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Attempts at Weight Loss in US Women With and Without a History of Gestational Diabetes Mellitus

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Abstract

Background and Objective—Gestational diabetes mellitus (GDM) is a risk factor for type 2 diabetes. Relatively modest weight loss can delay or prevent the onset of type 2 diabetes. The objective of this study was to determine, using a nationally representative survey, if among women without diabetes, those with a history of GDM (hGDM) were more likely than those without hGDM to be currently attempting weight loss.

Methods—This study used data from the 2003 Behavioral Risk Factor Surveillance System, a national population-based random sample telephone survey. Women aged 18–44 without diabetes, who answered questions related to current weight loss activity were included in the analysis. The primary outcome was currently attempting weight loss. Logistic regression was used to analyze the association between hGDM and currently attempting weight loss.

Results—53,608 women without diabetes were included: 1,260 (2%) with hGDM, and 52,348 (98%) without hGDM. Among women with hGDM 53% were currently attempting weight loss compared with 47% of women without hGDM. Overall, after adjusting for age, race/ethnicity, education, marital status, and medical insurance, compared with women without hGDM, those with hGDM had 20% higher odds of currently attempting weight loss (95% CI 0.97, 1.49); however, among obese women (BMI ≥ 30 kg/m²), compared with women without hGDM, those with hGDM had 46% lower odds of currently attempting weight loss (95% CI 0.35, 0.82).

Conclusions—Obese women with hGDM are less likely to be currently attempting weight loss compared with those without hGDM. Effective interventions for obese women with hGDM are needed.

Introduction

Gestational diabetes mellitus (GDM), or glucose intolerance first recognized during pregnancy, affects 2–14% of pregnancies in the United States and is a recognized risk factor

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for type 2 diabetes (“ACOG Practice Bulletin. Clinical management guidelines for obstetrician-gynecologists. Number 30, September 2001 (replaces Technical Bulletin Number 200, December 1994). Gestational diabetes,” 2001). Up to 60% of women with a history of GDM (hGDM) will develop type 2 diabetes within 5–10 years postpartum (Kim, Newton, & Knopp, 2002). While pre-pregnancy obesity is a risk factor for GDM, women with hGDM are also more likely to have excess gestational weight gain,(Hedderson, Gunderson, & Ferrara, 2010) which is associated with increased risk of postpartum weight retention and obesity.(Amorim, Rossner, Neovius, Lourenco, & Linne, 2007; Luke, Hediger, & Scholl, 1996) Evidence from the Diabetes Prevention Program Trial demonstrates that relatively modest weight loss, at a mean of 12 years since first occurrence of GDM, can prevent or delay the onset of type 2 diabetes among women with hGDM.(Ratner et al., 2008).

Educating women with hGDM concerning their increased risk of type 2 diabetes and potential diabetes prevention behaviors may not produce long term behavior change.(Kim, McEwen, Kerr, et al., 2007; Swan, Kilmartin, & Liaw, 2007) One explanation for the discordance between understanding and behavior is that women with hGDM may systematically underestimate their individual risk for type 2 diabetes (Kim, McEwen, Piette, et al., 2007). Other potential barriers to diabetes prevention behaviors in the postpartum period by women with hGDM include lack of time and lack of childcare (Smith, Cheung, Bauman, Zehle, & McLean, 2005; Symons Downs & Ulbrecht, 2006).

Prior studies of health behaviors among women with hGDM focused on specific behaviors such as physical activity and consumption of fruits and vegetables (Kieffer, Sinco, & Kim, 2006) rather than intention to lose weight. However, findings from the Diabetes Prevention Program Trial indicate the importance of weight loss as a separate outcome. Therefore, our objective was to examine, in a nationally representative survey, whether non-diabetic women with hGDM were more likely than women without hGDM to be attempting weight loss and to quantify differences in preferred weight loss methods.

Methods

Data Source

This study used data from the 2003 Behavioral Risk Factor Surveillance System (BRFSS) survey. BRFSS is a cross-sectional telephone survey conducted by the Centers for Disease Control and Prevention in conjunction with state health departments. BRFSS uses a multistage cluster design based on random-digit dialing to select a representative sample of each state’s non-institutionalized civilian residents aged 18 years old. Data are then pooled across states to create national estimates. A detailed description of the survey methods has been previously published ((CDC), 2004). The response rate for this study based on the median response rate to the 2003 national core questions was 42% ((CDC), 2003). The University of Washington Human Subjects Division deemed the study exempt from Institutional Review Board review.

Study Population

The study population included women aged 18–44 with recorded body mass index (BMI) who answered the survey questions: “Have you ever been told by a doctor that you have diabetes?” and “Are you now trying to lose weight?” Exclusions included women with established diabetes, who were pregnant at the time of the survey, and had unknown pregnancy, diabetes, or weight loss status (Figure 1).

Study Variables

Table 1 shows the BRFSS questions, potential responses, and how responses were categorized to define the exposure and primary and secondary outcomes. The primary exposure was self-reported hGDM. Women without established diabetes were categorized as having hGDM or no hGDM. The reliability of the BRFSS question regarding diagnosis of diabetes is high with reported kappa values ranging from 0.60–0.86 ((CDC), 2004).

The primary outcome was currently attempting weight loss (yes, no). Secondary outcomes were attempting weight loss through reduced calorie or fat consumption, physical activity, or both. Respondents were asked, “Are you eating either fewer calories or less fat to lose weight?” and “Are you using physical activity or exercise to lose weight?” Respondents who answered, “don’t know/not sure” or “refused” to either question were excluded (n=217). Based on the responses four categories of weight loss methods were formed: none, low fat or low calorie diet alone, physical activity alone, and low fat or low calorie diet and physical activity. Women who did not report that they were currently attempting weight loss were excluded from analyses of the association of hGDM and these weight loss methods (n=27,667).

Covariates included age (years), race/ethnicity (White, non-Hispanic; Black, non-Hispanic; Hispanic; Other), BMI ($<25 \text{ kg/m}^2$, $25\text{--}29.9 \text{ kg/m}^2$, 30 kg/m^2), income ($<\$15,000$, $\$15,000\text{--}\$25,000$, $\$25,000\text{--}\$35,000$, $\$35,000\text{--}\$50,000$, and $\$50,000$), education (less than high school, high school only, more than high school), currently married or partnered (yes/no), insurance (yes/no), at least one child <18 years old at home (yes, no), currently employed (yes/no), health status (excellent/very good/good, fair/poor), current smoking (yes/no), and meeting guidelines for moderate to vigorous physical activity (yes, 30 mins/day moderate activity or 20 mins/day vigorous activity; no, some activity but $<30 \text{ mins/day}$ moderate activity and $<20 \text{ mins/day}$ vigorous activity; sedentary, no moderate or vigorous activity).

BMI, receiving advice from a professional to lose weight, and self-reported health status were examined as potential modifiers of the association between hGDM and currently attempting weight loss among women without diabetes. Survey respondents were asked, “In the past 12 months, has a doctor, nurse or other health professional given you advice about your weight?” Those answering “don’t know/not sure” or “refused” were excluded from this analysis (n=184). The remaining respondents were categorized as either receiving or not receiving advice to lose weight (Table 1). Self-reported health status was categorized as “Excellent/Very Good/Good” or “Fair/Poor.”

Statistical Analysis

Logistic regression was used to analyze the association between hGDM and currently attempting weight loss among women 18–44 years old without diabetes. For the analysis of the association of hGDM and weight loss strategies the odds of attempting weight loss by low fat or low calorie diet alone, physical activity alone, and low fat or low calorie diet and physical activity were modeled separately using logistic regression. Table 1 illustrates the categorization of outcomes and referent groups. Appropriate sampling weights were used to account for survey design ((CDC), 2003) and all analyses were done using STATA 9 (StataCorp, 2005). Since data was cross-sectional the final models only included covariates that were thought 1) *a priori* to be associated with hGDM and attempting weight loss, and 2) to be unlikely to be either a result of hGDM or attempting to lose weight. Unadjusted and adjusted odds ratios and 95% confidence intervals are reported and all tests had a two-sided alpha level of 0.05.

Modification of the association of hGDM and attempting weight loss by BMI, advice from a clinician to lose weight, and self-reported health status were examined through the separate introduction of interaction terms with hGDM. The significance of the interaction was assessed via the Wald test.

Sensitivity Analyses

Women's motivations for attempting to lose weight may change overtime, and BRFSS does not contain data on time since GDM pregnancy. Therefore, we conducted an analysis restricted to women <35 years old, who might be assumed to be closer in time to their GDM pregnancy.

Results

Of the 160,284 female respondents to the 2003 BRFSS survey 65,678 were between 18 and 44 years old. A total of 5,677 (9%) respondents were excluded: 1,747 (3%) had established diabetes, 41 (0.1%) had unknown diabetes status, 2,787 (4%) were pregnant, 126 (1%) had unknown pregnancy status, and 727 (1%) were missing information regarding attempting weight loss (Figure 1). An additional 3,768 women were excluded due to missing BMI, and 2,625 women were excluded due to other missing covariate data. Excluding women with missing BMI or covariates did not change the prevalence of hGDM in our sample. The final sample consisted of 53,608 women without diabetes: 1,260 with hGDM (2%) and 52,348 (98%) without hGDM.

Among women without diabetes, risk factors for type 2 diabetes were more common among those with hGDM compared to those without hGDM, specifically: older age, belonging to a high risk racial or ethnic group, BMI ≥ 30 kg/m², and less education (Table 2). Additionally women with hGDM were more likely to have at least one child <18 years old living at home, were less likely to be employed, and were more likely to receive advice to lose weight compared to women without hGDM.

Table 3 shows that 53% of those with hGDM compared with 47% of those without hGDM were attempting weight loss. After adjustment for age, race/ethnicity, education, marital status, and medical insurance compared with women without hGDM, those with hGDM had 20% higher odds of attempting weight loss (OR 1.20; 95% CI 0.97, 1.49).

After adjustment a statistically significant interaction was detected between hGDM and current BMI (p for interaction=0.01). Among those with BMI <25 kg/m², compared with women without hGDM, those with hGDM had 24% higher odds of attempting weight loss; among those with BMI 25–29.9 kg/m² no reliable association between hGDM and attempting weight loss was detected (OR: 1.01; 95% CI 0.63, 1.62). However, among those with BMI ≥ 30 kg/m², compared with women without hGDM, those with hGDM had 46% lower odds of attempting weight loss (OR: 0.54; 95% CI 0.35, 0.82).

A statistically significant interaction was also detected between hGDM and receiving advice to lose weight (p for interaction=0.02) after adjusting for age, race/ethnicity, education, marital status, and medical insurance. Overall, compared with those who did not receive advice to lose weight, a higher percentage of women who received such advice were attempting weight loss. Among those who received advice to lose weight, compared with women without hGDM, those with hGDM had 52% lower odds of attempting weight loss (OR: 0.48; 95% CI 0.23, 1.03). Conversely, among those who did not receive such advice, compared with women without hGDM, those with hGDM had 24% higher odds of attempting weight loss (OR 1.24; 95% CI 0.99, 1.54). No interaction was detected between health status and hGDM (p for interaction=0.98).

No reliable associations between hGDM and any specific methods for attempting weight loss were detected. After adjustment for age, race/ethnicity, education, marital status, and medical insurance women with hGDM were no more or less likely to attempt to lose weight through a low fat or low calorie diet alone (OR 0.85; 95% CI 0.59, 1.29), physical activity alone (OR 0.79; 95% CI 0.55, 1.13), or a combination of the two strategies (OR 0.81; 95% CI 0.61, 1.10).

When the analysis was restricted to women <35 years old, compared with women without hGDM, those with hGDM had 42% higher odds of currently attempting weight loss after adjusting for age, race/ethnicity, education, marital status, and medical insurance (95% CI 1.09, 1.85). While no statistically significant interaction was detected between hGDM and BMI (p for interaction=0.22), a pattern of association between hGDM and currently attempting weight loss similar to that observed for the entire sample was evident. After adjusting for age, race/ethnicity, education, marital status, and medical insurance among those with BMI <25 kg/m², compared with women without hGDM, those with hGDM had 26% higher odds of currently attempting weight loss (95% CI 0.81, 1.98); among those with BMI 25–29.9 kg/m², compared with women without hGDM, those with hGDM had 14% higher odds of currently attempting weight loss (95% CI 0.71, 1.84); and among those with BMI ≥30 kg/m², compared with women without hGDM those with hGDM had 44% lower odds of currently attempting weight loss (95% CI 0.36, 1.22).

Discussion

This analysis examined the association of hGDM and currently attempting weight loss in a nationally representative sample of reproductive age women without diabetes. Overall women with hGDM appeared more likely to be currently attempting weight loss compared with women without such a history, but this association varied by current BMI status. Approximately, one third of women with hGDM achieved a healthy BMI (BMI <25 kg/m²) and continued to attempt weight loss with greater frequency than their counterparts without such a history. However, among obese women hGDM was associated with lower odds of currently attempting weight loss.

The difference in our findings for normal weight women (BMI <25 kg/m²) and obese women, regarding the association of hGDM and attempting weight loss, may explain the difference in our results previous findings regarding hGDM and diabetes prevention behaviors.(Kieffer, et al., 2006) Previously, Kiefer et. al. reported that hGDM was not associated with increased odds of adoption of diabetes prevention behaviors, including physical activity and increased fruit and vegetable consumption (Kieffer, et al., 2006). Unlike the present study, Kiefer et. al. did not examine these associations by BMI. Combining obese and normal weight women may have neutralized any detectable association between hGDM and physical activity and fruit and vegetable intake.

Importantly almost a third of women with hGDM were obese and in this subgroup, compared with women without hGDM, those with hGDM were less likely to be currently attempting weight loss. Potential explanations for the reluctance among women with hGDM to attempt weight loss, include low perceived individual risk (Feig, Chen, & Naylor, 1998; Kim, McEwen, Piette, et al., 2007; Swan, et al., 2007), low social support (Kim, McEwen, Kieffer, Herman, & Piette, 2008), lack of time (Smith, et al., 2005; Symons Downs & Ulbrecht, 2006), and lack of childcare (Smith, et al., 2005). Alternatively, at the time of the survey, many obese women might no longer be attempting weight loss after prior failed attempts. Finally, BMI, at the time of the survey may be a result of excess gestational weight gain or pre-pregnancy BMI, which are also risk factors for GDM and for which we were unable to adjust. Our findings regarding the impact of receiving advice to lose weight were

unexpected. Overall, women who received advice to lose weight were more likely to attempt weight loss.. However, among those receiving such advice, compared with women without hGDM, those with hGDM had lower odds of attempting to lose weight. Notably, 60% of women who received advice to lose weight were also obese. Therefore, these results may reflect our earlier finding that among obese women hGDM was associated with lower odds of attempting weight loss.

Strengths of this study include the use of a nationally representative sample to assess trends regarding weight loss behavior among women with hGDM who are at high risk for type 2 diabetes. A primary limitation to use of BRFSS data is that measures are self-reported. While studies have reported overall high reliability of the diabetes question in the BRFSS survey there may be substantial underreporting (Nelson, Holtzman, Bolen, Stanwyck, & Mack, 2001). Validity studies indicate that sensitivity of the diabetes question in BRFSS is estimated to be 67–100% and specificity is 98–99% (Bowlin et al., 1993; Martin, Leff, Calonge, Garrett, & Nelson, 2000). Additionally, despite the large national sample BRFSS is not generalizable to the entire US population as it is limited to adults with land-based telephones. Individuals between ages 18–34 are more likely to live in cell phone only households (Link, Battaglia, Frankel, Osborn, & Mokdad, 2007) and a portion of younger women with and without hGDM may therefore have been excluded from the BRFSS survey. This may also result in the exclusion of very low-income individuals who may have different risk profiles.

Additional limitations to the use of the BRFSS data were that BRFSS did not include questions regarding parity or time since GDM. Therefore, nulliparous women were included in the group of women without hGDM. If nulliparous women were more likely to attempt weight loss including them in our analysis may have lead to an overestimation of the association of hGDM and attempting weight loss among obese women, but an underestimation of the association of hGDM and attempting weight loss in the entire population.

Women with more distant hGDM might be less likely to be attempting weight loss. Assuming that in the total population hGDM was associated with an increased likelihood of attempting weight loss, the inability to adjust for or stratify by time since GDM may have resulted in underestimation of the association of hGDM and attempting weight loss in the total population. When we restricted our analysis to women <35 years old, in an attempt to limit our sample to those with more recent GDM, the pattern of observed associations remained consistent. Importantly, the findings from a sub-analysis of the Diabetes Prevention Program Trial indicate that the increased risk of diabetes associated with hGDM persists throughout a woman's life time and that weight loss many years following a GDM affected pregnancy can reduce this risk.(Ratner, et al., 2008)

A final methodologic limitation to this study, which must be considered when interpreting the results, is the exclusion of women with established diabetes. It is likely that a portion of these women likely had hGDM. Women with hGDM who already developed type 2 diabetes may have had the most severe GDM and the greatest number of risk factors for type 2 diabetes. By restricting our analysis to women with hGDM who had not yet developed type 2 diabetes, we focused on a group that could benefit from prevention strategies.

Implications for Practice and/or Policy

These limitations notwithstanding, this study provides important information regarding the weight loss behavior of women with hGDM. Our findings indicate that close to a third of women with hGDM remain obese, and that among obese women those with hGDM are less likely to attempt weight loss. This is of particular concern given current conservative

estimates indicating that the prevalence of type 2 diabetes in the United States will increase from 1 in 10 in 2010 to between 1 in 5 and 1 in 3 by 2050 (Boyle, Thompson, Gregg, Barker, & Williamson, 2010). An important step towards reducing the incidence of type 2 diabetes may be developing interventions that encourage women who remain obese after a pregnancy affected by GDM to adopt diabetes prevention behaviors and to sustain these behaviors across their life course. Current theories of behavior change and health promotion emphasize a need to understand the patient's unique needs, barriers to change, and readiness to change. (Rollnick, Mason, & Butler, 1999) In order for women with hGDM to successfully adopt diabetes prevention behaviors, health care providers need to assess women's readiness to change. Among interested women, provision of a sufficient number of education sessions and real-life applications will foster improved self-efficacy addressing the unique weight loss barriers faced by women with hGDM.

Additionally, our findings also indicate that a portion of women with hGDM may be effectively engaging in diabetes prevention behaviors as evidenced by the increased likelihood of attempting weight loss associated with hGDM among normal weight women. Understanding the motivations and behaviors of this subgroup might provide useful insight for developing effective lifestyle interventions among women with hGDM. New research that takes into account the impact of time since pregnancy on motivation to lose weight is also needed to inform development of lifestyle interventions for overweight and obese women with hGDM. These results add to a growing body of evidence that more attention needs to be paid to the care of women with hGDM in the postpartum period. Effective interventions and care for obese women with hGDM are needed consistent with current theories of behavior change and health promotion.

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Figure 1.
Inclusions, exclusions and final study sample

Table 1

BRFSS diabetes and weight loss questions, potential responses, and categorizations, 2003

Question #	Question	Potential Responses	Categorization
4.1	<i>Have you ever been told by a doctor that you have diabetes?</i>	Yes	Excluded
		Yes, but only during pregnancy	Yes, hGDM
		No	Reference category
		Don't know/Not sure	Excluded
		Refused	Excluded
8.1	<i>Are you now trying to lose weight?</i>	Yes	Yes
		No	Reference category
		Don't know/Not sure	Excluded
		Refused	Excluded
8.3	<i>Are you eating either fewer calories or less fat to lose weight?</i>	Yes, fewer calories	Yes
		Yes, less fat	Yes
		Yes, fewer calories and less fat	Yes
		No	Reference category
		Don't know/Not sure	Excluded
		Refused	Excluded
8.4	<i>Are you using physical activity or exercise to lose weight?</i>	Yes	Yes
		No	Reference category
		Don't know/Not sure	Excluded
		Refused	Excluded
8.3–8.4	<i>Combined weight loss strategy</i>	Low fat or low calorie diet & physical activity	Yes
		None	Reference category
		Low fat or low calorie diet alone	Reference category
		Physical activity alone	Reference category
8.5	<i>In the past 12 months, has a doctor, nurse or other health professional given you advice about your weight?</i>	Yes, lose weight	Yes
		Yes, gain weight	Reference category
		Yes, maintain weight	Reference category
		No	Reference category
		Don't know/Not sure	Excluded
		Refused	Excluded

Table 2

Characteristics of women aged 18–44 yrs, and no diabetes, with and without a history of gestational diabetes (hGDM) in the United States, BRFSS 2003^a

Characteristic	Total	hGDM	No hGDM
<i>N^b</i>	53,608	1,260	52,348
<i>Mean Age (yrs)</i>	32 (31.6, 31.8)	34 (33.0, 34.5)	32 (31.5, 31.8)
<i>Race/Ethnicity (%)</i>			
White, non-Hispanic	66 (64.8, 66.3)	60 (54.3, 65.0)	66 (64.9, 66.5)
Black, non-Hispanic	12 (11.2, 12.2)	10 (7.1, 13.2)	12 (11.2, 12.2)
Hispanic	16 (14.9, 16.0)	22 (16.1, 26.9)	15 (14.7, 16.1)
Other	7 (6.7, 7.6)	9 (5.9, 11.5)	7 (6.7, 7.6)
<i>BMI kg/m² (%)</i>			
<25	56 (55.1, 56.6)	38 (33.0, 42.7)	56 (55.5, 57.0)
25–29.9	26 (24.9, 26.3)	32 (26.5, 36.6)	25 (24.8, 26.1)
30	19 (18.0, 19.2)	31 (25.9, 35.3)	18 (17.7, 18.9)
<i>Fair or Poor Health Status (%)</i>	9 (8.5, 9.4)	14 (10.2, 18.0)	9 (8.3, 9.2)
<i>Income (%)</i>			
<\$15,000	12 (10.9, 12.1)	14 (10.0, 18.1)	11 (10.9, 12.0)
\$15,000–\$25,000	17 (16.7, 17.8)	17 (12.8, 20.7)	17 (16.6, 17.8)
\$25,000–\$35,000	14 (13.3, 14.4)	12 (7.4, 16.1)	14 (13.3, 14.4)
\$35,000–\$50,000	18 (17.0, 18.2)	20 (15.6, 24.4)	18 (16.9, 18.1)
\$50,000	40 (39.1, 40.7)	37 (32.4, 42.4)	40 (39.2, 40.8)
<i>Education Level (%)</i>			
Less than High School	9 (8.2, 9.2)	12 (8.5, 15.6)	9 (8.1, 9.1)
High School Graduate	28 (26.7, 28.2)	27 (22.2, 31.8)	28 (26.8, 28.2)
More than High School	64 (63.1, 64.6)	61 (55.8, 66.2)	64 (63.2, 64.7)
<i>Currently Married or Partnered (%)</i>	60 (59.1, 60.6)	77 (73.2, 81.2)	59 (58.6, 60.2)
<i>Medical Insurance (%)</i>	82 (81.3, 82.5)	81 (76.5, 85.0)	82 (81.3, 82.5)
1 child <18 Living at Home	68 (67.4, 68.8)	94 (91.8, 96.0)	68 (66.7, 68.2)
<i>Currently Employed (%)</i>	65 (64.4, 65.9)	58 (53.2, 63.4)	65 (64.5, 66.1)
<i>Current Smoker (%)</i>	24 (23.6, 24.9)	23 (18.6, 26.5)	24 (23.7, 25.0)
<i>Physical Activity (%)</i>			
Yes, meets guidelines	50 (49.2, 50.7)	47 (42.3, 52.6)	50 (49.2, 50.8)
No, below guidelines	39 (38.5, 40.0)	40 (34.6, 44.6)	39 (38.5, 40.0)
Sedentary, no activity	11 (10.3, 11.3)	13 (9.5, 16.4)	11 (10.3, 11.3)
<i>Advised to Lose Weight (%)</i>	11.7 (11.2, 12.2)	21.6 (16.6, 26.5)	11.4 (10.9, 11.9)

^aData are weighted mean or percent (95% Confidence Interval)

^bObserved n, not weighted for survey sampling

Odds ratios for attempting to lose weight, comparing women with hGDM to those with no hGDM among women aged 18–44 yrs and no diabetes, BRFSS 2003

Table 3

Total Sample:		hGDM	N _{observed} ^a	% Trying to lose weight ^b	Unadjusted OR (95% CI) ^c	Adjusted OR (95% CI) ^{c,d}
BMI (kg/m²)^e	No	No	52,348	47	reference	reference
		Yes	1,260	53	1.27 (1.03, 1.57)	1.20 (0.97, 1.49)
	Yes	No	28,686	30	reference	reference
		Yes	499	35	1.26 (0.90, 1.75)	1.24 (0.88, 1.74)
	No	No	13,349	65	reference	reference
		Yes	386	66	1.03 (0.64, 1.65)	1.01 (0.63, 1.62)
	Yes	No	10,313	75	reference	reference
		Yes	375	63	0.56 (0.37, 0.85)	0.54 (0.35, 0.82)
	Advice to Lose Weight:^f					
	Received advice to Lose Weight	No	46,086	82	reference	reference
		Yes	6,087	69	0.50 (0.24, 1.05)	0.48 (0.23, 1.03)
	Did not receive advice to Lose Weight	No	1,007	43	reference	reference
		Yes	244	49	1.29 (1.03, 1.60)	1.24 (0.99, 1.54)
Health Status:^g						
	Excellent/Very Good/Good	No	47,778	47	reference	reference
		Yes	1,113	52	1.26 (1.00, 1.57)	1.19 (0.95, 1.49)
	Fair/Poor	No	4,525	54	reference	reference
		Yes	144	59	1.21 (0.64, 2.30)	1.18 (0.62, 2.25)

^a Observed data counts, not weighted for survey sampling

^b Weighted for the entire population

^c Odds ratios (95% confidence intervals) weighted to account for survey sampling

^d Adjusted for age, race/ethnicity, education, marital status, and medical insurance

^e p for interaction: Crude p=0.01, Adjusted p=0.01

^f p for interaction: Crude p=0.02, Adjusted p=0.02

^gp for interaction: Crude p=0.92, Adjusted p=0.98