, information about the time and date of the focus group, and the incentives for participation either in person or via telephone. Study personnel contacted the participants by telephone two days prior to the focus group session to confirm participation. Women who deliver at UI Health are primarily minorities (54% non-Hispanic black, 30% Hispanic) and 70% receive Medicaid. Among the obese women (35%) who deliver at UI Health, 55% exceed the IOM GWG guidelines.

B. Patient Study Procedures

Informed consent was obtained at the time of the focus group session which occurred in a meeting room at UI Health. After consent, the participants completed an anonymous 15-item survey which asked questions about demographics (e.g., age, race, parity) and knowledge of GWG. The audiotaped 90 minute focus groups were then conducted according to standard focus group procedures.(43) A review of existing literature, prior clinical and research experience (MK), and constructs from the Health Belief Model (e.g., perceived susceptibility and severity of the condition, perceived benefits and barriers to change, and cues to action) generated the key topics which were tailored to the potential needs of low-income minority women.(44) The following topics were presented with open-ended or semi-structured questions: (1) attitudes and beliefs about GWG; (2) attitudes and beliefs about obesity risks in pregnancy; (3) current behaviors and plans to change behavior during pregnancy; (4) stress management; and (5) acceptability of prenatal care programs to target GWG in a group setting. Many of the open ended questions were preceded by presentation of information (i.e. “This [BMI] chart shows how much a person should weigh based on their height. Higher BMI values are associated with increased health risks. What do you think about that statement?”) A trained, experienced focus group moderator (FG) led the discussions, and the lead investigator (MK) acted as a note taker, attending to issues such as nonverbal behavior and level of engagement among the participants. A third member of the research team facilitated the informed consent and survey administration activities. Participants received healthy snacks during the focus group and were provided a $25 cash incentive along with reimbursement for travel expenses and parking at the completion of the focus group. The original plan was to complete three focus groups of 6-8 participants or until thematic saturation was reached. Given the low turnout for the first three groups, an additional focus group was conducted. The authors agreed that thematic saturation (i.e. no additional themes identified) was achieved after four focus groups.

C. Provider Sample

An email invitation recruited from a pool of faculty (n=25) and resident (n=28) obstetrician-gynecologists, faculty family medicine physicians (n=9), and certified nurse midwives (CNM, n=25), all of whom provided prenatal care at UI Health. The email contained information on the content of the focus group discussion, the time and date of the focus group, the incentives for participation, and the consent process. The mean age of eligible faculty providers (36 faculty physicians, 25 CNM), was 45 years with 13 years in practice; the majority were female (91%) with a diverse racial-ethnic composition (66% non-Hispanic

whites, 12% non-Hispanic blacks, 6% Hispanics, 12% Asians, 4% other). During the year in which the study was conducted, the mean number of new and return outpatient prenatal visits for providers at UI Health was 32 and 188, respectively. Focus groups occurred separately for faculty physicians, resident physicians, and CNMs in order to capture any differences in perspective that might exist between the groups, and to allow for candid discussions that might be dampened due to status or power imbalances within more heterogeneous groups.

D. Provider Study Procedures

Informed consent was obtained at the time of the focus group session which occurred in a meeting room in the hospital. After consent, the participants completed an adapted 19-item "Provider Characteristics and Knowledge Survey," which assessed knowledge of BMI categories and GWG recommendations by BMI and physician characteristics (e.g., gender, self-reported height and weight, body self-image and satisfaction, years in practice, subspecialty).(34) The audiotaped 90 minute focus group was conducted according to standard focus group procedures.(43) A semi-structured interview guide with open-ended questions was used to explore the following topics: (1) attitudes and beliefs about managing obesity in pregnancy and GWG and how they might vary by patient race or ethnicity; (2) current approach to nutrition and exercise counseling and its perceived effectiveness; (3) opinions on improving prenatal care for obese, low-income, minority women; (4) opinions on provider education and training needs (e.g., online courses, apps, checklists, toolkits, etc.), especially related to the time constraints of a prenatal visit. The participants received a meal during the focus group and a $50 gift card at its completion. The original plan was to complete 2-3 focus groups for each type of prenatal care provider. However, ideas expressed by different categories of providers were much more similar than anticipated. In addition, further provider recruitment presented a challenge, and the investigators concluded that sufficient thematic saturation had been achieved after completing one focus group per provider type.

E. Analysis of Patient and Provider Focus Group Data

Conventional qualitative data analysis approaches were used to identify thematic patterns and draw conclusions from the focus group data.(45) As soon as possible after each focus group, a brief preliminary report was prepared that summarized important themes or ideas, the extent to which they differed from or confirmed expectations, similarities to and differences from prior focus groups, and considerations for the next focus group. Audio recordings of the focus groups were professionally transcribed verbatim with voice tracking by Landmark Associates, Inc., and the primary author reviewed the transcripts for accuracy and recorded further reflections. All words, phrases, or sentences in quotations were transcribed directly from the audio recordings. For more in-depth analysis, the transcripts were imported into Atlas.ti (Berlin, Germany), a computer-assisted software program that facilitates the storage, annotation, coding, and retrieval of qualitative data. The primary authors (MK and FG) independently coded each transcript and held several in-person meetings to review these procedures. Several steps were taken to assure that the analyses were verifiable and credible. First, the primary authors independently wrote extensive methodological and interpretive memos based on the first of the patient and provider focus

groups. These memos were then used to create a code list with clear operational definitions. A protocol to identify and code text segments was also created. After the first transcripts were coded, agreement statistics (Cohen's *kappa*) were calculated for each code to evaluate inter-rater reliability.(46) For codes with low agreement (*kappa* < .80) the coders discussed and reconciled their differences and refined the code definitions when required. The remainder of the focus group transcripts were then coded using the final revised code directory.

Next, a second-level conceptual analysis evaluated patterns and common themes in the focus group data. Code frequencies revealed the "groundedness" of codes (i.e. how often they were attached to segments of text). Atlas.ti's Query Tool function with its semantic and Boolean operators was used to explore code-code relations (e.g. codes that tended to occur in proximity to one another and codes that co-occurred in the same text passages) and to extract similarly coded text passages for further interpretation.(47) The focus group findings from patients (Objective 1) and providers (Objective 2) were analyzed separately, but cross-cutting themes were considered together. Descriptive statistics from the survey data were used to characterize the patient and provider samples.

Results

A. Patients

Four focus groups with a participant size of 3-6 per group were conducted in 2012 over a four month period. Of the 60 patients approached to participate, 16 completed the study procedures. The primary reasons given for not participating in the study were lack of time or interest. The majority of the patients were non-Hispanic black and the mean pre-pregnancy BMI was 39±7 kg/m^2 (Table 1). The major themes discussed in the smaller focus groups were similar to themes in the largest focus group:

Patient Theme 1: Attitudes about gestational weight gain and terms for obesity—In general, weight gain was inevitable during pregnancy. Patients had a wide range of GWG goals, but commonly stated their goals were >20 pounds. They expressed a fear of gaining weight, but also frustration when told to restrict GWG. Patients also stated that the actual GWG was not as important as "just being healthy." They thought they had little control over GWG (e.g., "You can't control it, cuz that baby controlling it for you."). Patients described a body image not in line with standard clinical recommendations (e.g., "200 pounds is not that big."; 200 pounds was "comfortable for me"). Patients did not like the term "obesity"; they used "thick" more commonly, but also admitted there really wasn't a "nice way to say it." One patient stated she didn't consider herself overweight or obese because "I don't look it - I ain't got flab." Many patients thought that the term "obese" referred to people who were not physically active or "stuck in their house." Being physically active should prevent them from being called "obese," as described in the passages below.

> *Participant 3 focus group 2*: Now, me, myself, I'm real active. I participate in the classes that I go to. I, you know, volunteer at my school. I, you know, participate around the community and things like that. So how's I'm fat? You know what I'm saying? Or obese?

Participant 1 focus group 2: I don't feel like I'm the typical obese person, you know. They say I'm obese, and I'm like, well, I don't know how you figure I'm obese. How do you classify obesity? I don't like that word because I don't feel—I know I'm big, but I'm not as big as most.

When the patients viewed a chart of BMI's and normal ranges of weight based on height, they expressed strong opinions against the chart (e.g., “It's a lie”) and that their weight did not increase health risks since women with normal weights could still have problems such as diabetes or hypertension and hereditary factors or a family history could account for health risks.

Patient Theme 2: Health behaviors including exercise and nutrition and the relationship to support—Women defined exercise or physical activity inconsistently. They considered the routine activities of daily living as exercise. For example, patients felt that doing chores, picking up children from school and other responsibilities that involved movement were exercise. Few patients agreed that exercise involved increasing their heart rate over an extended period of time through aerobic activity.

Moderator: Is taking kids to school exercise?

Participant 2 focus group 1: Yeah, because your body's moving. You're not, like, in one place, not lying in the bed, not sitting still. Your body is in motion.

Moderator: What does “working out” mean?

Participant 1 focus group 3: Um, walking, moving in motion, cleaning up, it could mean several things.

The following passage captures strategies that patients use to improve health, but also shows how women struggle with the challenges of not having time, the convenience of fast food, and cultural practices.

Participant 1 focus group 2: I have to watch the carbs I eat at each setting. Um, I can't still eat the foods I normally eat. Um, but I have moved away from fried foods. And see, I'm not a cooker. I can cook, but when I'm coming home at 9:00 at night and I gotta feed my family, we gonna stop and get something to eat if I got anything to do with it. I'm gonna spend money at a fast food restaurant before I go home and cook something because then that means it's gonna take more time for me to get my daughter prepared for bed. And my husband working, you know, it's just—it's quicker to buy out than to cook. I will cheat sometimes, like on the weekends or something like that. And cheatin', to me, is like, um, I can have fried chicken or something. Or I can have a piece of cake if it's a family function and it —you know, everybody is eating—it's a festivity. I—I'm gonna cheat because I'm not at home.

Participant 2 focus group 2: Because, like I said, I have down south people that stays around me. And they don't do nothing. They don't believe in boil. They don't believe in baked. They believe in fried.

Not surprisingly, patients provided several examples of how unhealthy nutrition led to excessive GWG and how healthy nutrition behaviors assisted them in meeting GWG goals and having a healthy pregnancy. As described above, an important feature was the influence of cultural or regional practices on nutrition and how the concept of support was woven in between the two. Support persons were self, family members, friends, or partners but they were not necessarily "supportive" of healthy behaviors. In the following quote, the patient's support persons did not understand common appetite changes during pregnancy and their views on GWG and nutrition were a source of stress during her pregnancy.

> *Participant 2 focus group 2*: I feel like everybody that I have on my team are beating me down because I'm not eating. Now if I had a positive person on my team to say, okay, well, you know what, I'm gonna eat this with you to make you feel a little better. I love greasy food…but I think in my own mind that if I get away from the fried food and go to the healthy food, that I could …at least try to start to eat more, but by me having my auntie stay right directly next door to me, and she—you know, she from down south. You know, every Friday, they have a fish fry and the spaghetti and all that. And the bad part about it, my auntie, she's a nutrition person where she goes out and talks to people about the nutrition, but when I went up to her, she want to jump on me because I'm not eating. So I think if you get more positive health and advice about the type of food you should eat, then it'll help more.
>
> *Participant 2 focus group 3:* The food that my mother buy [gets in the way of me reaching my GWG goal]. She don't buy healthy food, she, cuz my brother, and they all like fried chicken. I don't know, they just fry up food, like they love fried food, period. She don't buy plain chicken.

The concept of "eating for two" was also highly prevalent among their support persons. Their support persons were also critical of provider advice regarding exercise and GWG goals and instead they offered advice that was based on cultural or generational practices as detailed in the following dialogue.

> *Moderator:* So your source was saying that you can't exercise, you said your grandmother told you?
>
> *Participant 1 focus group 1*: So she'd tell me "No, you can't. You can't ride a bike. You can't do, like, sit-ups and stuff. You can't, you can't do that - while you're pregnant."
>
> *Moderator*: So if you, if your grandma was walking in and you were doing sit-ups, how would she react?
>
> *Participant 1 focus group 1*: [Laughing] How she would—she would curse me out.
>
> *Participant 3 focus group 3*: She was like, "You walked all the way to Walgreens with the kids? That's not good, and you're pregnant," and she just worries about like the—I dunno. She says like, basically she makes it sound like pregnancy's a handicap, which it's not, you know?

Conversely, young children, whether they were their own or a relative's, were supportive because they were non-judgmental and were primarily focused on the patient's health, not cultural practices. Nevertheless, the disrupted support system forced these patients to recognize the need to “encourage myself” and “do this for me and the baby.” Patients frequently stated that stress led to unhealthy nutritional behavior which in turn was an obstacle to attaining goals during pregnancy.

Patient Theme 3: Suggestions for group programs during prenatal care—When patients were specifically asked about what group programs or interventions would help obese women during pregnancy, they viewed the group setting as an environment that could provide support as determined by the following passages:

> *Participant 2 focus group 1*: It could be people in a group that's going through the same thing you're going through, so don't feel that it's just you.

> *Participant 1 focus group 2*: Once you get out into these groups or you talk—you start talking and then your family start listening. So even with my husband, when we sat down and they had to do the insulin and we had—I had to sit down with the nutritionist, he started looking at some of the food he was eating. And, like, “dang, I can't eat that no more.” No, you're not even supposed to eat that because—it didn't just education me, it educated him, too, on what he should be eatin'. When I got on insulin, my mama started talking about baking chicken….I do think you should bring anybody who help prepare your meals or anybody you know that's close to or that you go to confide in. You should welcome them to come out to the meetings with you.

> *Participant 1 focus group 3*: Yeah, a partner or whatever, to be there with you, cuz some people could feed off other people energy….Like, girl, let's go walk, even though they both might be pregnant….But they might, that might just motivate you. Like, okay, come on girl, let's go walk and talk, have a conversation.

As evidenced by the responses, some of the patients had previously participated in some type of group sessions, but only one of them had previously participated in group prenatal care (CenteringPregnancy™). Negative aspects of attending group programs related to their support systems.

> *Participant 2 focus group 1*: “I'm your momma. I told you this—how this is supposed to be - and you're gonna go over to this group and let them tell you something different? If your baby comes out like this, it's your fault”—you know, it's just— having you confused, like—listen to my momma or go to the group?

Patients also envisioned engaging in activities such as massage, yoga, other stress reduction techniques, and cooking classes in a group setting. More specifically, they wanted culturally-based nutrition education that could occur in cooking classes or a “hood cook book.” Exercise was also discussed as an activity for groups with treadmills given as an example, but patients still felt as though their daily activities counted for exercise, as previously discussed.

> *Participant 2 focus group 1*: And as far as, like, uh, activities, the exercise would be nice, because a lot of people probably don't exercise. I know I don't really exercise but, like I said, getting the kids ready and walking to the car—I feel like that's sufficient enough for me to exercise.

Healthy snacks were also an incentive to attend the group programs. Furthermore, patients expressed an interest in discussing their mood and depression, especially as it related to excessive GWG (e.g., "And sometime I beat myself up for it [weight gain]. I'm like, oh, I'm just so depressed, and I don't wanna eat no more.") and stated that this discussion would add more variety to the program content as depression is traditionally discussed postpartum. This participant highlighted a link between depression, stress, and overeating along with the need for support during a pregnancy:

> *Participant 3 focus group 4*: And just a whole lot of other health conditions that comes along that really, really triggers some stress. Or depression, and that's like to me I think that was, that's one of the main focuses that a lot of pregnant people go through is depression and stress. You know? Sometimes you overeat because you're stressed or depressed. So I just think if that was incorporated somehow in the prenatal care that the doctors give you or whatever.

Patient Theme 4:The role of the provider from the patient's perspective— Lastly, the patients discussed their prior experiences in discussing obesity and GWG with their providers. They reported that although it "hurt" when providers discussed their weight, they knew they were being truthful and ultimately it helped them. However, some women reported that they received mixed messages about how much GWG was appropriate.

> *Participant 4 focus group 4*: They always tell you two different things and you don't know who to believe. One doctor tells you oh you can gain 13 pounds, one doctor tells you oh you can gain 25 pounds.

They also gave recommendations on how providers could improve their counseling approaches such as concrete examples of healthy food choices, being knowledgeable about nutrition, and not getting defensive when patients ask weight-related questions.

B. Providers

Three focus groups with a participant size of 4-9 were conducted over a 3 month period in 2013. All of the 19 participants were female and the majority were non-Hispanic whites. Certified nurse midwives followed by faculty obstetrician-gynecologists had the greatest representation, with a smaller number of resident and family medicine physicians (Table 2). The major themes were as follows:

Provider Theme 1: Counseling on obesity and gestational weight gain goals— Although providers were aware of the 2009 IOM recommendations for GWG in obese women (11-20 pounds) based on the survey responses (63% recommended a GWG of 10-20 pounds), most reported communicating the lower limit of GWG (10 or 11 pounds) to their patients and even encouraging "weight maintenance" (e.g., "The average patient I see does not need to gain weight"). Their patients commonly experienced excessive GWG. Weight

loss during pregnancy was a byproduct of improved health behaviors (i.e., healthier diets) and not necessarily a substantial risk to the developing fetus as long as the fetal growth was appropriate (e.g., “If they lose weight it's fine, too, but it's not the ultimate [goal]”). Providers did not feel comfortable discussing weight with obese women and had to motivate themselves to start the discussion:

> Participant 1, faculty ob-gyn: I think overall I'd rather not talk about weight with obese patients. I look at their problem list and see obesity. Then, I have to prime myself that this is something that I really need to talk about. It's not something I feel completely comfortable. I have to just encourage myself that, “It's really important we're gonna talk about this today.” I think I'd rather not address it.

The CNM providers, in particular, directly acknowledged their patient's successes (e.g., reaching GWG goals or health behaviors) in the form of praise. Providers sensed that their patients did not understand the health risks of obesity as evidenced by the statements below. Phrases in quotations represent direct quotes from their patients.

> Participant 2, CNM: “I'm very happy with my weight. There's more to love.”

> Participant 5, faculty ob-gyn: “[My husband] likes big women. I could lose my husband if I lose weight.”

> Participant 9, CNM: I'm glad that you're comfortable in your own skin, but this is a health risk for you.

> Participant 4, resident: It is really interesting that people don't really think the weight is a problem until they are wheelchair-bound.

Provider Theme 2: Terms for obesity—The dominant theme from the groups was how careful and sensitive providers were when communicating obese status to their patients. Regardless of the number of years in practice and experience, finding the right words to refer to obesity was a formidable challenge for providers. In order to avoid insulting patients, they substituted the term “obesity” with “overweight” or with phrases (e.g., “when you are heavier at the beginning of pregnancy”, “higher weight starting off”). They often skirted the “obesity issue” altogether and instead focused on discussions about healthy diets and exercise and GWG goals. Because “BMI” is a defined medical term, some had greater comfort using this term, but would never tell a patient that she was “morbidly” obese, another defined medical term.

Provider Theme 3: Challenges to providing prenatal care to obese women—Limited time in a standard prenatal care visit was a universal challenge to addressing issues such as obesity and GWG. Providers suggested longer and additional visits. This concept extended beyond the typical time-related constraints in a busy clinical practice because the discussion of obesity and GWG required that the provider first establish the patient's trust. As such, this discussion was best avoided at the initial visit and discussed at subsequent visits instead when the relationship was stronger. Discontinuity in prenatal care providers was recognized as a frustration for patients who may then receive conflicting messages about GWG.

Overcoming cultural myths was also a prominent challenge. Several providers discussed patients with excessive GWG and battling the “eating for two” myth and the perception that pregnancy is a “get out of jail free card” with respect to health behaviors (e.g., “I'm taking care of my baby by eating more.”). In all focus groups, providers acknowledged and were empathic about their patients' limited resources and how culture may impact healthy food choices. The most critical issue was the patients' family beliefs and expectations regarding GWG, which could lead the patient to mistrust the provider. In contrast, family influence was also an advantage when it pertained to patients with gestational diabetes. For example, this diagnosis unified the family's approach to nutrition because diabetes was viewed as important to manage appropriately during pregnancy. The patients also discussed this concept in their own focus groups.

Providers referenced their own weight status as a barrier to their counseling strategies if their BMI was normal or high. On the other hand, some providers with higher BMI's made a connection with their patients when they relayed their own personal weight struggles and shared successful strategies. Nonetheless, regardless of the providers' BMI, they reported that they still did not feel comfortable discussing these sensitive issues.

Some challenges related to the health care system design. Providers were unaware of exactly what happened during a nutrition consult and weren't sure if this consult was a beneficial visit for the patient. Given the high volume of patients who could benefit from nutritional advice during pregnancy, a more convenient location for this person would be within the prenatal clinics.

Provider Theme 4: What do providers need in order to improve prenatal care for obese women?—Providers acknowledged extremely limited nutritional knowledge which they primarily attributed a lack of education and training. Despite having the greatest proximity to training, resident physicians more commonly focused on their limited education and knowledge compared to the other provider types (e.g., “Well, that's the five minutes of nutrition I know.” “My comfort stops at the basic nutritional advice, which I do not think is sufficient for most of our patients.”).

As opposed to traditional learning formats such as didactic grand-rounds, they proposed “hands-on nutrition training,” which is more consistent with contemporary educational approaches. Most importantly, they sought training on effective communication strategies that would improve their comfort level in discussing GWG, especially as it relates to their own body weight. Standard, clear guidelines built into an electronic medical record (EMR) such as order sets and algorithms would assist providers because the current management varied from provider to provider and among provider types. Since providers also had difficulty remembering the BMI cut-off numbers for the different weight categories and consequently used an absolute weight value as a trigger to have a discussion about obesity risks and GWG, they suggested an EMR that automatically calculated BMI and created the management pathway.

Provider Theme 5: Providers shared their expert opinions and were aware of their patient's resources—Even though providers felt their nutritional knowledge and

comfort in discussing obesity was lacking, they shared their unique approaches to managing obesity during prenatal care visits and gave several concrete and practical examples that would be useful for all prenatal care providers. Many of these examples included a distinct communication style regarding nutrition, exercise, and GWG. For example, they recommended keeping the conversation basic, such as how a pediatrician might talk to a 10 year old patient. Phrases such as “eat the fruit, don't drink the juice” engaged their patients and helped them understand the role of nutrition in reaching GWG goals. Food diaries were a favored tool because they were simple tasks that any patient could do for either a short or long-term period. This exercise was generally an “eye-opening experience” for the patient. The free resources on the website choosemyplate.gov, specific diets (e.g., “Pregnancy power,” eat healthy for 6 days and on the 7th eat what you want), and diet books (e.g., “Eat This, Not That”) were discussed. As an alternative to joining a health club with membership fees, turning on the radio and dancing for 20-30 minutes in their home would fulfill the daily requirements for exercise. Since patients spend many hours in the waiting room at the prenatal care clinic, a television program with pregnancy-related health information would supplement their educational needs.

Provider Theme 6: The approach to group programs for obese women during pregnancy—Providers understood the concept of support and its importance in helping their patients reach their GWG goals. A “breakfast club” was proposed whereby patients would enjoy a healthy breakfast, which would also be an incentive to attend, while discussing nutrition. A model similar to Weight Watchers (though several providers preferred the online, as opposed to the in-person meeting), or CenteringPregnancy™ was proposed. The following segment portrays the providers' opinions about group prenatal care; (note that most used the term “Centering” referring to CenteringPregnancy™, the proprietary name for one group prenatal care model):

> Moderator: What if prenatal care was provided in a group setting to obese women with particular emphasis on diet?
>
> Participant 7, CNM: That would be ideal. That's absolutely ideal. Those groups are amazing. The most amazing thing is that the patients form bonds—they form community…Absolutely, Centering.
>
> Participant 8, CNM: I guess Centering will be very great because it will bring a sense of competition and you are in a circle with people with the same problem. That really would be good.

Suggested adaptations to the traditional CenteringPregnancy™ approach included discussion of nutritional substitutions that were less expensive, recipe exchanges, cooking classes/ demonstrations, and instruction on reading food labels. However, providers expressed concern that “stigmatization” would occur when providers invited their obese patients to participate in a group for obese women only and they struggled with the title for such a program (e.g., “Wellness Centering”). On the other hand, one provider referenced a research study previously conducted in the prenatal clinics at their university which specifically and successfully recruited obese pregnant women to participate. Incentives would pique their interest to participate. They also suggested that the patients' support persons could attend

some, but perhaps not all, of the sessions. Other discussion included challenges commonly encountered in group prenatal care programs such as group space, coordinating provider schedules, and lack of privacy to discuss sensitive issues. Providers also suggested a multidisciplinary approach similar to what typically occurs in a bariatric surgery practice with a team of providers comprised of not only the prenatal care provider, but social workers, psychologists, and nutritionists, thereby creating a larger support network.

Provider Theme 7: Comparisons and contrasts to the patient focus groups— The patient and provider groups discussed several similar themes including lack of access to healthy foods in the patients' community and homes (e.g., “It's not just that they have to decide to eat broccoli, but they have to convince their whole family to eat broccoli.”) and messages from family and friends that did not support healthy behaviors (e.g., “Eat as much as you want.” “You need to gain 40-50 pounds this pregnancy.”). For some of the themes, the patients and providers had differences of opinions. Patients expressed negative feelings about the BMI chart, but providers used the chart “a lot” so that they could more directly demonstrate risks associated with a higher BMI. Providers could then “medicalize” obesity and attenuate the patient concept of what “looks good on them.” Conversely, some providers also minimized the BMI chart discussion and instead focused on concrete examples to improve health behaviors and the quality of consumed food. The following quote demonstrates the mixed opinions about the BMI chart:

> Participant 7, CNM: I don't show it to people because I was horrified when I saw where I fell on it, so I think it can be really—on the other hand, it was a bit of a wakeup call.

The terms “healthy obese” or “fit and fat”, which faculty obstetrician-gynecologists used in one of the focus groups, can summarize this concept. These terms prevented them from “getting stuck on the numbers” and shifted the focus to a healthy lifestyle. A normal BMI may not be a goal that all patient and providers can reach. Instead, they suggested individualization and a compromise between the recommendations and the goals.

Lastly, a need for greater patient education and perhaps a greater public health issue arose in the discussion of fruit juice consumption. Patients thought juice was healthy (e.g., “I know I need to drink more juice.”) whereas all providers consistently discussed how unhealthy juice was (e.g., “You don't need [juice].”; “Do not drink your calories.”) and pleaded for the Women, Infants, and Children program (WIC) to stop giving away juice.

Conclusions

A. Patient Health Behaviors and Dual Role of Support Systems

From the patient focus groups, patient behaviors with respect to nutrition are tied to their support system and the environment. Aside from the typical barriers of time, responsibilities, and lack of access to healthy foods in their community, patients' experiences with support were embedded in an ecological framework in which they hear society-level and geographic-specific cultural myths (e.g., “eat for two” while pregnant and pregnancy being a “get out of jail free” card) with respect to health behaviors. Many patients in these focus groups came from households in which they were not the sole homemaker or cook.

Therefore, in addition to cultural barriers, they also encountered family-level constraints when it pertained to eating healthier and exercising during pregnancy. In these often-cited scenarios, their experiences caused an undue amount of stress. This stress, coupled with unhealthy eating, largely contributed to not reaching GWG goals. Conversely, we hypothesized that the support through programs that involve multiple patients with similar experiences would be a strategy to learn more about cooking, healthy eating, and would provide a social aspect to exercise or be physically active. These types of programs can also contribute to educating the patients' families on ways they can be more supportive. For example, both patients and providers described a stronger support system when a pregnancy became complicated by gestational diabetes.

These findings were similar to other reports from non-pregnant women. In a focus group study of non-pregnant, obese, Hispanic immigrants, these women requested “buy-in” from their families for weight loss, support for physical activity from a group setting, and a strong social support system.(47) Most importantly, they desired programs that incorporated traditional foods and supported cultural traditions with a family focus.(47) In another focus group study that explored what motivates non-pregnant African-American women to engage in regular physical activity and maintain weight loss, participants reported that a buddy, a personalized exercise program, and joining a group were motivations to start exercising.(48) For those participants who were already exercising, social support was key to maintaining exercise patterns.

B. The Challenge of Incorporating Exercise into Daily Activities

In addition to advice from family or other support persons, several factors contribute to the reticence to exercise during pregnancy including the patients' perceptions of their routine daily activities as exercise. In a previous study, African-American women also had broad definitions about what types of activities were exercise, but they generally thought that exercise was good during pregnancy.(49) Nonetheless, certain types of activities could cause problems with the pregnancy and cultural myths that family members communicated (e.g., raising hands over the head caused stillbirth) were pervasive. Of note, household chores and caregiving activities accounted for the highest levels of energy expenditure during all three trimesters in the prior study.(49) In another report, more than a third of African-American women reported no exercise and 56% reported engaging in only non-strenuous physical activity during pregnancy.(50) Despite the published guidelines that recommend 30 minutes of exercise every day during pregnancy and the advice providers might give about exercise during pregnancy, we hypothesized that overcoming patient and family beliefs about the risks of exercise during pregnancy will continue to be a significant hurdle in the pathway of improving health behaviors in obese women.(51) The attitudes towards exercise also need to be interpreted in the context of the higher national rates of preterm delivery in minority women and the patient's perception of exercise potentially increasing the risk for preterm delivery. Future studies would need to investigate their beliefs about the causes of preterm delivery and whether or not they believed in a relationship of preterm delivery and exercise. We do note that obese women have decreased odds for spontaneous preterm birth compared to normal weight women in several studies and an analysis by race-ethnicity suggests that

obese non-Hispanic blacks have the greatest reduction in spontaneous preterm births.(52, 53)

C. The Provider and Communication Style

Patients welcome greater involvement from their providers in the discussion of obesity and GWG, but emphasized the importance of consistent messages. Other studies have also emphasized that inconsistent advice from providers has prompted patients to not follow their recommendations and to seek information elsewhere.(54, 55) Providers need to educate their patients about GWG given that many patients in this study, the majority of whom were already in their second trimester, had a GWG goal >20 pounds. A lower GWG recommendation or weight maintenance were also reported in a qualitative study of obstetric clinicians (e.g., “Why should they gain any weight at all?…But these women, if you give them five pounds they take 20.”).(56) Providers need additional training regarding obesity-related pregnancy risks and how to improve communication skills so as to dispel common myths and simultaneously convey confidence and compassion regarding these issues. Communication skills are critical given that prenatal care providers have difficulty in discussing this topic (e.g., “…have to choose our words carefully”).(57) This concept also extends to the psychological aspects of being obese and pregnant and addressing mental health problems such as depression and anxiety.

Of further interest, patients in this study were not receptive to the BMI chart, which providers commonly used as a visual guide for weight goals. This finding was similar to another focus group study of minority parents who felt as though the charts that physicians use for their children's weight status were wrong and physicians' expectations for weight were also wrong.(58) As a result, the parents became frustrated with their children's physicians. Prenatal care providers also face similar frustrations when their patients seek advice from family influences that encourage excessive GWG (e.g. “I feel like our mothers know the most.”).(54) These findings confirm the substantial barriers to behavioral change that likely stem from low-income urban environments including complex family dynamics, generational conflicts about food, and acceptance of higher body weights as “comfortable for me.” Regardless, women seek concrete and feasible advice from their providers regarding healthy behaviors during pregnancy. Providers will need to emphasize the positive aspects of family and support systems and build on these strengths as opposed to dwelling on the negative aspects. We therefore hypothesize that if providers acknowledge cultural beliefs about body image while they emphasize the health risks associated with higher BMI's and excessive weight gain, they may also communicate their message more effectively.

The provider focus group findings also shared similar themes with other published qualitative studies of prenatal care providers and their opinions on prenatal care for obese women. This includes lack of continuity of care, time constraints, training needs (e.g., increased nutrition knowledge, skills to manage obesity), and the need for clear evidence-based guidelines.(54, 57, 59-63) Other providers also struggled with a name for a prenatal intervention for obese women as the title might be a source of embarrassment and negatively impact provider-patient relationships.(64)

D. Implications for Practice and Future Steps: Design of the Group Intervention for Health Behaviors

Formative research that assesses beliefs, perceptions, and behavior of a group can be used to design culturally appropriate interventions.(65) Adapted interventions have been more successful at modifying health behaviors that relate to weight loss outside of pregnancy compared to interventions that did not account for race, ethnicity or socioeconomic status.(66) Based on the current study, culturally-tailored programs that use acceptable terms for obesity, provide education regarding healthy eating and safe exercise, and encourage appropriate support from social networks may be effective in addressing GWG in obese minority women. Group prenatal care programs would be ideal to pilot these ideas with the appropriate provider training and content modification.

As an example, in CenteringPregnancy™, a trained clinician facilitates 10 prenatal care sessions that last 60-90 minutes each.(25, 67) The group format provides women with 15-20 hours of contact time with the same provider which allows for discussion of a wide range of pregnancy-related health content, including early pregnancy concerns, childbirth preparation, and psychological and social issues. Although a schedule of recommended topics for discussion accompanies each session, an important feature of CenteringPregnancy™ is the facilitative, or nondidactic, leadership approach. Group leaders also promote engagement by employing participatory group activities, by referring questions raised during discussions back to the group, and by encouraging women to share information with one another.(68) All these features closely mirror what patients and providers in the current study said they were searching for. Health professionals in the United Kingdom also promoted the concept of group sessions that had an emphasis on behavioral change techniques and were previously piloted as part of a feasibility study of an "antenatal lifestyle course" for women with a BMI≥30 kg/m^2.(57) The need for groups was partially attributed to the multi-factorial nature of obesity which requires an integration of health care services, similar to the multidisciplinary approach providers in the current study suggested as well.

Our focus group results and findings from weight-management intervention studies in non-pregnant and pregnant patients also suggest that before piloting the intervention, the providers will need to raise their awareness of the risks of obesity in pregnancy and the importance of obese women meeting GWG recommendations.

E. Limitations and Strengths

This study has several limitations and strengths. Although 60 patients were approached to participate or responded to recruitment flyers and an average of 10 patients per group confirmed, only 3-6 patients actually attended each focus group. Reasons for initially declining participation included lack of interest or time. Although this limitation is valid, there is also evidence to support that the discussion of more sensitive topics, such as obesity, is effective even with smaller numbers of participants.(69) The racial-ethnic composition of the patient sample (87% black, 13% Hispanic) differed from the general pregnant population at UI Health likely because of the English-speaking inclusion criteria and the greater prevalence of prepregnancy obesity among non-Hispanic blacks compared to other racial-

ethnic groups. Furthermore, our provider sample did not have the same racial-ethnic composition as the patient sample and the participation of more minority providers might have generated greater discussion on the impact of cultural factors and ways to create more culturally-tailored interventions. These qualitative data may not be generalizable beyond the specific sample population (i.e., pregnant, obese, minority women and their providers at UI Health), but the participants varied in age, race (providers), parity (patients), BMI, and training/experience (providers), all of which captured diverse perspectives. As a result, our findings apply to providers who manage pregnancies complicated by obesity as they give information on how patients prefer to talk about obesity, how they can realistically improve their health behaviors, and the barriers they face in doing so. Other providers may also be able to relate to the challenges our providers encounter during their prenatal care of obese women. The experienced moderator encouraged all participants to speak, yet did not allow the dominant participants to control the discussion and probed for additional responses so as to capture these diverse opinions. Lastly, the survey given prior to the focus group discussion may have biased the responses by providing subtle messages about specific content areas of interest to the authors.

To our knowledge, no prior intervention study of GWG has included groups of minority patients and providers. Given that providers do not communicate obesity-related risks and GWG goals effectively, prenatal care in a group setting may decrease barriers between patients and providers and allow for better communication on these critical issues. Future efforts should continue to explore the role that support systems play either as a barrier to or enabler for obese pregnant women to improve their health behaviors and ultimately reach their GWG goals. In order to improve provider participation in their patient's goal to have a healthy pregnancy, other system issues such as formal training and education in health behaviors specific to the needs of obese women need to be addressed.

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References

1. Flegal KM, Carroll MD, Kit BK, et al. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. JAMA. 2012; 307:491–7. [PubMed: 22253363]
2. Wang Y, Beydoun MA. The obesity epidemic in the United States--gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. Epidemiol Rev. 2007; 29:6–28. [PubMed: 17510091]
3. Weiss JL, Malone FD, Emig D, et al. Obesity, obstetric complications and cesarean delivery rate--a population-based screening study. American journal of obstetrics and gynecology. 2004; 190:1091–7. [PubMed: 15118648]
4. Chu SY, Kim SY, Lau J, et al. Maternal obesity and risk of stillbirth: a metaanalysis. Am J Obstet Gynecol. 2007; 197:223–8. [PubMed: 17826400]
5. Stothard KJ, Tennant PWG, Bell R, et al. Maternal overweight and obesity and the risk of congenital anomalies: a systematic review and meta-analysis. JAMA. 2009; 301:636–50. [PubMed: 19211471]
6. Kominiarek MA, Vanveldhuisen P, Hibbard J, et al. The maternal body mass index: a strong association with delivery route. Am J Obstet Gynecol. 2010; 203(3):264 e1–7. [PubMed: 20673867]

7. Gunatilake RP, Perlow JH. Obesity and pregnancy: clinical management of the obese gravida. Am J Obstet Gynecol. 2011; 204:106–19. [PubMed: 21284965]
8. Myles TD, Gooch J, Santolaya J. Obesity as an independent risk factor for infectious morbidity in patients who undergo cesarean delivery. Obstet Gynecol. 2002; 100:959–64. [PubMed: 12423861]
9. Blomberg M. Maternal obesity and risk of postpartum hemorrhage. Obstet Gynecol. 2011; 118(3): 561–8. [PubMed: 21860284]
10. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines. Washington, DC: 2009.
11. Moore Simas TA, Doyle Curiale DK, Hardy J, et al. Efforts needed to provide Institute of Medicine-recommended guidelines for gestational weight gain. Obstet Gynecol. 2010; 115(4): 777–83. [PubMed: 20308839]
12. Bodnar LM, Siega-Riz AM, Simhan HN, et al. Severe obesity, gestational weight gain, and adverse birth outcomes. Am J Clin Nutr. 2010; 91(6):1642–8. [PubMed: 20357043]
13. Krukowski RA, Bursac Z, McGehee MA, et al. Exploring potential health disparities in excessive gestational weight gain. J Womens Health (Larchmt). 2013; 22(6):494–500. [PubMed: 23751164]
14. Oteng-Ntim E, Varma R, Croker H, et al. Lifestyle interventions for overweight and obese pregnant women to improve pregnancy outcome: systematic review and meta-analysis. BMC medicine. 2012; 10:47. [PubMed: 22574949]
15. Dodd JM, Grivell RM, Crowther Ca, et al. Antenatal interventions for overweight or obese pregnant women: a systematic review of randomised trials. BJOG. 2010; 117:1316–26. [PubMed: 20353459]
16. Campbell F, Johnson M, Messina J, et al. Behavioural interventions for weight management in pregnancy: a systematic review of quantitative and qualitative data. BMC Public Health. 2011; 11:491. [PubMed: 21696589]
17. Hui A, Back L, Ludwig S, et al. Lifestyle intervention on diet and exercise reduced excessive gestational weight gain in pregnant women under a randomised controlled trial. BJOG. 2012; 119:70–7. [PubMed: 22017967]
18. Wolff S, Legarth J, Vangsgaard K, et al. A randomized trial of the effects of dietary counseling on gestational weight gain and glucose metabolism in obese pregnant women. Int J Obes. 2008; 32:495–501.
19. Jeffries K, Shub A, Walker SP, et al. Reducing excessive weight gain in pregnancy: a randomised controlled trial. Med J Aust. 2009; 191:429–33. [PubMed: 19835535]
20. Callaway LK, Colditz PB, Byrne NM, et al. Prevention of gestational diabetes: feasibility issues for an exercise intervention in obese pregnant women. Diabetes care. 2010; 33:1457–9. [PubMed: 20357374]
21. Guelinckx I, Devlieger R, Mullie P, et al. Effect of lifestyle intervention on dietary habits, physical activity, and gestational weight gain in obese pregnant women: a randomized controlled trial. Am J Clin Nut. 2010; 91:373–80.
22. Nascimento SL, Surita FG, Parpinelli MÂ, et al. The effect of an antenatal physical exercise programme on maternal/perinatal outcomes and quality of life in overweight and obese pregnant women: a randomised clinical trial. BJOG. 2011; 118:1455–63. [PubMed: 21895947]
23. Bechtel-Blackwell DA. Computer-assisted self-interview and nutrition education in pregnant teens. Clin Nurs Res. 2002; 11:450–62. [PubMed: 12413116]
24. Claesson IM, Sydsjö G, Brynhildsen J, et al. Weight gain restriction for obese pregnant women: a case-control intervention study. BJOG. 2008; 115:44–50. [PubMed: 17970795]
25. Rising S. Centering Pregnancy: an interdisciplinary model of empowerment. J Nurs Midwifery. 1998; 43:46–54.
26. Wolfe W. A review: maximizing social support--a neglected strategy for improving weight management with African-American women. Ethn Dis. 2004; 14:212–8. [PubMed: 15132206]
27. Tsai AG, Wadden TA. Systematic review: an evaluation of major commercial weight loss programs in the United States. Ann Intern Med. 2005; 142:56–66. [PubMed: 15630109]
28. Campbell F, Johnson M, Messina J, et al. Behavioural interventions for weight management in pregnancy: a systematic review of quantitative and qualitative data. BMC Public Health. 2011; 11:491. [PubMed: 21696589]

29. Stotland NE, Gilbert P, Bogetz A, et al. Preventing excessive weight gain in pregnancy: how do prenatal care providers approach counseling? J Womens Health (Larchmt). 2010; 19(4):807–14. [PubMed: 20078239]
30. Power ML, Cogswell ME, Schulkin J. Obesity prevention and treatment practices of U.S. obstetrician-gynecologists. Obstetrics and gynecology. 2006; 108(4):961–8. [PubMed: 17012460]
31. Kushner RF, Roth JL. Assessment of the obese patient. Endocrinology and metabolism clinics of North America. 2003; 32(4):915–33. [PubMed: 14711068]
32. Gudzune KA, Beach MC, Roter DL, et al. Physicians build less rapport with obese patients. Obesity (Silver Spring). 2013
33. Stotland N, Tsoh JY, Gerbert B. Prenatal weight gain: who is counseled? J Womens Health (Larchmt). 2012; 21(6):695–701. [PubMed: 22111873]
34. Herring SJ, Platek DN, Elliott P, et al. Addressing obesity in pregnancy: what do obstetric providers recommend? J Womens Health (Larchmt). 2010; 19(1):65–70. [PubMed: 20088660]
35. Knight BA, Wyatt K. Barriers encountered when recruiting obese pregnant women to a dietary intervention. Nursing times. 2010 Aug 17-23.:20–2. [PubMed: 20879641]
36. Perrin EM, Flower KB, Garrett J, et al. Preventing and treating obesity: pediatricians' self-efficacy, barriers, resources, and advocacy. Ambulatory pediatrics : the official journal of the Ambulatory Pediatric Association. 2005; 5(3):150–6. [PubMed: 15913408]
37. Yancey AK, Sallis RE, Bastani R. Changing physical activity participation for the medical profession. JAMA. 2013; 309(2):141–2. [PubMed: 23299602]
38. Phelan S, Phipps MG, Abrams B, et al. Practitioner advice and gestational weight gain. J Womens Health (Larchmt). 2011; 20(4):585–91. [PubMed: 21413898]
39. Stengel MR, Kraschnewski JL, Hwang SW, et al. “What my doctor didn't tell me”: examining health care provider advice to overweight and obese pregnant women on gestational weight gain and physical activity. Women's Health Issues. 2012; 22(6):e535–40. [PubMed: 23122213]
40. Roberts A, Ashley G. What are the characteristics of overweight and obese patients who achieve weight loss and what factors are most helpful? A quantitative and qualitative study of patients and interventions in a rural general practice. J Hum Nut Diet. 1999; 12(s1):20–7.
41. Halcomb EJ, Gholizadeh L, DiGiacomo M, et al. Literature review: considerations in undertaking focus group research with culturally and linguistically diverse groups. J Clin Nurs. 2007; 16(6): 1000–11. [PubMed: 17518876]
42. Murdaugh C, Russell RB, Sowell R. Using focus groups to develop a culturally sensitive videotape intervention for HIV-positive women. J Adv Nurs. 2000; 32(6):1507–13. [PubMed: 11136420]
43. krueger, RC.; Mary, Anne. Focus Groups: A Practical Guide for Applied Research. 4th. SAGE Publications, Inc; 2008.
44. Janz NK, Becker MH. The Health Belief Model: a decade later. Health education quarterly. 1984; 11(1):1–47. [PubMed: 6392204]
45. Patton, MQ. Qualitative research & evaluation methods. 3rd. Thousand Oaks: Sage Publications; 2002.
46. Carey JW, Morgan M, Oxtoby M. Inter-coder agreement in analysis of responses to open-ended interview questions: Examples from tuberculosis research. Cult Anthropol Meth. 1996; 8:1–5.
47. Corbin, J.; S, A. Basics of Qualitative Research:Techniques and Procedures for Developing Grounded Theory. 3rd. SAGE Publications, Inc; 2007.
48. Agne AA, Daubert R, Munoz ML, et al. The cultural context of obesity: exploring perceptions of obesity and weight loss among Latina immigrants. J Immig Min Health. 2012; 14(6):1063–70.
49. Young DR, Gittelsohn J, Charleston J, et al. Motivations for exercise and weight loss among African-American women: focus group results and their contribution towards program development. Ethn Health. 2001; 6(3-4):227–45. [PubMed: 11696933]
50. Krans EE, Chang JC. Low-income African American women's beliefs regarding exercise during pregnancy. Maternal and child health journal. 2012; 16(6):1180–7. [PubMed: 21910011]
51. Orr ST, James SA, Garry J, et al. Exercise and pregnancy outcome among urban, low-income, black women. Ethn Dis. 2006; 16(4):933–7. [PubMed: 17061749]

52. ACOG Committee opinion. Number 267, January 2002: Exercise during pregnancy and the postpartum period. Obstet Gynecol. 2002; 99(1):171–3. [PubMed: 11777528]
53. Torloni MR, Fortunato SJ, Betran AP, et al. Ethnic disparity in spontaneous preterm birth and maternal pre-pregnancy body mass index. Arch Gynecol Obstet. 2012; 285(4):959–66. [PubMed: 22006583]
54. Torloni MR, Betran AP, Daher S, et al. Maternal BMI and preterm birth: a systematic review of the literature with meta-analysis. J Matern Fetal Neonat Med. 2009; 22(11):957–70.
55. Herring SJ, Henry TQ, Klotz AA, et al. Perceptions of low-income African-American mothers about excessive gestational weight gain. Matern Child Health J. 2012; 16(9):1837–43. [PubMed: 22160656]
56. Brown A, Avery A. Healthy weight management during pregnancy: what advice and information is being provided. J Hum Nutr Diet. 2012; 25(4):378–87. [PubMed: 22339766]
57. Oken E, Switkowski K, Price S, et al. A qualitative study of gestational weight gain counseling and tracking. Matern Child Health J. 2012
58. Smith DM, Cooke A, Lavender T. Maternal obesity is the new challenge; a qualitative study of health professionals' views towards suitable care for pregnant women with a Body Mass Index (BMI) >/= 30 kg/m(2). BMC pregnancy and childbirth. 2012; 12:157. [PubMed: 23253137]
59. McKee MD, Maher S, Deen D, et al. Counseling to prevent obesity among preschool children: acceptability of a pilot urban primary care intervention. Ann Fam Med. 2010; 8(3):249–55. [PubMed: 20458109]
60. Ferrari RM, Siega-Riz AM, Evenson KR, et al. A qualitative study of women's perceptions of provider advice about diet and physical activity during pregnancy. Pat Edu Counsel. 2013; 91(3): 372–7.
61. Sui Z, Turnbull DA, Dodd JM. Overweight and obese women's perceptions about making healthy change during pregnancy: A Mixed Method Study. Matern Child Health J. 2012
62. Shieh C, Weaver MT. Comparisons in perceived importance of and needs for maternal gestational weight information between african american and caucasian pregnant women. J Perinat Edu. 2011; 20(2):100–7.
63. Mills A, Schmied VA, Dahlen HG. ‘Get alongside us’, women's experiences of being overweight and pregnant in Sydney, Australia. Matern Child Nut. 2013; 9(3):309–21.
64. Johnson M, Campbell F, Messina J, et al. Weight management during pregnancy: A systematic review of qualitative evidence. Midwifery. 2013
65. Heslehurst N, Moore H, Rankin J, et al. How can maternity services be developed to effectively address maternal obesity? A qualitative study. Midwifery. 2011; 27(5):e170–7. [PubMed: 20188447]
66. Gittelsohn J, Evans M, Helitzer D, et al. Formative research in a school-based obesity prevention program for Native American school children (Pathways). Health Edu Res. 1998; 13(2):251–65.
67. Fitzgibbon ML, Tussing-Humphreys LM, Porter JS, et al. Weight loss and African-American women: a systematic review of the behavioural weight loss intervention literature. Obesity Rev. 2012; 13(3):193–213.
68. Novick G. CenteringPregnancy and the current state of prenatal care. J Midwifery Womens Health. 2004; 49(5):405–11. [PubMed: 15351330]
69. Novick G, Reid AE, Lewis J, et al. Group prenatal care: model fidelity and outcomes. Am J Obstet Gynecol. 2013; 209(2):112 e1–6. [PubMed: 23524175]
70. Cote-Arsenault D, Morrison-Beedy D. Practical advice for planning and conducting focus groups. Nursing research. 1999; 48(5):280–3. [PubMed: 10494913]

Table 1

Patient Characteristics

Variable	Participant responses (n=16)	
	Mean ± standard deviation or %	Range
Demographics		
Prepregnancy body mass index (kg/m^2)	39±7	30-49
Race-ethnicity	87% Black 13% Hispanic	
Age (years)	28±5	21-39
Multiparas	93.7%	
Completed 12th grade	93.7%	
Married	18.7%	
Medicaid	75%	
Gestational age (weeks)	24±8.6	9-38
Employed outside of the home for a salary	56%	
Prenatal care provider	25% Certified nurse midwife 62.5% Physician 12.5% Other	
Weight-related questions		
Do you think you should gain or lose weight during this pregnancy?	67% Gain 20% Lose 13% Stay the same	
If you should gain weight during this pregnancy, how many pounds do you think you should gain? (pounds)	24±10	15 to >50
Do you think there are any risks of being obese during a pregnancy?	87% Yes 13% No	
Has a provider ever discussed how much weight you should gain during a pregnancy?	62.5% Yes 31.2% No 6.3% Don't remember	
Has a provider ever talked to you about the risks of being obese during a pregnancy?	43.7% Yes 43.7% No 12.6% Don't remember	

Table 2

Provider Characteristics

Variable	Participant responses (n=19)	
	Mean ± standard deviation or %	Range
Age (mean ± SD) years	38.6 ± 13.7; Median 34	31-56
Ethnicity	84.2% non-Hispanic 15.8% Hispanic	
Race	78.9% White 5.3% African American 5.3% Asian 10.6% Missing	
Female gender	100%	
Provider type	21.0% Resident ob-gyn 47.4% CNM 26.3% Faculty ob-gyn 5.3% Faculty family medicine	
Years in practice (CNM and faculty only)	10.9 ± 11.1; Median 8	1-35
Years in practice at UI Health	6.8 ± 5.3; Median 4	0-17.5
Should obese women lose or gain weight during pregnancy?	10.5% Lose 57.9% Gain 31.5% Stay the same	
If obese women should gain weight, how many pounds should they gain? (n=11)	9.1% 5-10 pounds 90.9% 10-20 pounds	
Do you discuss weight gain during pregnancy with your patients?	89.5% Always 10.5% Sometimes	
Are there risks of being obese during a pregnancy?	100% Yes	
How would you describe your own body weight?	47.4% Normal 26.3% Overweight 26.3% Obese	
Body mass index (mean ± SD) kg/m^2	26.1 ± 6.3 10.5% incomplete data	21-41
How would you describe your nutrition?	78.9% Very good 15.8% Good 5.3% Fair	
During the past 7 days, on how many days were you physically active for at least 60 minutes per day?	2.3 ± 1.6; Median 2 days	0-5
General health description	10.5% Excellent 36.8% Very good 52.6% Good	
Are you satisfied with your body weight?	26.3% Yes 73.7% No	
Which of the following are you trying to do about your weight?	73.7% Lose weight 0% Gain weight 21.0% Stay the same weight 5.3% Nothing	