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Patient and obstetric provider communication regarding weight gain management among socioeconomically disadvantaged African American women who are overweight/obese

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Abstract

Objective—To examine the communication between obstetric providers and their socioeconomically disadvantaged, African American patients who are overweight and obese during pregnancy, and whether this communication relates to outcomes.

Study Design—Pregnant patients and their obstetric providers were surveyed between October 2012 and March 2016 at Washington University School of Medicine in St. Louis, MO. Percent agreement between patients' and obstetric providers' survey responses were analyzed and measured (κ coefficient). Descriptive and multilevel logistic regression analyses aimed at identifying the relation of perceived communication between providers and patients to gestational weight gain, diet, and exercise during pregnancy.

Result—A total of 99 pregnant women and 18 obstetric providers participated in the study. Significant lack of agreement was observed between patients and obstetric providers regarding communication about weight gain recommendations, risk factors associated with excessive weight gain, what constitutes adequate exercise per week, exercise recommendations, dietary recommendations, and risk factors associated with a poor diet.

Conclusion—Our findings suggest patients were not receiving intended messages from their obstetric providers. Thus, more effective patient-obstetric provider communication is needed

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regarding gestational weight gain, exercise and dietary recommendations among overweight/obese, socioeconomically disadvantaged, African American women.

Keywords

Patient-Provider Communication; Pregnancy; Gestational Weight Gain

Introduction

In the United States, approximately 60% of women enter pregnancy as overweight or obese (Institute of Medicine Weight Gain During Pregnancy: Reexamining the Guidelines. 2009, National Academies Press: Washington, DC.), and this prevalence is significantly higher in socioeconomically disadvantaged (SED) African American women (Chu, Kim, and Bish 2009). Pre-pregnancy obesity increases the risk of a host of adverse obstetric and infant outcomes (Kongubol and Phupong 2011, Bhattacharya et al. 2007, Carmichael, Rasmussen, and Shaw 2010), including excessive gestational weight gain (GWG) (Althuisen et al. 2011, Chasan-Taber et al. 2004, Tovar et al. 2010, Rasmussen, Catalano, and Yaktine 2009). Excessive GWG is further associated with a number of unfavorable maternal and neonatal health outcomes (Herring et al. 2008, Stotland et al. 2010, Olson, Strawderman, and Dennison 2009, Herring, Nelson, et al. 2012, Herring, Henry, et al. 2012).

Sixty percent of women who are overweight and obese exceed weight gain guidelines recommended by the Institute of Medicine (IOM) (Rasmussen, Catalano, and Yaktine 2009, Herring, Nelson, et al. 2012), thus, putting them at greater risk for poor outcomes and future obesity in both mother and child (Stotland et al. 2010, Olson, Strawderman, and Dennison 2009). SED African American women are at an especially high risk for high pre-pregnancy body mass index (BMI) (Ogden et al. 2014) and excessive GWG (Herring, Henry, et al. 2012, Lederman, Alfasi, and Deckelbaum 2002). The IOM has suggested increased provider attention and advising should be given to low-income minority women who are more likely to be overweight and obese, consume diets of poor quality, and exercise less during pregnancy (Rasmussen, Catalano, and Yaktine 2009, Krans and Chang 2012). Previous research has suggested that women provided with target weight gains are more likely to limit weight gain during pregnancy (Phelan et al. 2011), suggesting that effective communication between patient and obstetric provider can have an impact on GWG and obstetric outcomes. However, obstetric provider advice on GWG is often insufficient, inappropriate, and does not use evidence-based guidelines (Stotland et al. 2010, Stengel et al. 2012, Phelan et al. 2011, Whitaker et al. 2016).

Physical activity and diet are two potential areas of communication that may aid obstetric providers in helping patients reduce GWG (Gavard and Artal 2008, Downs et al. 2012, Diemert et al. 2016) and improve maternal-fetal health (Downs et al. 2012, Szymanski and Satin 2012, Diemert et al. 2016). However, a gap is apparent between the scientific literature and clinical practice. Pregnant women are receiving little advice, no advice, or incorrect advice about the safety and benefits of exercise during pregnancy (Stengel et al. 2012). Furthermore, dietary advice from obstetric providers during pregnancy also appears to be absent or minimal (Duthie, Drew, and Flynn 2013).

Therefore, this study examined obstetric providers' advice on GWG, diet, and exercise from both the patient's and the obstetric provider's perspectives. The primary purpose was to determine what information obstetric providers reported sharing with their patients and whether the patients received the messages that the provider was trying to communicate. The secondary purpose was to evaluate the relation between patient-reported obstetric provider advice to actual GWG, diet and exercise among overweight and obese, SED, African American women.

Materials and Methods

Study Participants

Participants were recruited from a larger ongoing study as part of the LIFE-Moms Consortium. The LIFE-Moms consortium is a collaboration between clinical centers, a research-coordinating unit, and the NIH with the goal of determining the effect of various behavioral and lifestyle interventions on GWG and other adverse outcomes in pregnant women and their neonates. The randomized controlled trial was conducted at a single university-based tertiary care center (Washington University School of Medicine in St. Louis, MO) from October 2012 to March 2016. The University's Institutional Review Board approved all study procedures, and written informed consent was obtained from each study participant. Inclusion criteria for the present study were: 1) confirmed singleton viable pregnancy with no identified fetal abnormalities, 2) pre-pregnancy BMI of 25–29.9 kg/m² (overweight) and 30–45 kg/m² (obese) (measured by study team at enrollment between 9 and 15 6/7 weeks gestation), 3) age 18–35 years, 4) African American race, 5) socioeconomically disadvantaged (SED) (e.g., on Medicaid, uninsured, or live in zip codes with median income below the poverty level), 6) established care at the University-affiliated Women's Health Clinic before 15 weeks gestation with plans to deliver at this hospital, and 7) randomized to standard of care (i.e., did not receive any intervention) in the larger study (Cahill et al. 2018).

Exclusion criteria were: 1) multiple gestation pregnancy, 2) inability to provide voluntary informed consent, 3) self-reported use of illegal drugs (e.g., cocaine, methamphetamine, opiates), 4) consumption of daily medications by class: corticosteroids, anti-psychotics (known to alter metabolic profiles and body weight), and 5) history of gestational diabetes mellitus (GDM), pre-pregnancy diabetes or prior macrosomic (>4000g) infant in previous pregnancy (each elevate the risk for GDM in the current pregnancy, or undiagnosed GDM).

From the larger trial (Cahill et al. 2018), 134 of the 267 (50.2%) women were eligible (i.e., in the control arm of the study), and 99 of the 134 (73.9%) chose to participate in the study. Once identified through the study team, a research coordinator approached the participant in the Clinical Research Unit (while there for their trial study visit) for enrollment in the present study. After study procedures were explained, written informed consent was obtained at the Clinical Research Unit. No additional screening was required because participation in the larger study guaranteed eligibility for the present study.

Data Collection

At the Clinical Research Unit, the research coordinator administered (via paper and pencil) a 15-question survey developed by our group, to each participant (between 35 and 37 weeks gestation) inquiring about their prenatal communication with their obstetric provider about GWG recommendations, excess weight gain during pregnancy, and risk factors associated with excessive GWG (Table 1). In addition, the survey contained questions about their obstetric provider's communication regarding exercise and diet during pregnancy (Table 1). After 35 weeks, the obstetric providers who were responsible for each given patient's prenatal care were identified, contacted, and sent the obstetric provider's version of the survey via email regarding their communication with their patients in the established cohort. Thus, this study assessed whether these topics (GWG, diet, and exercise) were discussed with/by the provider. If they were discussed, data on which topics were discussed and specifically what was said was also collected. By asking both the patient and the provider, the study design permitted determination of whether the messages intended by the provider were received by the patient, and thus, if the communication was effective.

GWG was determined by subtracting weight measured by the study team at enrollment between 9 and 15 6/7 weeks gestation from their 35-week appointment weight. For each participant, GWG was determined to be below, within or above the IOM established guidelines for appropriate GWG based on pre-pregnancy BMI (Rasmussen et al. 2010, Rasmussen, Catalano, and Yaktine 2009). Additional obstetric outcomes were obtained from their prenatal charts (i.e., GDM, hypertensive disorders, and obstetric outcomes) as they were followed prospectively through their pregnancy.

Data Analyses

Baseline characteristics of women in the study were summarized using descriptive statistics. To determine whether messages intended by the provider were received by the patient, provider and patient responses were compared to each other. Percent agreement between patients and obstetric provider survey responses was analyzed for each topic and measured using the κ coefficient to examine the discordance among responses between the patients and obstetric providers (Cohen 1960). As the survey was administered one time to the providers, those who treated multiple patients in the cohort had their one set of answers compared to all of their patients' answers. Because patients were clustered within providers, a series of multilevel binary logistic regressions with Bayesian estimators were used to accommodate this clustering to evaluate the relation of excessive GWG and patient-reported obstetric provider advice (i.e., regarding weight gain, diet and exercise) stratified by BMI and overall GWG. This model had two levels, with patients (level 1), nested within providers (level 2). The models were tested for fit using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). The final multilevel binary logistic regression models provided odds ratios (OR) and 95% confidence intervals (CI) for exceeding GWG guidelines and were adjusted for parity and advanced maternal age. All statistical procedures were performed with STATA Version 15 (College Station, TX).

Results

During the study period, 134 of the 267 (50.2%) women were eligible, and 99 of the 134 (73.9%) women enrolled in the study. The obstetric provider associated with each patient's prenatal care was also surveyed (n=18; 7 nurse practitioners, 11 obstetricians; 17 females, 1 male; 14 Caucasians, 4 African Americans); a 100% participation rate was attained among providers. All pregnant study participants were either overweight (39.4%) or obese (60.6%), of African American race and were determined to be SED. Among all participants, 50.5% exceeded guidelines for GWG as established by the IOM, and percentages were similar when examining data in overweight and obese women separately (Table 2).

All obstetric providers (100%) reported discussing excess GWG with their overweight/obese patients; however, only 11% of patients reported having had these conversations (Table 3). Based on the Cohen suggested interpretation of the κ coefficient (Cohen 1960), none to slight agreement was observed between obstetric providers and patients regarding conversations about GWG recommendations (κ coefficient 0.02; 95% CI -0.10, 0.14) and the risk factors associated with excessive GWG (κ coefficient 0.01; 95% CI -0.01, 0.01). Further, none to slight agreement was observed between obstetric providers and patients regarding conversations about exercise recommendations (κ coefficient 0.09; 95% CI -0.04, 0.22) and benefits associated with exercise (κ coefficient: 0.04; 95% CI -0.15, 0.24). No agreement was observed in what constituted risk factors associated with a poor diet, (κ coefficient: -0.01; 95% CI -0.06, 0.03), adequate exercise per week (κ coefficient -0.07; 95% CI -0.24, 0.10), or exercise recommendations (-0.06; 95% CI -0.19, 0.06) (Table 3).

In the total sample, discussing excessive GWG with the provider was associated with a significantly increased odds of exceeding gestational weight gain beyond the guidelines established by the IOM (adjusted OR=10.59, 95% CI (1.29, 86.94)). All other relationships of weight, diet and exercise with GWG stratified on whether women were overweight or obese were non-significant (Table 4).

Discussion

Our findings demonstrated a gap in communication between overweight and obese, SED African American patients and their obstetric providers regarding GWG, exercise, and dietary advice. Overall, obstetric providers reported they had given advice regarding appropriate GWG, diet, and exercise during pregnancy; however, patients did not appear to be receiving the messages intended by the provider. This lack-of effective communication may be related to patients exceeding GWG guidelines.

Our outcomes in overweight and obese, SED African American women were similar to those from previous studies in other populations that suggest obstetric provider advice on GWG is insufficient and often inappropriate (Stotland et al. 2010, Stengel et al. 2012, Phelan et al. 2011). A previous study found similar discrepancies between obstetric provider and patient perceptions of their weight-related clinical conversations in a cohort of predominately white educated women (Duthie, Drew, and Flynn 2013). In another study, obstetric providers reported discussing GWG with their patients, but none of the obstetric

providers specifically discussed the guidelines established by the IOM (Whitaker et al. 2016). Although data were not collected on what specific advice was/was not given in the present study, patient responses in the current study demonstrated that either the message was not delivered in a way that resonated with them (possibly due to issues with health literacy among women in this population (Birru and Steinman 2004)) or the conversation did not occur. Previous research has demonstrated that patient-provider communication during medical visits is different among African American versus white patients, with communication being less patient-centered and with less emotional tone (affect) for the former group (Johnson et al. 2004). It is plausible that this contributed to the lack of effective communication between the patients and obstetric providers in the present study, and interventions to improve providers' awareness of affective cues and patient-centeredness may be warranted to improve obstetric health care practices among African American women (Johnson et al. 2004).

Based on previous findings, the lack of effective communication between the obstetric providers and patients who were overweight/obese might be due in part to the sensitivity of the topic (Chang et al. 2013, Whitaker et al. 2016), as well as the topic not being a priority among obstetric providers of high-risk pregnant women (Chang et al. 2013). Another possible explanation is that obstetric providers may not have been providing adequate advice as they may have believed that their counseling would have a low impact on patients (Chang et al. 2013) and that patients would be more influenced by other factors, such as their family, habits, and culture, which may be especially relevant in SED African American women (Chang et al. 2013, Boyington et al. 2008, Krans and Chang 2012). A final potential explanation for lack of effective communication between the patient and obstetric provider regarding advice on appropriate GWG was that obstetric providers lacked resources to give to patients (Chang et al. 2013). Expanding the obstetric health care team to beyond the physician, thus, providing additional resources, such as dietary experts (e.g., registered dietitians) and physical activity experts (e.g., physical therapists (Tinius, Cahill, and Cade 2016)) could aid in the education of and communication with overweight and obese, SED, African American pregnant women regarding GWG, diet, and exercise during pregnancy.

A previous study demonstrated that patients typically view obstetric provider advice on weight gain and related topics positively, and many report actually modifying their behaviors in response to this advice (Whitaker et al. 2016). Therefore, obstetric providers should feel empowered to give specific advice regarding GWG, exercise, and diet to all of their pregnant patients regardless of body weight status, income level, and race. Moreover, patients need to be informed about their role in the patient-obstetric provider conversation, a notion that could be particularly challenging among SED African American women who may have their own unique beliefs about exercise and desirable weight change during pregnancy (Krans and Chang 2012) and may also view their low-income neighborhoods as unsafe to pursue an active lifestyle (Carlson et al. 2018). A key factor that may facilitate discussions between the patient and obstetric provider on lifestyle topics is the patient expressing interest and asking questions (Whitaker et al. 2016). Therefore, health care providers (not just obstetric providers) should encourage their patients to ask questions and initiate conversations about these important topics.

Results from the present study showed that not only are patients not receiving the messages obstetric providers believe they are communicating regarding GWG advice, but providers reported not providing advice on the benefits of exercise during pregnancy with overweight and obese SED African American patients a majority of the time (only 39% reported talking to their patients about physical activity). This is problematic as overweight and obese women are a population at high risk for numerous poor outcomes that can potentially be improved through a physically active lifestyle (Ferraro, Gruslin, and Adamo 2013, Prevention 2015, Downs et al. 2012, Szymanski and Satin 2012) as recommended by the American Congress of Obstetricians and Gynecologists (ACOG) (Tinius, Cahill, and Cade 2016, Prevention 2015).

In addition to exercise, it also appears dietary advice was mismanaged among SED African American women in the present study. Previous literature suggests a link between obesity and food insecurity (Franklin et al. 2012), i.e., access to adequate food is limited by lack of money and other resources (The State of Food Insecurity and Nutrition in the World. Food and Agriculture Organization of the United Nations. 2018. Accessed at www.fao.org/state-of-food-security-nutrition/en/. which could be a contributing factor to poor dietary choices, including overconsumption of high-calorie, low-nutrition foods (and likely subsequent GWG among SED African American women). Obstetric providers should consider incorporating a simple validated two-question screening tool (Hager et al. 2010) into prenatal care to identify women for whom food insecurity may be the driving factor behind poor dietary choices. This may aid providers in identifying patients whom dietary guidance or referral is needed and, once again, consider expanding the obstetric health care team.

Because overweight and obese, SED African American women are at increased risk for excessive GWG (Herring, Henry, et al. 2012) and subsequent unfavorable outcomes, it is imperative that obstetric providers find methods to deliver the message about GWG more clearly to these women (Herring et al. 2008, Stotland et al. 2010, Olson, Strawderman, and Dennison 2009, Herring, Nelson, et al. 2012, Herring, Henry, et al. 2012). In particular, the high rates of cesarean delivery and hypertensive disorders (similar to what was observed among women in the present study) could potentially be improved through reduced GWG (Macdonald-Wallis et al. 2013, Zhou et al. 2017), possibly facilitated by improved counseling on GWG. However, this is speculative and is an important line of future inquiry. Pregnancy is considered a “teachable moment” (Phelan et al. 2011) as pregnant women not only interacting regularly with health care providers, but are also motivated by the opportunity to improve the health of their unborn baby and, thus, may be more likely to implement lifestyle changes.

As with any study, several limitations should be noted for the present study. One limitation was potential recall bias by both the patients and the obstetric providers as they were asked to recall conversations that happened throughout their pregnancy and their patients’ pregnancies. However, results of previous studies have suggested that maternal recall of medical-related data tends to be accurate (Petersen et al. 2019) as pregnancy is a very memorable time in women’s lives. Another limitation was that certain obstetric providers’ (i.e., the providers who provided prenatal care to multiple patients in the cohort) survey responses were counted more than once in the concordance analyses, and therefore, the

administration of the survey may have had an influence on subsequent patient conversations. Additionally, these results were only from a small cohort of providers and may not be generalizable to all providers in other cities and hospitals. Further, the small sample size of providers may have resulted in inadequate statistical power to detect moderate but meaningful associations and agreements. However, all providers in the participating clinic were included; thus, provider sample size for the present study was maximized. Further, participants may have made errors with their survey responses due to potential issues with health literacy among women in this population; however, the study team was available to help with any survey-related confusion and aid in obtaining accurate data. In addition, the study included only overweight and obese, SED, African American women; thus, results may not be generalizable to other populations. Finally, because a large number of physiological, social, and emotional factors could influence key outcomes, uncontrolled confounding was possible.

Overall, our findings demonstrated ineffective communication between patients and obstetric providers regarding communication about GWG, diet, and physical activity during pregnancy; thus, suggesting a missed opportunity to use prenatal care to engage patients in conversations regarding these topics. Additional research on the design and implementation of interventions to increase patient and obstetric provider communication, and thus, improve lifestyle habits and achieve appropriate GWG, particularly among SED African American women, are warranted. Future interventions targeted at improving patient and obstetric provider communication, specifically among, SED African American women who are overweight or obese, hold potential to close the gap in health disparities in GWG among these women.

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Table 1.**Interview Questions for Patients and Obstetric Providers**

Domain	Questions
Gestational Weight Gain	<p><i>Patient Questions</i></p> <p><i>How much weight did your obstetric provider recommend you gain during this pregnancy?</i></p> <p><i>How often did your obstetric provider discuss your weight and weight gain recommendations with you?</i></p> <p><i>Did you obstetric provider discuss the risks of gaining too much weight? If yes, what were the risks discussed?</i></p> <p><i>Obstetric Provider Questions</i></p> <p><i>How much weight did you recommend your patient should gain during her pregnancy?</i></p> <p><i>How often did you discuss weight and weight gain recommendations with your patient?</i></p> <p><i>Did you discuss the risks of gaining too much weight during pregnancy with her?</i></p>
Diet	<p><i>Patient Questions</i></p> <p><i>How often did your obstetric provider discuss your diet and dietary recommendations with you?</i></p> <p><i>What types of information did your obstetric provider give you about a healthy diet during pregnancy (e.g. Foods to eat less/more of, how many calories to consume)?</i></p> <p><i>Did you obstetric provider discuss the risks of having a poor diet during pregnancy?</i></p> <p><i>Obstetric Provider Questions</i></p> <p><i>How often did you discuss your patient's diet and dietary recommendations with her?</i></p> <p><i>What types of information did you give your patient and a healthy diet during pregnancy (e.g. Foods to eat less/more of, how many calories to consume)?</i></p> <p><i>Did you discuss the risks of having a poor diet during pregnancy?</i></p>
Exercise	<p><i>Patient Questions</i></p> <p><i>Did your obstetric provider discuss exercise recommendations for your pregnancy with you?</i></p> <p><i>How often did your obstetric provider discuss exercise during pregnancy with you?</i></p> <p><i>Did your obstetric provider discuss the benefits of exercise during pregnancy with you?</i></p> <p><i>Obstetric Provider Questions</i></p> <p><i>Did you discuss exercise recommendations for pregnancy with your patient?</i></p> <p><i>How often did you discuss exercise during pregnancy with your patient?</i></p> <p><i>Did you discuss the benefits of exercise during pregnancy with your patient?</i></p>

Table 2.**Clinical Characteristics of Patients**

	N = 99
Maternal age, years, mean $\pm$ sd	25.64 $\pm$ 0.50
Maternal age $\geq$ 35, years, n (%)	7 (7.1)
Birthweight, grams, mean $\pm$ sd	3213 $\pm$ 43.01
Birthweight $>$ 4000, grams, n (%)	4 (4.0)
Obese (BMI $\geq$ 30 kg/m ²), n (%)	60 (60.6)
Overweight (BMI 25.0–29.9 kg/m ²), n (%)	39 (39.4)
All GWG	
GWG not above IOM, n (%)	49 (49.5)
GWG above IOM, n (%)	50 (50.5)
Obese Only GWG	
GWG not above IOM, n (%)	28 (46.7)
GWG above IOM, n (%)	32 (53.3)
Overweight Only GWG	
GWG not above IOM, n (%)	21 (53.9)
GWG above IOM, n (%)	18 (46.1)
GWG, pounds, mean $\pm$ sd	22.92 $\pm$ 1.21
GDM, n (%)	8 (8.1)
Hypertensive disorder, n (%)	24 (24.2)
Oxytocin use, n (%)	60 (60.6)
Prostaglandin use, n (%)	27 (27.3)
Foley bulb use, n (%)	18 (18.2)
Nulliparous, n (%)	20 (20.2)
Prior cesarean, n (%)	18 (18.2)
Infant gender	
Male, n (%)	53 (53.5)
Female, n (%)	46 (46.5)
Mode of delivery	
Vaginal, n (%)	58 (58.6)
Operative vaginal, n (%)	3 (3.0)
Cesarean, n (%)	38 (38.4)

BMI= body mass index, GWG= gestational weight gain, IOM= Institute of Medicine

Table 3.**Patient and Obstetric Provider Agreement**

Item	Patient Rating Yes (%)	Physician Rating Yes (%)	Agreement (%)	K coefficient (95% CI)
Domain: Weight				
Discussion of weight and weight gain recommendations	43.3	88.9	46.5	0.02 (−0.10, 0.14)
Discussion of excess weight gain during pregnancy ^a	11.1	100	11.1	--
Discussion of risk factors associated with excess weight gain	19.2	98.9	20.2	0.01 (−0.01, 0.01)
Domain: Diet				
Discussion of dietary recommendations during pregnancy	37.4	79.8	47.5	0.09 (−0.04, 0.22)
Discussion of risk factors associated with poor diet	33.3	98.0	33.3	−0.01 (−0.06, 0.03)
Domain: Exercise				
Discussion of what constitutes as adequate exercise per week	31.3	17.2	59.6	−0.07 (−0.24, 0.10)
Discussion of exercise recommendations	23.2	73.7	33.3	−0.06 (−0.19, 0.06)
Discussion of benefits associated with exercise	28.3	39.4	56.6	0.04 (−0.15, 0.24)

^a All obstetric providers reported discussing excess gestational weight gain (GWG) with all patients

Table 4.

Multilevel logistic regression model for the association of patient-reported obstetric provider advice on weight gain, diet, and exercise to excessive gestational weight gain by BMI category

Item	All GWG above IOM	Overweight Only: GWG above IOM	Obese Only: GWG above IOM
	Adjusted Odds Ratio ^a (95% CI)	Adjusted Odds Ratio ^a (95% CI)	Adjusted Odds Ratio ^a (95% CI)
Domain: Weight			
Discussion of weight and weight gain recommendations	1.07 (0.41, 2.32)	1.31 (0.16, 4.51)	1.88 (0.52, 5.28)
Discussion of excess weight gain during pregnancy	10.59 (1.29, 86.94) [*]	8.39 (0.67, 104.61)	-- ^b
Discussion of risk factors associated with excess weight gain	2.78 (0.73, 7.37)	11.39 (0.44, 63.47)	3.63 (0.55, 14.36)
Domain: Diet			
Discussion of dietary recommendations during pregnancy	0.84 (0.32, 1.86)	0.50 (0.07, 1.74)	2.73 (0.54, 9.18)
Discussion of risk factors associated with poor diet	0.85 (0.31, 1.79)	2.41 (0.30, 9.75)	0.51 (0.12, 1.42)
Domain: Exercise			
Discussion of what constitutes as adequate exercise per week	0.95 (0.35, 2.15)	0.83 (0.10, 3.06)	1.09 (0.27, 3.08)
Discussion of exercise recommendations	1.23 (0.38, 2.93)	2.71 (0.29, 10.93)	1.02 (0.23, 3.09)
Discussion of benefits associated with exercise	0.98 (0.33, 2.35)	0.83 (0.07, 3.36)	1.06 (0.25, 2.88)

^a Adjusted for parity and advanced maternal age

^b No obese only patients were in the not above the IOM guideline who also reported having a discussion about excessive gestational weight.

^{*} p<0.05