Managing Gestational Weight Gain: Obstetricians' Perceived Barriers and Interventions

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ABSTRACT

To support optimal health outcomes during pregnancy, understanding obstetricians' (OBs) recommendations for and barriers to managing gestational weight gain (GWG) can benefit childbirth educators. This mailed survey examined OBs' practices ($n = 63$) for managing GWG along with perceived barriers. The most frequent recommendations were (a) increase activity (76.2%), (b) aerobic activity (63.5%), (c) patient education about weight management (61.9%), (d) increase fiber intake (61.3%), and (e) use of guidelines for weight gain (58.7%). Self-tracking weight gain charts were the least used. Greatest barriers to GWG management were (a) patients not interested in changing behavior (77.8%), (b) high relapse rates (66.7%), (c) lack of community resources (60.3%), (d) patients cannot afford referrals (58.7%), and (e) lack of time (53.9%).

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Despite more than two decades of published national guidelines about gestational weight gain (GWG) set forth by experts (Institute of Medicine [IOM], 1990, 2009), only about a third of women successfully gain weight within the recommended amounts. Generally, a fifth of women gain inadequate amounts and almost half gain excessive amounts of weight (Centers for Disease Control and Prevention [CDC], 2012; Deputy, Sharma, Kim, & Hinkle, 2015; Johnson et al., 2015; Pawlak, Alvarez, Jones, & Lezotte, 2015). Although inadequate GWG remains a concern as a risk factor for low birth weight

(Siega-Riz et al., 2009), the obesity epidemic has focused health-care providers' attention on excessive GWG to avoid adverse perinatal outcomes, such as cesarean birth, high birth weight, and postpartum weight retention (Hernandez, 2012; Siega-Riz et al., 2009; Stotland, Cheng, Hopkins, & Caughey, 2006; Stotland, Hopkins, & Caughey, 2004).

As key providers of prenatal care, obstetricians (OBs) are at the front line of providing advice to pregnant women about how much weight to gain during pregnancy and how to manage weight gain effectively. Thus, the American College of Obstetricians

and Gynecologists (ACOG) recommends discussing “appropriate weight gain, diet, and exercise at the initial visit and periodically throughout the pregnancy” (2013, p. 2). The best way to translate this recommendation into effective clinical practice interventions, which achieve adequate weight gain, is not yet well-developed. For childbirth educators, who provide evidence-based information on wellness and self-care techniques during pregnancy and facilitate communication among parents and their health-care providers (International Childbirth Education Association [ICEA], 2015), understanding and supporting GWG management is an important activity that supports healthy outcomes for both the mother and the baby.

CURRENT GESTATIONAL WEIGHT GAIN RECOMMENDATIONS AND CHALLENGES

Although the recommendations for GWG have been controversial for the past 50 years, the obesity epidemic provides further impetus to examine unnecessary weight gain during pregnancy (Rössner, 2002). With 73% of women who are obese reporting pregnancy as a major triggering event for their weight problems (Rössner, 2002) and research that indicates that GWG contributes to postpartum weight retention (Viswanathan et al., 2008; Walker, Sterling, Kim, Arheart, & Timmerman, 2006), a logical focus for preventing obesity is to address excessive weight gain during pregnancy.

The most recent IOM (2009) evidence-based guidelines for GWG use World Health Organization categories to classify pregnant women into four weight categories based on their prepregnancy body mass index (BMI): underweight ($<18.5 \text{ kg/m}^2$), normal weight ($18.5\text{--}24.9 \text{ kg/m}^2$), overweight ($25.0\text{--}29.9 \text{ kg/m}^2$), and obese ($\geq 30.0 \text{ kg/m}^2$). The recommended GWG ranges for these four BMI categories are 28–40 lb, 25–35 lb, 15–25 lb, and 11–20 lb (IOM, 2009), respectively. Compared to the past, pregnant women are now entering pregnancy at substantially higher BMIs (IOM, 2009; Johnson et al., 2015), which increases the challenge of meeting the IOM’s GWG guidelines. In addition to preventing adverse perinatal outcomes, these recommendations are essential for reducing future health problems in women that stem from the increased health risks inherent with obesity (e.g., cardiovascular disease, diabetes).

Despite these guidelines, only 58% of obstetrician-gynecologists (OB/GYNs) and family practice

residents report being aware of IOM’s GWG guidelines (Simas et al., 2013). An additional problem is women’s lack of knowledge about GWG. In a survey of pregnant women at their first prenatal visit, 56% indicated that GWG was not a problem and 63% indicated their OB had not mentioned GWG in prior visits (Ali & Wright, 2014). Nonetheless, 93% of OBs report they advise pregnant women about GWG either most of the time or often (Power, Cogswell, & Schulkin, 2009). These data indicate possible confusion among providers of prenatal care about prevailing GWG guidelines and gaps in communication between pregnant women and care providers about recommended GWG.

Although we focused this study on OBs’ current practices for and perceived barriers to managing GWG, the results from this study are important to childbirth educators as well. Greater understanding of OBs’ GWG management practices and their perceived barriers to managing GWG can help childbirth educators provide guidance to parents on how to work more effectively with their OB or nurse-midwife on the issue of GWG. Research also shows that some of the pregnant women are not given GWG targets by their OBs or the targets may be inconsistent with national guidelines (Ferrari & Siega-Riz, 2013; Phelan et al., 2011; Stengel, Kraschnewski, Hwang, Kjerulff, & Chuang, 2012; Stotland et al., 2005). In these cases, childbirth educators may need to guide women to resources for GWG guidelines or facilitate clarifying with OBs the GWG targets that are suitable for the specific health situations of individual women.

Furthermore, having a target for GWG gives women a goal, but not necessarily the means to reach that goal in a healthy and practical way over the course of pregnancy. Again, childbirth educators may be helpful in translating GWG goals into healthy action plans. Particularly in early prenatal classes, childbirth educators have a pivotal role to play in educating and counseling pregnant women on ways to achieve adequate GWG through healthy nutrition and physical activity. The better understanding that childbirth educators have about the

For more information on IOM recommendations for gestational weight gain, see <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Weight-Gain-During-Pregnancy>

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weight management practices and barriers to managing GWG of OBs, the more they will be able to communicate with parents and OBs about GWG in the context of childbirth preparation. Finally, because excessive GWG increases risk of cesarean birth (Viswanathan et al., 2008), it may disrupt women's birth plans for a vaginal birth—an important focus in childbirth education.

PURPOSE

Very little research has been conducted to examine current GWG management practices of OBs or the barriers to GWG management (Power, Cogswell, & Schulkin, 2006). Furthermore, although a limited number of studies exist that identify effective interventions for preventing excess GWG, they are generally more intensive in nature (Tanentsapf, Heitmann, & Adegboye, 2011). Thus, to enhance GWG management in prenatal care and prevent excessive GWG, an important first step is to gain a better understanding of the current practices of OBs and barriers they encounter related to managing GWG. Thus, this study addressed the following research questions:

1. What are the GWG management practices recommended by OBs?
2. What are the barriers reported by OBs to GWG management?

METHODS

This study was a descriptive, mailed survey of practicing OBs. The target population was practicing OBs in the large urban southwest cities of Houston and San Antonio, Texas. Potential participants' addresses were generated from searching for OBs/gynecologists as the specialty within a 25-mile radius of the Houston area and the San Antonio areas on the website: <http://www.doctorsdig.com/>. This website was chosen over competitors because it yielded a larger number of OB names and addresses. This generated a list of 285 names and addresses for the San Antonio area and 691 names and addresses for the Houston area. To ensure that participants

met the inclusion criteria of being practicing OBs, they also were required to check "yes" on the Background Information section of the questionnaire that they currently manage pregnant patients. Of the 976 surveys mailed, 187 (19%) were returned as undeliverable, 3 were reported as deceased, and 15 responded that they do not currently manage pregnant patients. This suggests a usable sampling frame of 761.

All OBs on the mailing list were sent a packet which included (a) a cover letter; (b) a 3-page questionnaire that addressed Background Information (Demographic, Practice Characteristics), Barriers to Gestational Weight Gain Management, and Gestational Weight Gain Management Practices; and (c) a preaddressed, postage-paid envelope for returning the survey. After 2 weeks, a reminder post card was sent to those deliverable addresses that did not return the survey. Institutional review board approval was obtained prior to data collection.

Instruments

A one-page questionnaire was used to collect background data on gender, years of practice, practice setting, and patient populations managed. The Gestational Weight Gain Management and Barriers to Gestational Weight Gain Management questionnaires were updated and adapted specifically for use with OBs from two prior surveys (Timmerman, Reifsnider, & Allan, 2000; Turner et al., 2012). The Gestational Weight Gain Management and Barriers to Gestational Weight Gain Management questionnaires were based on questionnaires originally with primary care providers, which was pretested for content and face validity (Timmerman et al., 2000) and had also been adapted to examine the weight management practices among heart and vascular health-care providers in ambulatory settings (Turner et al., 2012). The questionnaires were pretested with a group of OBs, and their feedback was used to ensure that the items included were pertinent to standard treatment for pregnant women.

Gestational Weight Gain Management Practices were assessed with 25 items that were grouped into 6 categories of interventions (use of guidelines for recommended weight gain, referrals, dietary recommendations, exercise recommendations, patient education, and behavioral interventions), with specific interventions under most categories. Participants indicated how frequently they used the various interventions (*never*, *sometimes*, and *often*). Barriers to

Gestational Weight Gain Management were assessed with 16 items in which participants were asked, “To what degree do you experience the following barriers to providing gestational weight gain management interventions in your practice?” Magnitude of a barrier was measured by a 4-point Likert-type scale (*not a barrier, small barrier, moderate barrier, and major barrier*). The item wording for the barriers is included in Table 1. Items on barriers and management practices were descriptive and not designed to be used as a summative scale.

RESULTS

The sample ($n = 63$) was 56% female with 71% practicing more than 10 years. For practice setting, 73% were in private practice, whereas 14% were at teaching hospitals or clinics. Patient populations managed by the sample were 39% White, 36% Hispanic, and 20% African American/Black. The majority of respondents (60%) felt that they did not receive enough content about weight management during pregnancy during medical school or residency.

Table 2 presents the frequency of use for GWG management interventions. To determine the most frequently used interventions, those within the *often* frequency category were ranked. The most frequent recommendations to patients were (a) increase activity (76.2%), (b) aerobic activity (63.5%), (c) patient education about principles of weight management (61.9%), (d) increase fiber/fruit and vegetables

(61.3%), and (e) use of IOM/ACOG guidelines for weight gain (58.7%). The recommendations reported as being least used by OBs (i.e., highest frequency of the “never used” response option) included (a) use of self-tracking weight gain charts (76.2%), (b) referrals to support groups (69.8%), (c) advice to “eat to appetite” (61.9%), (d) referrals to Women, Infants, and Children (WIC) programs (54%), and (e) referrals to exercise specialists (52.4%).

Table 1 presents the barriers to GWG management. To determine the top five greatest barriers to GWG, the categories of *major* and *moderate* barriers were combined and then ranked. The greatest barriers to GWG management reported by OBs were (a) patients not interested in changing behavior (77.8%), (b) high relapse rates (66.7%), (c) lack of community resources for referrals (60.3%), (d) patients cannot afford referrals (58.7%), and (e) lack of time (53.9%). The items that were most frequently identified as *not* being barriers to GWG management were (a) personal weight (87.3%), (b) not being part of my role (82.5%), and (c) concern about well-being of the baby (76.2%).

DISCUSSION

The results of this study indicate that OBs face multiple barriers to addressing GWG in their practice. With 60% of the OBs sampled indicating that they had not receive enough preparation in managing GWG in medical school or residency and with lack

TABLE 1
Barriers to Gestational Weight Gain Management

	Not a Barrier	Small Barrier	Moderate Barrier	Major Barrier	<i>M</i>	<i>SD</i>
Lack of financial reimbursement for weight management	31.7%	28.6%	28.6%	11.1%	1.19	1.01
Lack of time	15.9%	30.2%	31.7%	22.2%	1.60	1.01
Patients not interested in changing behavior	11.1%	11.1%	41.3%	36.5%	2.03	.97
Too complex to handle	36.5%	39.7%	15.9%	7.9%	.95	.92
High relapse rates for weight management behaviors	14.3%	19.0%	30.2%	36.5%	1.89	1.06
Do not enjoy addressing weight issues	38.1%	38.1%	17.5%	6.3%	.92	.90
Not part of my role	82.5%	15.9%	1.6%	0%	.19	.44
Lack of effective interventions	27.0%	31.7%	28.6%	12.7%	1.27	1.00
Lack of availability of nutritionist/dietitian	30.2%	23.8%	25.4%	20.6%	1.37	1.13
Lack of availability of physical activity experts	30.2%	19.0%	38.1%	12.7%	1.33	1.05
Patients cannot afford referrals	11.1%	28.6%	25.4%	33.3%	1.83	1.03
Lack of appropriate educational materials	19.0%	25.4%	46.0%	9.5%	1.46	.91
Lack of knowledge about appropriate weight management interventions	46.0%	28.6%	19.0%	6.3%	.86	.95
Lack of community resources for referral of patients	15.9%	23.8%	44.4%	15.9%	1.60	.94
Personal weight	87.3%	7.9%	3.2%	1.6%	.19	.56
Concern about well-being of baby	76.2%	17.5%	4.8%	1.6%	.32	.64

TABLE 2
Frequency of Gestational Weight Gain Management Interventions

Gestational Weight Gain Management	Never	Sometimes	Often	<i>M</i>	<i>SD</i>
1. Use IOM/ACOG guidelines based on BMI for recommended weight gain.	9.5%	28.6%	58.7%	1.51	.67
2. Make referrals related to weight gain management.					
Websites, books, patient education materials	27.0%	46.0%	22.2%	.95	.72
Dietitian/nutritionist	17.5%	52.4%	25.4%	1.08	.67
Personal trainer, exercise physiologist, or physical therapist	52.4%	33.3%	7.9%	.53	.65
Commercial programs (e.g., weight watchers)	36.5%	34.9%	20.6%	.84	.77
WIC program	54.0%	28.6%	12.7%	.57	.72
Support groups	69.8%	23.8%	1.6%	.28	.49
3. Provide dietary recommendations related to weight gain management					
"Eat to appetite"	61.9%	17.5%	17.5%	.54	.79
Increase fiber in diet (e.g., increase fruit and vegetables).	7.9%	30.2%	61.9%	1.54	.64
Low-fat diet	12.7%	44.4%	42.9%	1.30	.69
Calorie-restricted diet	14.3%	44.4%	41.3%	1.27	.70
4. Provide exercise recommendations related to weight gain management.					
Increase activity.	3.2%	20.6%	76.2%	1.73	.52
Aerobic exercise	7.9%	28.6%	63.5%	1.56	.64
Strength or weight training	17.5%	38.1%	44.4%	1.27	.75
5. Provide patient education about weight gain management.					
Benefits of weight gain management	17.5%	27.0%	55.6%	1.38	.77
Principles of weight management (role of calorie intake/exercise)	15.9%	22.2%	61.9%	1.46	.76
Portion sizes (e.g., USDA healthy food plate)	19.0%	36.5%	44.4%	1.25	.76
Reading food labels	31.7%	38.1%	30.2%	.98	.79
6. Recommend behavioral interventions to manage weight gain.					
Distribute weight gain charts for patients to track weight gain.	76.2%	11.1%	12.7%	.37	.70
Goal setting	22.2%	44.4%	33.3%	1.11	.74
Food diaries	25.4%	55.6%	19.0%	.94	.67
Get significant others involved.	33.3%	44.4%	22.2%	.89	.74
Behavior modification (e.g., eating only at table, keep healthy food visible)	28.6%	41.3%	28.6%	1.00	.77
Stress management	22.2%	50.8%	27.0%	1.05	.71
Mindful eating	14.3%	49.2%	36.5%	1.22	.68

Note. IOM/ACOG = Institute of Medicine/American College of Obstetricians and Gynecologists; WIC = Women, Infant, and Children; USDA = United States Department of Agriculture.

of time being a top-ranked barrier, the GWG management interventions currently being delivered may not be sufficient to assist women in changing their behavior. It is especially concerning that 78% of OBs view patients as not interested in changing their behavior as a major or moderate barrier, and 67% view high relapse rates for weight management behaviors as a major or moderate barrier to GWG management. If health-care providers view their GWG management efforts as potentially futile, coupled with time constraints faced by most health-care practitioners, the motivation and ability to provide GWG counseling may be limited.

Data from interviews and focus groups on pregnant women's attitudes regarding GWG illustrate that pregnant women's interests in managing GWG is complex and may be influenced by income (Paul, Graham, & Olson, 2013; Wang, Arroyo, Druker, Sankey, & Rosal, 2015). For example, low-

income participants were interested in information about GWG, diet, and exercise and reported good intentions to adopting healthy eating behaviors (Groth & Morrison-Beedy, 2013; Wang et al., 2015). However, they also believed that you could not control GWG because of cravings, appetite, and emotional eating, which drove them to consume foods high in fat, calories, and comfort (Groth & Morrison-Beedy, 2013; Wang et al., 2015). In contrast, high-income women, whose beliefs were influenced from their information seeking, felt they could handle cravings and still eat healthfully (Paul et al., 2013).

These studies may explain OBs' perceptions that patients have high relapse rates and are not interested in changing behavior. To avoid overgeneralization by health-care providers, further research is needed to validate to what degree pregnant women are interested in making behavior changes regarding GWG management and what influences their

motivation and ability to be successful (e.g., socioeconomic status, knowledge, stress level). Specific strategies that improve motivation and the skills needed to successfully make lifestyle changes also warrant further investigation for this population.

The lack of referrals for GWG management (to support groups, WIC, exercise specialists) reported by OBs is consistent with some of the top barriers identified by OBs: lack of community resources for referrals (60.3%) and patients cannot afford referrals (58.7%). Reasonably priced resources that address the needs of women related to GWG is clearly an area of unmet need. Although systematic reviews of clinical trials using dietary interventions show these generally achieve modest (about 2 kg or less) reductions in GWG (Tanentsapf et al., 2011), these often have involved dietary counseling by dietitians and other supportive services. Such services may be beyond the reach of many obstetric practices. This lack of resources for GWG opens the door for childbirth educators who can potentially fill this void.

The limitations of the study include a low response rate that limits the generalizability of the data. It is possible that the OBs who answered the survey had a particular interest in GWG. The OBs sampled were also limited to two large urban areas in Texas. So the results from the study may not be representative of other regions or rural areas. The study also did not include certified nurse-midwives (CNMs) because there are only 340 CNMs practicing in the entire state of Texas (Health Professions Resource Center, 2014). Further research on this topic should include both OBs and CNMs using a randomly selected national sample. Despite these limitations, the study does provide some insight into the multiple problems surrounding GWG management.

IMPLICATIONS FOR PRACTICE

The results from this study can be used by childbirth educators to provide anticipatory guidance to pregnant women about how to address GWG issues. With the vast majority of OBs in this sample indicating that greatest barriers to managing GWG were patients not being interested in changing behavior and high relapse rates for weight management behaviors, childbirth educators should encourage women to speak to their OBs and CNMs about GWG and how to manage it. Perhaps the assumption that patients do not wish to change may prevent health-care providers from broaching this important issue.

The other barrier that could be addressed by childbirth educators is the lack of community resources for referrals and inability of patients to be able to afford referrals. Childbirth educators could develop a list of community resources that could be useful for dealing with GWG, along with information about the cost of these resources. Strategies to avoid excessive GWG are no different than the recommendations for healthy eating during pregnancy, which is consistent with the role of childbirth educators to provide information about wellness and self-care strategies that support a healthy pregnancy (ICEA, 2015). Childbirth educators could be an important community resource for women to help with managing GWG. As an aid to professionals who care for pregnant women, the IOM (2015a) provides a *Toolkit* of helpful materials, which may be accessed online.

Childbirth educators can also encourage women to know what their expected GWG should be based on the IOM guidelines in which prepregnancy BMI determines healthy GWG ranges and how many pounds they should plan to gain during which months. The IOM recommendations can serve as a talking point for women with their health-care providers. With less than half of newly pregnant women viewing GWG as a concern (Ali & Wright, 2014), childbirth educators can provide information on how excess GWG impacts healthy outcomes.

Tracking weight gain can be a helpful strategy to avoid excessive GWG. Although self-tracking weight gain charts were infrequently recommended by OBs, this can be a good self-management strategy for preventing excessive GWG. Charts can be downloaded from the IOM website (2015b). There also is recent research reporting the development and scientific testing of electronic GWG trackers for pregnant women (Demment, Graham, & Olson, 2014; Graham, Uesugi, Niederdeppe, Gay, & Olson, 2014). Although electronic GWG trackers are also available on websites and other sources, it is important to determine if these have been tested for effectiveness and are in accord with IOM guidelines before recommending them to pregnant women.

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Pregnant women want practical advice about GWG, diet, and physical activity (Wang et al., 2015), which may need to include strategies on how to cope with stress and emotional eating—a barrier to healthy eating for some pregnant women (Chang et al., 2015; Paul et al., 2013; Wang et al., 2015). Because childbirth educators already incorporate relaxation techniques into their work with pregnant women, they could extend this content to discuss how relaxation techniques and other stress management strategies can be used to manage cravings and emotional eating (Chang et al., 2015). Providing information about mindful eating and managing food environment including fast food and restaurant eating (Timmerman & Brown, 2012) may also be useful strategies to assist with emotional eating (Wansink, 2006, 2014).

Finally, some of the barriers to GWG management identified by OBs (e.g., lack of community resources, lack of time on the OBs' part, and costs to patients of referrals) support rethinking the venues in which GWG should be managed. Models of care that incorporate childbirth educators as part of the health-care team could improve the convenient delivery of GWG services to pregnant women. Content on management of GWG in classes offered by childbirth educators would need to occur early in pregnancy when prevention is most feasible.

Furthermore, according to the Listening to Mothers III Pregnancy and Birth survey, only about one in three women currently attends classes for childbirth (Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013), a downward trend from the 1980s and the 1990s (DiFillippo, n.d.). These statistics provide additional support for reducing the barriers women face in accessing childbirth education by providing access at the actual point of care, bringing services to the woman. With the new national health priorities ushered in by the Affordable Care Act (ACA), ACA Marketplace covers obesity screening and management, which includes pregnant women (Agency for Healthcare Research and Quality [AHRQ], n.d.; Surgeon General, 2011). This coverage addresses GWG barriers related to reimbursement and time (AHRQ, n.d.) and may facilitate the bundling of nutrition and physical activity counseling in a way that could facilitate the role of childbirth educators providing these services.

In addition, as tax-exempt hospitals assess how to meet their community benefit requirements (Singh, Young, Lee, Song, & Alexander, 2015), offering free

or low-cost prenatal classes for low-income women taught by childbirth educators warrants priority as a means to promote maternal and child health through healthy weight gain during pregnancy.

In conclusion, although GWG guidelines based on prepregnancy BMI have been in existence for over 20 years, translating these guidelines into effective health-care practices has not yet been achieved. OBs face barriers in helping women achieve these guidelines, and some of those barriers stem from their training and current resources. Childbirth educators, as well as other health professionals, can contribute to efforts to improve GWG outcomes.

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