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Pregnancy and Postpartum Related Weight Counseling Practices of U.S. Obstetrician-Gynecologists: Results from the Doc Styles Survey, 2010

Allison Boothe-LaRoche[1], Brook Belay[2]* and Andrea J Sharma[3,4]

[1]*Department of Pediatrics, University of Washington, Seattle Children's Hospital, USA*
[2]*Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention, USA*
[3]*Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, USA*
[4]*U.S. Public Health Service Commissioned Corps, USA*

Abstract

Objective: To describe factors and provider characteristics associated with weight-related counseling practices among U.S. obstetrician-gynecologists (OB/GYNs).

Methods: Data were from a 2010 cross-sectional survey of 250 OB/GYNs. The OB/GYNs were asked how often they used pre-pregnancy body mass index (BMI) to determine the appropriate range of gestational weight gain (GWG), counseled pregnant patients on appropriate rate of GWG, and counseled postpartum patients on weight loss or maintenance. They were also asked how often they counseled pregnant and postpartum patients on five weight-related behaviors [consumption of Fruits and Vegetables (FV), Sugar-Sweetened Beverages (SSB), or high-fat or sugary foods, breastfeeding, and Physical Activity (PA)].

Results: Less than half of providers reported "always" using BMI to determine appropriate GWG (42%); however 65% reported "always" counseling about appropriate GWG rate. About one-third of providers reported counseling about postpartum weight loss or maintenance (38%).Providers reported counseling pregnant and postpartum patients on all weight-related behaviors only 58% and 27% of the time, respectively. Providers with normal BMI had a greater odds of counseling pregnant patients on FV consumption (adjusted odds ratio (aOR): 3.2; 95% confidence interval (CI): 1.5-7.0) and postpartum patients on FV (aOR: 1.9; 95% CI: 1.1-3.6) compared to overweight/obese providers. Providers who exercised regularly had a greater odds of counseling pregnant and postpartum patients on SSB (aOR: 2.2; 95% CI: 1.1-4.8, and aOR: 2.6; 95% CI: 1.4-4.9, respectively) compared to those providers not exercising regularly. Providers who used podcasts for continuing medical education(CME) had a greater odds of providing counseling on several behaviors, including postpartum patients on FV consumption (aOR: 3.1; 95% CI: 1.3-7.2).

Conclusions: Improvements can be made in weight-related counseling practices of OB/GYNs for both pregnant and postpartum patients. Strategies to improve counseling practices, such as podcasts for CME, could be investigated further.

Keywords: Pregnancy; Post-partum; Weight loss; Weight retention; Obesity; Counseling, Health behaviors; Women's health

Abbreviations:ACOG: American College of Obstetricians and Gynecologists; aOR: adjusted Odds Ratio; BMI: Body Mass Index; FGP: Family or General Practitioner; IOM: Institute of Medicine; OB/GYNs: Obstetricians and Gynecologists; OR : Odds Ratio; CI : Confidence Interval

Introduction

In the United States, 59% of women of reproductive age (20-39 years of age) are either overweight or obese (defined as body mass index (BMI) ≥ 25 kg/m^2) [1]. Almost a third of women in this age group are obese (BMI ≥ 30 kg/m^2). Among women delivering live born infants in 20 states in 2009, pre-pregnancy obesity prevalence was estimated at over 20% [2]. The prevalence of pre-pregnancy obesity in these 20 states displayed an increasing trend between 2003 and 2009 [2]. This is of concern since obesity is associated with an increased risk of preeclampsia, gestational diabetes, congenital anomalies, stillbirths and other adverse birth outcomes [3-6].

In addition to pre-pregnancy BMI, Gestational Weight Gain (GWG) may also influence pregnancy and birth-related outcomes [7,8]. In 2009, the Institute of Medicine (IOM) released revised guidelines for appropriate GWG based on pre-pregnancy BMI [9]. Preliminary estimates from births during 2010 indicate that nearly half of women have GWG in excess of these recommendations [10]. The American College of Obstetrics and Gynecology (ACOG) released guidelines on appropriate GWG and postpartum weight management [11]. Both of these guidelines emphasize the importance of healthy GWG based on pre-pregnancy BMI. In addition, these guidelines emphasize the role of providers in counseling women about behaviors that can aid in achieving appropriate GWG and rate during pregnancy. While there are currently no guidelines on postpartum weight loss, studies show that failure to return to pre-pregnancy weight by six months postpartum is an important predictor of long-term obesity [12].

A 2005 survey of 900 U.S. obstetricians and gynecologists (OB/GYNs) found that the majority of OB/GYNs counsel non-pregnant patients about diet, including specific strategies such as limiting portion size and increasing physical activity [13]. However, only 27%

***Corresponding author:** Brook Belay, Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 4770 Buford Hwy NE, MSK-26, Atlanta, GA 30341, USA, Tel: 770.488.5237; Fax: 770.488.6500; E-mail: bbelay@cdc.gov

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reported referring patients with obesity for behavioral therapy on a frequent basis. Moreover, whereas the majority of OB/GYNs counseled their pregnant patients on GWG, only 65% reported modifying that recommendation based on the patient's pre-pregnancy BMI [13]. A follow-up survey in 2007 demonstrated modest improvements in counseling rates for pregnant women [14]. A comparison of the two surveys also showed that counseling practices of OB/GYNs was associated with having familiarity with ACOG guidelines [15]. Previous studies have also shown that female providers and those providers with normal BMIs report higher rates of counseling [16,17,19].

The objectives of this study were to describe US OB/GYNs' self-reported counseling practices in relation to the IOM and ACOG guidelines. Specifically, we sought to determine how frequently OB/GYNs used pre-pregnancy BMI to determine the appropriate GWG when counseling pregnant patients, how frequently they counseled pregnant patients on the appropriate rate of GWG, and how frequently they counseled postpartum patients on weight loss or weight maintenance. We also sought to determine whether they counsel pregnant and postpartum patients on specific weight-related behaviors. We examined predictors of these counseling practices including provider demographics, practice setting and personal engagement in health-related behaviors.

Methods

Data were obtained from Doc Styles 2010 -- a web-based panel survey developed by Porter Novelli designed to provide insight into health care provider attitudes, counseling behaviors and use of health information resources regarding a variety of adult and pediatric health issues [20-22]. In addition, the survey includes questions on the provider's height and weight, as well as other questions describing their demographics, health behaviors, and practice characteristics. The Centers for Disease Control and Prevention Human Subjects Review determined that these analyses were exempt from Human Subjects Review because this is a secondary data analysis using data without identifiers.

Porter Novelli utilized a physician sample drawn from the Epocrates Honors Panel, an opt-in, verified panel of over 275,000 medical practitioners across the nation. Respondents were selected to participate in this survey from a panel is drawn to match the American Medical Association's (AMA) master file proportions for age, gender, and region, but were not required to participate and could exit at any time. Respondents were paid an honorarium of $40-$60 for completing the survey. Respondents were screened to include only those who: practice in the United States; actively see patients; work in an individual, group, or hospital practice; and have been practicing for at least three years. No individual identifiers were included in the database. Quotas were set to reach 1,000 primary care physicians, 250 pediatricians, 250 OB/GYNs, 250 retail pharmacists, 250 nurse practitioners, and 150 registered dietitians; once the quotas were met, the survey was closed. For the purposes of this study, only the responses from the 250 OB/GYNs, who were asked our survey questions (Figure 1), were

How often do you or your staff use pre-pregnancy body mass index to modify your recommendation for weight gain during pregnancy? How often do you or your staff counsel pregnant patients on appropriate rate of weight gain during pregnancy? How often do you or your staff counsel postpartum patients on appropriate weight loss or weight maintenance? Possible answers for Questions 1-3: Never Rarely Sometimes Often Always
Which of the following do you or one of your staff counsel pregnant patients on? Which of the following do you or one of your staff counsel postpartum patients on? Possible answers for Questions 4-5: Fruits and vegetables Breastfeeding the baby High-fat or sugary foods Sugar-sweetened beverages Physical activity None of these

Figure 1: Survey questions regarding self-reported counseling practices on weight gain and behaviors among U.S. OB/GYNs-United States, Doc Styles, 2010.

considered.To reach this quota, 431 OB/GYN invitations had to be sent, yielding an overall response rate of 51%.

The Doc Styles 2010 survey included 113 questions, some with multiple subparts, which could be selected to be viewed by all or only some of the health providers depending on applicability of question content. Our study asked five questions of OB/GYNs (Figure 1). The first three questions examined the frequency with which OB/GYNs or their staff (1) used pre-pregnancy BMI to modify GWG recommendations, (2) counseled pregnant patients on the appropriate rate of GWG, and (3) counseled postpartum patients on appropriate weight loss or weight maintenance. The possible answers to these three questions were meant to assess intensity of counseling and included "never, rarely, sometimes, often, or always."The last two questions sought to determine whether OB/GYNs or their staff counseled their pregnant or postpartum patients on five weight-related behaviors (consumption of Fruits and Vegetables (FV), breastfeeding, consumption of high-fat or sugary foods, consumption of Sugar-Sweetened Beverages (SSBs),and Physical Activity (PA)).These questions on weight-related behavior counseling captured whether counseling was provided or not, and did not measure intensity. Respondents were allowed to select one or more behaviors or "none of these behaviors" for each question. The year 2010 was the first that these five questions were asked in the Doc Styles survey.

Bivariate analyses were conducted to explore associations between provider demographics and characteristics and counseling practices. Among these was the provider's BMI, categorized as either normal (BMI $\geq$ 18.5 kg/m^2 and <25 kg/m^2) or overweight/obese (BMI $\geq$ 25 kg/m^2). Because there were only 4 respondents who were underweight (BMI <18.5 kg/m^2), they were excluded from the analyses. Using podcasts forContinuing Medical Education (CME) was also investigated as a novel means by which providers might learn more about current guidelines as a means to improving their counseling practices. Finally, the provider's personal lifestyle behaviors were investigated as predictors of counseling patterns. Specifically, we examined whether providers who (1) consumed 5 cups of fruits/vegetables per day, 7 days a week compared to those who did not and, (2) engaged in physical activity to maintain an elevated heart rate for 30 minutes or more on >5 days per week compared to those who did not were more likely to counsel their patients on the selected measures.

For multivariate regression models, variables that were significant at $p<0.05$ in bivariate analyses were included. If a variable was significant in any of the bivariate analyses it was included in all of the multivariate regression models. We developed three sets of multivariate logistic regression models. We first examined the potential predictors of responding to"always"for all three questions regarding weight management practices; i.e., (1) using pre-pregnancy BMI to modify GWG recommendations, (2) counseling pregnant patients on the appropriate rate of GWG, and (3) counseling postpartum patients on appropriate weight loss or weight maintenance.

A second set of multivariate regression models examined potential predictors of counseling pregnant patients on each of the five weight-related behaviors. The third set of multivariate regression models examined potential predictors of counseling postpartum patients on each of the five weight-related behaviors.

Statistical analysis was completed using SPSS v.19 (IBAM Corp., Armonk, NY). We calculated means and frequencies of OB/GYN characteristics. We used chi-squared tests to explore bivariate relationships between OB/GYN characteristics and responses to questions on weight management practices and behavioral counseling.

Results

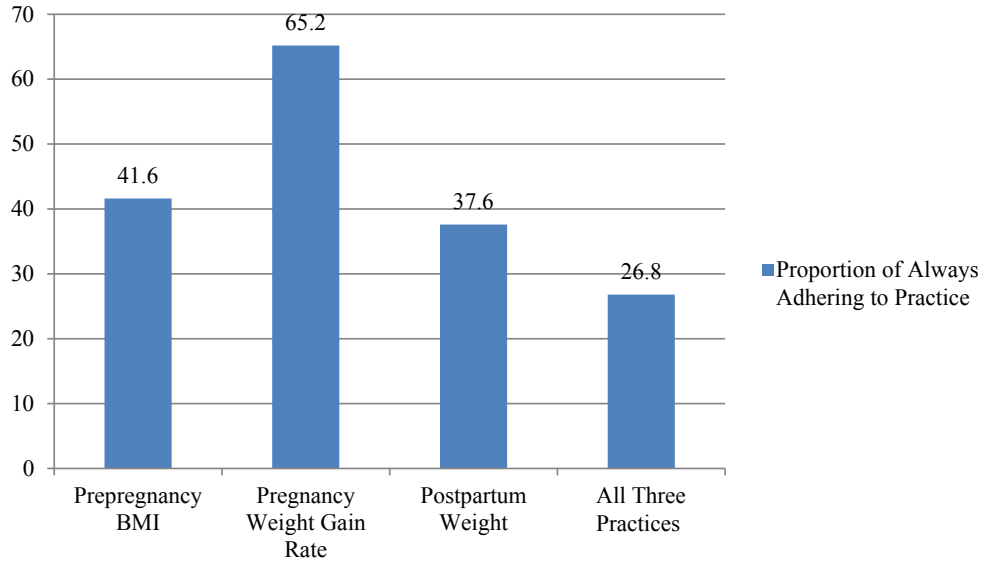
Of the 250 OB/GYNs who completed the survey, 55% were aged 45 years or older, 62% were male and 77% were non-Hispanic white (Table 1). These providers saw a mean of 107 patients per week and had been practicing medicine for an average of 16 years. About80% worked in a group or hospital practice. Approximately 46% of OB/GYNs had a normal BMI and 53% had a BMI corresponding to overweight/obese. OB/GYNs ate 5 or more cups of fruits and vegetableson a median of 4 days/week; however, only 16% reported eating 5 or more cups of fruits and vegetables on each day of the week. Only 27% of OB/GYNs exercised for at least 30 minutes a day on $\geq$5 days/week. Only 12% of OB/GYNs reported using podcasts "always" or "often" for CME purposes.

Forty-two percent (42%) of OB/GYNs responded they always used pre-pregnancy BMI to modify recommendations for GWG (Figure 2); 65% of OB/GYNs reported always counseling about appropriate rate of GWG. Finally, 38% of OB/GYNsreported always counseling postpartum patients on appropriate weight loss or maintenance. Overall, only 27% reported always adheringto all three weight management practices. For the specific weight-related behaviors (Figure 3), the frequency of "always" counseling pregnant patients exceeded 70% for each behavior. For counseling postpartum patients this rangedbetween

Characteristic	Proportions* (n=250)
Age (mean) ≥ 45 years	46.6 55.0
Sex Male Female	 61.6 38.4
Race White Non-White	 77.2 22.8
Patients seen per week Mean Median	 107 100
Years practicing medicine Mean Median	 16 15
Work setting Individual Practice Group practice Hospital Clinic	 20.0 69.2 10.8
Provider BMI, mean (kg/m2) <18.5 kg/m^2 ≥ 18.5 kg/m^2 , <25 kg/m^2 ≥ 25 kg/ m^2 , <30 kg/ m^2 ≥ 30 kg/ m^2, <35 kg/m^2 ≥ 35 kg/m^2	25.6 1.6 45.6 38.8 10.4 3.6
Eat at least5 cups of fruits and vegetables (days/week) Mean Median	 3.6 4.0
Eat at least 5 cups of fruits and vegetables 7 days/week	16.4
Exercise for at least 30 minutes (days/week) Mean Median	 3.2 3.0
Exercise for at least 30 minutes/day≥ 5 days/week	26.8
Uses podcasts for continuing medical education (always or often)	12.4

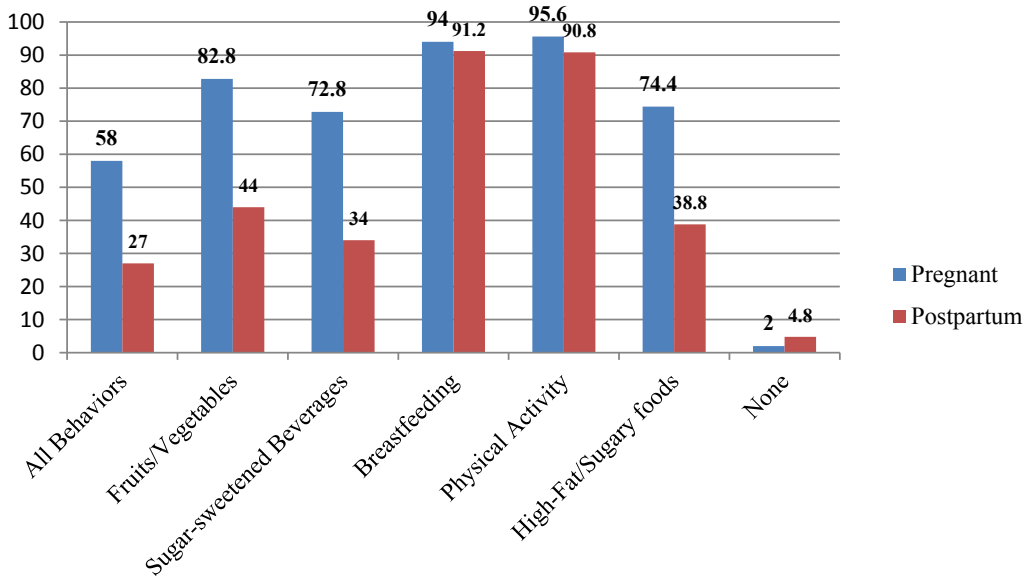
This table provides a summary description of demographic and personal characteristics of obstetricians and gynecologists (OB/GYNs) who responded to the survey. *Proportions are displayed unless indicated otherwise. BMI: Body mass index.

Table 1: Personal and Professional Characteristics of Surveyed OB/GYNs.



The proportion of obstetricians and gynecologists (OB/GYNs) reporting "always" adhering to three weight management practices is shown. The specific questions on weight management practices were if the OB/GYN or practice: (1) Use pre-pregnancy BMI to modify recommendation for weight gain during pregnancy (Pre-pregnancy BMI)? ; (2) Counsel pregnant patients on appropriate rate of weight-gain during pregnancy (Pregnancy Weight Gain Rate)?; (3) Counsel postpartum patients on appropriate weight loss or weight maintenance (Postpartum Weight)? The proportion responding "always" for all 3 practices is also shown.

Figure 2: Proportion of OB/GYNs Reporting "Always" Adhering to Specific Weight Management Practices.



This figure depicts the proportion of obstetricians and gynecologists (OB/GYNs) who responded to ever counseling on each of these five weight-related behaviors and the proportions reporting counseling on all or none of the behaviors.

Figure 3: Proportion of OB/GYN Providers Reporting Counseling Pregnant or Postpartum Patients on Five Specific Weight-Related Behaviors.

34% (counseling on SSB consumption) and 91% (breastfeeding and PA).Overall, approximately 58% of OB/GYNs provided counseling for pregnant patients on all of the behaviors, compared to 27% on all the behaviors for postpartum patients. By comparison, very few providers reported not counseling on any behaviors for pregnant (2%) and postpartum patients (4.8%).

Logistic regression modeling revealed that providers with normal BMIs had a significantly greater odds than those with overweight/obesity of adhering to all three weight management practices (adjusted odds ratio (aOR): 2.6; 95% confidence interval (CI): 1.3-4.9) (Table 2). No other provider characteristics were significantly associated with adherence to the three weight management practices.

In general, providers who had a normal BMI and maintained a healthier lifestyle had greater odds than their counterparts of counseling their pregnant and postpartum patients on weight-related behaviors (Tables 3 and 4, respectively). There were notable differences

Independent Variable	%†	aOR	95%CI
Sex			
Male	21	–	
Female	36	1.7	0.9–3.3
Body Mass Index (BMI)*			
Overweight/Obese	20	–	
Normal	61	**2.6**	**1.3–4.9**
Exercises at least 30 min on ≥5 days/week			
No	23	–	
Yes	36	1.7	0.9-3.4
Consumes at least 5 cups fruits/vegetables 7 days/week			
No	26	–	
Yes	30	0.8	0.3-1.8
Podcasts for CME			
Less than often	26	–	
Always, Often	35	2.1	0.8–5.0
Work setting			
Individual	24	–	
Group/Hospital	28	1.0	0.5-2.3
Years In Practice			
< 15	31	–	
≥ 15	22	0.7	0.4-1.3
Number of Patients/Week			
< 100	25	–	
≥ 100	30	1.5	0.8-2.8

Logistic regression modeling results for predictors of obstetricians and gynecologists always using body mass index (BMI) to modify gestational weight gain recommendations, counseling pregnant patients on the appropriate rate of gestational weight gain, and counseling postpartum patients on weight loss/maintenance. Statistically significant results are set in bold.
†Percent (%) represent the proportion of respondents in that category who provided counseling.
*Body mass index defined as normal (BMI ≥18.5 kg/m^2 and <25 kg/m^2) or overweight/obese (BMI ≥25 kg/m^2)
aOR: adjusted odds ratio; CI: confidence interval; CME: continuing medical education.

Table 2: Logistic Regression Model of "Always" Using Prepregnancy BMI to Modify Gestational Weight Gain (GWG) Recommendations, Counseling Pregnant Patients on the Appropriate rate of GWG and Counseling Postpartum Patients on Weight Loss or Maintenance.

	Fruit and Vegetable Intake			Sugar Sweetened Beverage Intake			High-fat or Sugary Food Intake			All Weight-Related Behaviors		
	%†	aOR	95%CI	%	aOR	95%CI	%	aOR	95%CI	%	aOR	95%CI
Sex												
Male	82	–		71	–		74	–		58	–	
Female	85	1.9	0.9-4.6	73	1.2	0.6-2.3	76	1.3	0.7-2.6	59	1.3	0.7-2.4
Body Mass Index*												
Overweight/Obese	76	–		70	–		72	–		56	–	
Normal	88	**3.2**	**1.5–7.0**	74	1.4	0.8-2.7	76	1.1	0.6-2.0	60	1.5	0.8-2.6
Exercises ≥30 min on ≥5 days/week												
No	81	–		69	–		69	–		53	–	
Yes	88	1.8	0.8-4.6	84	**2.2**	**1.1-4.8**	88	**2.8**	**1.2-6.5**	73	**2.5**	**1.3-4.9**
Consumes ≥5 cups fruits or vegetables 7 days/week												
No	81	–		72	–		73	–		57	–	
Yes	93	2.8	0.8–9.9	78	1.2	0.5-2.7	83	1.4	0.6-3.4	66	1.2	0.6-2.5
Podcasts for CME												
Less than often	80	–		72	–		73	–		58	–	
Always, Often	86	1.8	0.5–6.5	77	1.2	0.5-3.1	84	1.9	0.7-5.5	65	1.3	0.6-2.9
Worksetting												
Individual	83	–		68	–		72	–		56	–	
Group/Hospital	84	1.1	0.5-2.7	74	1.5	0.7-3.0	75	0.3	0.6-2.6	59	1.2	0.6-2.4
Years In Practice												
< 15	81	–		69	–		72	–		57	–	
≥ 15	84	1.2	0.6-2.5	77	1.4	0.8-2.6	77	1.2	0.7-2.3	61	1.2	0.7-1.9
Number of Patients/Week												
< 100	81	–		70	–		70	–		56	–	
≥ 100	85	1.3	0.6-2.8	77	1.3	0.7-2.5	81	1.7	0.9-3.2	61	1.1	0.6-1.9

Logistic regression modeling results for predictors of obstetricians and gynecologists counseling pregnant patients on specific behaviors: fruit and vegetable and sugar sweetened beverage intake, and high-fat or sugary food intake. A combined model for counseling on all of the specific behaviors, including breastfeeding and PA, is also depicted. Statistically significant results are set in bold.
† Percent (%) represent the proportion of respondents in that category who provided counseling on the specific measure.
*Body mass index defined as normal (BMI ≥18.5 kg/m^2 and <25 kg/m^2) or overweight/obese (BMI ≥25 kg/m^2)
aOR: adjusted odds ratio; CI: confidence interval; CME: continuing medical education.

Table 3: Logistic Regression Models for Counseling Pregnant Patients on Specific Health Behaviors.

	Fruit and Vegetable Intake			Sugar Sweetened Beverage Intake			High-fat or Sugary Food Intake			All Weight-Related Behaviors		
	%†	aOR	95%CI	%	aOR	95%CI	%	aOR	95%CI	%	aOR	95%CI
Sex												
Male	45	–		36	–		44	–		28	–	
Female	42	1.0	0.5-1.8	31	0.9	0.5-1.7	30	0.7	0.4-1.3	25	0.9	0.5-1.9
Body Mass Index*												
Overweight/Obese	37	–		32	–		31	–		25	–	
Normal	49	**1.9**	**1.1-3.6**	35	1.3	0.7-2.3	46	**2.1**	**1.1-3.9**	29	0.7	0.4-1.3
Exercises ≥30 min on ≥5 days/week												
No	40	–		28	–		32	–		22	–	
Yes	54	1.8	1.0-3.4	51	**2.6**	**1.4-4.9**	57	**3.1**	**1.6-5.8**	40	**2.2**	**1.1-4.3**
Consumes ≥5 cups fruits or vegetables 7 days/week												
No	39	–		31	–		36	–		27	–	
Yes	68	**3.4**	**1.6-7.3**	49	1.7	0.8-3.6	51	1.6	0.7-3.3	44	2.1	1.0-4.6
Podcasts for CME												
Less than often	41	–		31	–		35	–		24	–	
Always, Often	68	**3.1**	**1.3-7.2**	55	**2.7**	**1.2-6.1**	68	**3.5**	**1.5-8.2**	48	**3.2**	**1.4-7.8**
Worksetting												
Individual	44	–		28	–		34	–		18	–	
Group/Hospital	46	1.2	0.6-2.3	36	1.6	0.8-3.5	40	1.6	0.8-3.5	30	**2.6**	**1.1-6.3**
Years In Practice												
< 15	43	–		35	–		37	–		25	–	
≥ 15	45	0.9	0.5-1.6	33	1.0	0.5-1.7	41	1.0	0.6-1.7	29	1.1	0.6-2.1
Number of Patients/Week												
< 100	46	–		36	–		36	–		26	–	
≥ 100	41	0.6	0.4-1.1	33	0.9	0.5-1.7	43	1.1	0.6-1.9	28	0.9	0.5-1.7

Logistic regression modeling results for predictors of obstetricians and gynecologists counseling postpartum patients on specific behaviors: fruit and vegetable and sugar sweetened beverage intake and high-fat or sugary food intake. A combined model for counseling on all of the specific behaviors, including breastfeeding and PA, is also depicted. Statistically significant results are set in bold.

† Percent (%) represent the proportion of respondents in that category who provided counseling.

*Body mass index defined as normal (BMI ≥18.5 kg/m^2 and <25 kg/m^2) or overweight/obese (BMI ≥25 kg/m^2)

aOR: adjusted odds ratio; CI: confidence interval; CME: continuing medical education.

Table 4: Logistic Regression Models for Counseling Postpartum Patients on Specific Health Behaviors.

between the counseling of pregnant and postpartum patients including, for example: the use of podcasts always/often for CME was associated with counseling on healthier behaviors only for postpartum patients. Because of the very high prevalence of counseling on breastfeeding and PA (Figure 3) and resultant small sample sizes of non-counseling physicians, regression models are not reported for these two behaviors for pregnant and postpartum patients; although combined models with all behaviors are reported.

Providers with a normal BMI had greater odds than thosewith overweight/obesityof counseling pregnant patients on FV consumption (aOR: 3.2; 95% CI: 1.5-7.0) (Table 3). Providers who exercised at least30 minutes/day on ≥ 5 days a week had greater odds of counseling pregnant patients on SSB (aOR: 2.2; 95% CI: 1.1-4.8) and high-fat or sugary food consumption (aOR: 2.8; 95% CI: 1.2-6.5) and all weight-related behaviors (aOR: 2.5; 95% CI: 1.3-4.9) compared to providers who exercised less. A provider's personal level of exercise was not associated with counseling pregnant patients on physical activity. There were no associations for providers who consumed ≥ 5 cups of fruits or vegetables each day of the week or who used podcasts for CME always/often with counseling pregnant patients.

Providers with a normal BMI had greater odds than those with overweight/obese of counselingpostpartum patients on FV consumption (aOR: 1.9; 95% CI: 1.1-3.6) and consumption of high-fat or sugary foods (aOR: 2.1; 95% CI: 1.1-3.9) (Table 4). Providers who exercised at least30 minutes/day on ≥ 5 days a week had greater odds of counseling postpartum patients on SSB consumption (aOR: 2.6; 95% CI: 1.4-4.9), high-fat or sugary food consumption (aOR 3.1; 95% CI: 1.6-5.8) and all weight-related behaviors (aOR: 2.2; 95% CI: 1.1-4.3) compared to providers who exercised less. Providers who consumed at least 5 cups of fruits or vegetables each day of the week had greater odds of counseling postpartum patients on FV consumption (aOR: 3.4; 95% CI: 1.6-7.3) compared to providers consuming less FV. Providers who used podcasts always/often for CME had greater odds of counseling postpartum patients on FV (aOR: 3.1; 95% CI: 1.3-7.2), SSB (aOR: 2.7; 95% CI: 1.2-6.1) and high-fat or sugary consumption(aOR: 3.5; 95% CI: 1.5-8.2) and all weight-related behaviors (aOR: 3.2; 95% CI: 1.4-7.8), compared to those using podcasts less often. Providers who worked in a group or hospital setting had greater odds of counseling postpartum patients on all weight-related behaviors (aOR: 2.6; 95% CI: 1.1-6.3) compared to those working in individual practices.

Discussion

The IOM report, the ACOG committee opinion, and experts provide recommendations on screening for obesity and weight management during pregnancy and through the postpartum period [10,11,23-25]. Research has shown, however, that providers experience barriers to effective screening and weight management including awareness of guidelines and time constraints [26,27]. Other barriers include the provider's perception that he/she may not be effective in counseling [28] or that there are no effective treatments for women of reproductive age with overweight or obesity [13,26]. However, appropriate training has been shown to improve counseling skills and provider self-efficacy [25,26]. Furthermore, there is evidence that counseling women of reproductive age on increasing FV consumption, increasing PA and reducing consumption of less healthy foods and beverages may optimize gestational weight gain and postpartum weight retention [30,31].

Similar to the two ACOG surveys conducted in 2005 and 2007 where nearly two-thirds of OB/GYNs reported using BMI "most of the time" or "often" to provide specific recommendations for gestational weight gain [13,14],we found that our 2010 study suggests that 71% of OB/GYNs "always" or "often" used the woman's pre-pregnancy BMI in their counseling of GWG. Approximately 65% of providers in our sample reported counseling on the appropriate rate of GWG. Our study also observed a similar proportion of OB/GYNs who reported counseling postpartum patients on weight loss: 75% compared to 67% and 72% in the ACOG surveys [13,14]. We did find that providers with normal BMIs had greater odds than those with overweight/obesity to adhere to all three weight management practices.

Regarding specific health behavior counseling for pregnant patients, our study asked about counseling on consumption of FV, sugar sweetened beverages and high-fat or sugary foods as well as counseling on breastfeeding and PA in a single survey. We found that 80% of OB/GYNs report ever counseling pregnant patients on FV consumption, breastfeeding and PA more each. However, only 58% of respondents reported always counseling on all five health behaviors.For postpartum patients, a much smaller proportion of OB/GYNs reported counseling on the specific health behaviors. The notable exceptions were breastfeeding and PA for which 91% of respondents reported ever counseling on each of these behaviors. This is important because breastfeeding may be an important corollary strategy to postpartum weight management [18]. We found that only 27% of OB/GYNs reported counseling on all of the health behaviors for postpartum patients.

To our knowledge, our study was unique in investigating specific behavior counseling rates associated with OB/GYN personal health behaviors. We found that providers who consumed at least 5 cups of FV 7 days/week had greater odds of counseling only for FV consumption for postpartum patients. In comparison, providers who exercised at least 30 minutes/day on >5 days/week had greater odds of counseling on several other behaviors. Unlike other studies, we did not find that years in practice (a proxy for years since residency) or volume of patients were associated with counseling practices. Our findings on practice setting are in contrast to previous studies that have compared physicians in private practice to those in other settings and found either a higher likelihood of providers in private settings than those in academic or hospital settings to counsel patients on healthier behaviors [17] or no differences between groups [16]. One study did find that physicians in non-academic hospital settings were less likely than those in other settings (including academic, private and community settings) to counsel their patients on healthier food behaviors [29]. The reasons for our finding are unclear, but may include that group and hospital-based practices have more resources to incorporate best counseling practices into their clinical practices. However, caution must be used when interpreting these comparisons because these studies included (a) OB/GYNs with other physicians, and (b) other practice sites (e.g., academic), thus making comparisons with our categorization of settings difficult.

Awareness of specific counseling guidelines has been associated with lifestyle counseling, as has use of new sources of medical knowledge [15,16,33].In our study we examined the use of podcasts as a novel means of CME to enable providers to be more up to date with recent recommendations and counseling practices. In the models examining "always" adhering to the three weight management practices there was no association with the use of podcasts. However, in the models examining "always" counseling ofhealth behaviors, we found that the use of podcasts was associated with counseling postpartum patients on FV, SSB and high-fat or sugary foods consumption, and on all weight related behaviors. However, the question on use of podcasts only asked about their use for CME in general and not forcounseling on topics related overweight or obesity in specific. Therefore, the associations we report need to be explored further. Specifically, future studies can investigate the association of provider characteristics on weight management and counseling practices. Furthermore, future studies can assess strategies to improve counseling and patient engagement, e.g., motivational interviewing, in regards to GWG and postpartum weight management. The use of novel means of CME, such as podcasts, can also be explored in interventional studies.

Our study was limited by the fact that the respondent population was derived from quota sampling. Previous ACOG surveys [13,14] involved between 787 and 900 OB/GYNs who were a part of a collaborative research network and reported to be representative of practicing OB/GYNs across the nation. Since our sample was self-selected it may not be nationally representative. However, our findings on the use of BMI for counseling on GWG are similar to those of the previous ACOG surveys. Our respondent pool may have been too small to find any significant associations between certain counseling practices as noted above. The questions we asked aligned very closely with recently released guidelines and recommendations about weight-related counseling, so a social desirability bias may have influenced some of the respondents. For example, this may have overestimated the proportion of physicians reporting "always" counseling. In this study we were unable to differentiate OB/GYNs who practice gynecology only, thus we may have misclassified some respondents as non-frequent counselors when they in fact donot routinely provide care to pregnant and postpartum patients in their practice.Also our study did not assess several factors that might contribute to lower counseling rates, including the providers' perceived self-efficacy and use of counseling skills such as motivational interviewing [24]. Similar considerations might explain why some associations, e.g., with providers' exercise habits and use of podcasts, were found for counseling of postpartum patients, but not pregnant patients.

Conclusion

Providing support and guidance to OB/GYNs may help to improve counseling about weight management to pregnant and postpartum women. Instituting best practice training and tools, such as motivational interviewing and electronic record prompts, respectively, could be useful for providers to increase their perceived self-efficacy. Furthermore, using novel means of keeping providers aware of guidelines and the efficacy of clinical interventions could be useful as well. Specific training on healthy lifestyle behaviors can be systematically included in OB/GYN residency programs and standardized such that future workforces are prepared to counsel around these issues.

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Disclaimer

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