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Perceived weight discrimination in the CARDIA study: Differences by race, sex, and weight status

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Abstract

Objective—To examine self-reported weight discrimination and differences based on race, sex, and BMI in a biracial cohort of community-based middle-aged adults.

Design and Methods—We report on 3,466 participants (mean age=50 years, mean BMI=30 kg/m²) of the Coronary Artery Risk Development in Young Adults (CARDIA) Study who completed the 25-year examination of this epidemiological investigation in 2010–11. The sample included normal weight, overweight, and obese participants. CARDIA participants are distributed into four race-sex groups, with about half being African-American and half White. Participants completed a self-reported measure of weight discrimination.

Results—Among overweight/obese participants, weight discrimination was lowest for White men (12.0%) and highest for White women (30.2%). The adjusted odds ratio (95% CI) for weight discrimination in those with class 2/3 obesity (BMI ≥ 35 kg/m²) versus the normal-weight was most pronounced: African American men, 4.59(1.71–12.34); African American women, 7.82(3.57–17.13); White men, 6.99(2.27–21.49); and White women, 18.60(8.97–38.54). Being overweight (BMI=25–29.9 kg/m²) vs. normal weight was associated with increased discrimination in White women only: 2.10(1.11–3.96).

Conclusions—We provide novel evidence for a race-sex interaction on perceived weight discrimination, with White women more likely to report discrimination at all levels of overweight and obesity. Psychosocial mechanisms responsible for these differences deserve exploration.

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Disclosures

The authors declare no conflicts of interest.

Keywords

discrimination; obesity; weight; sex; race

Introduction

In addition to the numerous chronic medical conditions associated with obesity (1), overweight and obesity are associated with social stigma and negative bias (2,3), which has been observed in the workplace (4), educational settings (5), and healthcare settings (6). Weight stigmatization has been associated with increased levels of depressive symptoms (7,8), diminished quality of life (7,8), decreased likelihood of seeking healthcare services (9), and decreased likelihood of attempting weight loss or participating in physical activity (10,11). Recent evidence even suggests that experiencing weight stigma may interact with central adiposity to increase diabetes risk (12).

Compared to weight bias (i.e., attitudes held by others towards obese individuals), less research has focused on perceived weight discrimination (i.e., a person's experience of being treated poorly by others because of his/her weight). However, initial work indicates weight discrimination is a common experience for obese individuals (6,13), and reports of discrimination are positively associated with increasing BMI (14–16). Women may be at greater risk of weight discrimination than men (16), although sex differences have not been consistently found (13,15). Racial/ethnic differences in weight stigma and perceived discrimination are also unclear. While experimental studies suggest that African Americans may experience less weight-related stigma than Whites (17,28), other studies have found higher rates of self-reported weight discrimination among African Americans as compared to Whites (14,16).

Besides the small number of studies focused on weight discrimination, limitations of past research include reliance upon self-reported height and weight (6,14–16,19) and assessment of discrimination based on physical appearance in general rather than weight specifically (14). Perhaps the most significant limitation is the under-representation of racial minorities in previous samples, which limits information about possible racial differences in weight discrimination. Examination of weight discrimination across different sex and racial/ethnic groups is particularly important given the significant disparities in obesity experienced by African Americans, and African American women, in particular (20). Between-group comparisons of weight discrimination are further warranted because of the higher prevalence of various forms of day-to-day racial discrimination (e.g., treated with less respect, received poorer service) reported by African Americans as compared to Whites (21,22).

We studied a large, community-based sample with balanced representation of African Americans and Whites as well as men and women to examine the prevalence of perceived weight discrimination and potential differences across groups. We hypothesized that overweight and obese participants would be more likely than normal-weight participants to report experiencing weight discrimination, and more severe levels of obesity would be associated with greater rates of perceived weight discrimination. Given the racial and sex differences in the prevalence of obesity (20) as well as potential differences in the

experience of weight discrimination, we examined interaction terms and performed stratified analyses to ascertain if the association differed by race and/or sex.

Methods and Procedures

Sample

Our sample comes from the Coronary Artery Risk Development in Young Adults (CARDIA) Study, which is a longitudinal, epidemiological study examining the development and determinants of clinical and subclinical cardiovascular disease and their risk factors, including obesity (23,24). In CARDIA, data have been collected on a variety of factors related to heart disease, including blood pressure, cholesterol/lipids, and glucose. Data have also been collected on physical measurements such as weight and body composition as well as lifestyle factors such as dietary and exercise patterns, substance use, behavioral and psychological variables, and medical/family history.

The CARDIA study began in 1985–86 with a sample of 5,115 black and White men and women aged 18–30 years from four affiliated field centers located in Birmingham, AL; Chicago, IL; Minneapolis, MN; and Oakland, CA. Participants were randomly selected and recruited through several mechanisms, including census tracts, telephone exchanges, and health plan membership rosters, to achieve balanced representation based on race, gender, and educational attainment at each of the clinical centers. This cohort has been followed for the past 25 years, with in-person assessments occurring every 2–5 years at the following time points: 1987–1988 (Year 2), 1990–1991 (Year 5), 1992–1993 (Year 7), 1995–1996 (Year 10), 2000–2001 (Year 15), 2005–2006 (Year 20), and 2010–2011 (Year 25). Data for the current project comes from the most recent (i.e., Year 25) examination. At this examination, CARDIA participants ranged in age from 43–55 years-old. A total of 3,498 participants completed this examination, which represents 72% of the original, surviving sample. When comparing participants who completed the Year 25 exam with those who failed to complete this exam, there were no differences observed in baseline BMI values.

Measures

Outcome variable—We assessed the primary outcome variable, perceived weight discrimination, using a modified version of the Experiences of Discrimination (EOD) Index (25). While the EOD was initially created to assess racial and gender discrimination, the instrument was modified for the Year 25 CARDIA exam to additionally evaluate discrimination due to one's weight across several settings. The EOD Weight Index is a self-report instrument assessing an individual's experience of discrimination in seven different situations by asking, "Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following seven situations because of your weight?" The seven situations listed include: 1) at school, 2) getting a job, 3) getting housing, 4) at work, 5) at home, 6) getting medical care, and 7) on the street or in a public setting. The outcome variable was derived from the composite score (range=0–7) of discrimination encountered across the seven situations assessed. The distribution of responses to this variable was positively skewed, with less than 3% of the sample having a composite score ≥ 5 . Therefore, the outcome variable was coded dichotomously, such that

participants were categorized as “yes” if they reported discrimination in one or more of the situations and were categorized as “no” if they denied discrimination in any of the seven situations. This approach is consistent with previous studies that utilized dichotomous outcomes of perceived discrimination (26,27). In the current study, the EOD for weight discrimination demonstrated good internal reliability as evidenced by high Cronbach alpha values (overall sample=0.85, African-Americans=0.87; Whites=0.83, women=0.85, men=0.85).

Independent variables—Demographic characteristics of participants were assessed via self-report measures at the baseline examinations in 1985–86, and this information was verified at each subsequent CARDIA exam. Assessed variables included age, sex, race/ethnicity, and educational attainment (i.e., the highest grade/level of education completed). Height and weight were measured at each examination, including in year 25, by research staff using calibrated equipment and standardized protocols, and these year 25 values were used to calculate body mass index (BMI; kg/m²) for each participant. BMI values were categorized into four groups, including normal weight (18.5–24.9 kg/m²), overweight (25.0–29.9 kg/m²), class 1 obesity (30.0–34.9 kg/m²), and class 2/3 obesity (≥ 35.0 kg/m²).

To account for perceived weight status, participants responded to a single item including a 5-point scale to rate how they currently viewed their body size (1=“much too thin”; 5=“much too fat”). Responses were categorized into three groups, including perception of thin body size (scores=1 or 2), ideal body size (score=3), and heavy body size (scores=4 or 5). Categorical scores on this item were included in analyses. The weight-related conditions of depression and diabetes were included in analyses and assessed with the Center for Epidemiologic Studies Depression Scale (CES-D), a 20-item self-report of depressive symptoms (28), and self-reported use of diabetes medication queried in the CARDIA medical history questionnaire, which has been used for the duration of the 25-year study and for which affirmative responses to initial queries are followed by more detailed questions regarding medication names and dosages. Participants’ reports of perceived racial and gender discrimination were assessed by the EOD Index and included in analyses as well. The EOD Index has been used to examine the relationship between perceived racial discrimination and a variety of health outcomes, including blood pressure (29), preterm delivery and infant birth weight (30), and substance use (31). The EOD Index has demonstrated good construct validity, high internal reliability, and high test-retest reliability (25).

Statistical Analysis

Descriptive and bivariate analyses summarized demographics as well as the prevalence and patterns of weight discrimination endorsed by participants. Chi square analyses compared the prevalence of weight discrimination for the categorical variables of sex, race (African American and White), and BMI category (normal weight [BMI=18.5–24.9], overweight [BMI 25.0–29.9], class 1 obesity [BMI 30.0–34.9], class 2/3 obesity [BMI = 35.0]). Multivariable logistic regression calculated the odds ratios (ORs) for weight discrimination associated with the predictor variables of race, sex, BMI, and the race by sex interaction. Because weight discrimination was associated with other types of self-reported

discrimination (i.e., racial and gender discrimination) in this sample, regression models were adjusted to account for self-reported racial and gender discrimination along with other predictor variables.

Initial analyses indicated a significant race ($p=0.006$), sex ($p=0.02$), and race-sex interaction ($p=0.003$) with BMI category for the outcome variable of weight discrimination. Therefore, subsequent analyses were stratified, and separate multivariable logistic regressions are presented for each of the four race-sex groups. In each model, independent variables included BMI category, age, education level, perceived racial and gender discrimination, perceived weight status, depressive symptoms, and reported use of diabetes medication. For BMI category, a normal BMI served as the reference group. For education level, the reference group included individuals with a high school diploma or less, and this group was compared to two other groups: those with “at least some college” and those with “at least some graduate school” education. For perceived weight status, a rating of 3 (ideal body size) on the 5-point scale served as the referent, which was compared to scores of 1–2 (too thin) and scores of 4–5 (too heavy).

For current analyses, 23 participants were excluded because their BMI was in the “underweight” range (i.e., $<18.5 \text{ kg/m}^2$). One participant was excluded for self-identifying as transgendered rather than male or female. While 67 participants (1.9%) reported having bariatric surgery at some point during the 25-year study period, exclusion of these individuals from analyses did not substantively change the results. Therefore, these individuals were retained in the analyses presented. Due to the previously-specified exclusions as well as missing data for certain variables, the current analyses included 3,466 participants.

Results

Sample Characteristics

The sample included African American men ($n=646$; 18.6%), African American women ($n=976$; 28.2%), White men ($n=860$; 24.8%), and White women ($n=984$; 28.4%). Overall, 44% of the sample had a BMI $\geq 30 \text{ kg/m}^2$, although the prevalence ranged from 32% of White women to 63% of African American women who were obese. The mean age of the sample was 50 years (Table 1).

Prevalence of Weight Discrimination

The prevalence of weight discrimination was examined among overweight and obese participants (Table 2). Among these individuals, discrimination when getting housing was the least frequently endorsed scenario by all groups: 0.2% of White men, 0.7% of White women, 2.7% of African American men, and 3.0% of African American women, representing a significant difference between African Americans and Whites. In contrast, public settings were the most common situations in which participants perceived being discriminated against: 5.8% of White men, 9.3% of African American men, 14.6% of African American women, and 18.7% of White women, representing a significant difference between men and women. Across all settings, the prevalence of weight discrimination for

White men and African American men was 12.0% and 14.9%, respectively, which differed significantly from the prevalence rates for both groups of women. Nearly 25% of African American women reported weight discrimination across any setting, which differed from all other groups. White women reported the highest prevalence of weight discrimination (30.2%), which also differed significantly from all other groups, $ps < 0.0001$.

As expected, the frequency of weight discrimination increased with increasing BMI categories, and this pattern was generally consistent across all four race-sex groups (Table 3). Within each above-normal BMI category, weight discrimination was reported most frequently by White women.

Associations of BMI, Demographic Factors, and Weight Discrimination

Within each race-sex group and after multivariable adjustment, BMI category and reported racial and gender discrimination were significantly related to reported experiences of weight discrimination (Table 4). In all four groups, class 2/3 obesity (i.e., BMI ≥ 35 kg/m²) was associated with reported discrimination compared to normal weight status. Class 1 obesity (i.e., BMI=30.0–34.9 kg/m²) was related to reported discrimination in both groups of women but neither group of men. In White women only, overweight was associated with a greater odds of reporting discrimination compared to normal weight status. Interestingly, overweight was associated with a decreased risk of weight discrimination in African American men.

Several other significant relationships emerged, although these differed for the four race-sex groups (Table 4). Perceived weight status was associated with reported weight discrimination for African American women and White men. However, the direction of these associations differed. Perceiving one's body size as too thin was associated with increased discrimination for African American women, while perceiving one's body size as too heavy was associated with increased discrimination for White men. Regarding depression, African American women and White women demonstrated a positive association between depressive symptoms and weight discrimination. Diabetes medication use was associated with increased weight discrimination for White men and decreased discrimination for White women.

Discussion

Significant differences in the prevalence of experiencing weight discrimination were observed across race-sex groups and across BMI categories. While 12% of overweight/obese White men reported experiencing weight discrimination, approximately 30% of White women reported this. The prevalence rates of weight discrimination among overweight/obese African American men and women were within this range at 15% and 25%, respectively. Results suggest that women perceive weight discrimination more frequently than men, which is consistent with previous research (19). As hypothesized, we also observed an association between BMI and weight discrimination consistent with previous research indicating progressively increasing reports of discrimination with higher BMI values (16–19).

There were also interesting differences in the prevalence of weight discrimination across settings for overweight/obese individuals. For instance, African American and White men endorsed comparably lower levels of weight discrimination in some settings (e.g., at school, getting medical care) as compared to levels endorsed by African American and White women. In contrast, White men and women reported similar levels of discrimination in other settings (e.g., getting housing). In some settings (i.e., at work and at home), White women reported significantly higher rates of weight discrimination than all other groups. These comparisons suggest that weight discrimination is not uniform across settings, and attempts to measure and alleviate it may depend on the setting.

Even after adjustment for a variety of factors, including age, educational attainment, perceived weight status, and depressive symptoms, White women were more likely to report weight discrimination at all levels of overweight and obesity compared to those of normal weight. In fact, overweight White women had over twice the odds of reporting discrimination than normal-weight White women, while those who were severely obese (i.e., class 2/3 obesity) had over 18 times the odds of reporting discrimination. African American women at both levels of obesity (i.e., Class 1 and Class 2/3) more often reported discrimination than their normal weight counterparts, although overweight status was not related to elevated discrimination. Among men of both racial groups, only Class 2/3 obesity was associated with increased weight discrimination. In African American men, however, overweight was actually associated with decreased levels of weight discrimination relative to the normal-weight group. This latter finding is particularly interesting and suggests that culturally specific preferences for body size may influence the likelihood and reasons for experiencing weight discrimination (32,36–38).

Previous investigations of racial differences in the experience of weight discrimination have been limited, and to our knowledge, no prior studies have examined race by sex interactions. By including a sample comprised of 47% African Americans recruited from four different urban areas, the current study provides novel evidence of a significant interaction between race and sex for perceived weight discrimination. It is important to consider why some groups may be more likely to report weight discrimination. It is well-documented that White women report greater social pressure to achieve unrealistic body ideals, and women report higher levels of body dissatisfaction than men (32–35). These social pressures, expectations, and higher rates of body dissatisfaction may confer additional risk for women to be stigmatized because of their weight and/or women may be more cognizant of others' discriminatory practices.

Regarding potential racial differences, rates of obesity are significantly higher among African Americans than Whites (20). However, African Americans tend to be more accepting and may prefer a larger body size (32,36–38), which could be protective against perceived weight discrimination. In fact, overweight African American men endorsed lower levels of weight discrimination than their normal-weight colleagues in this study. In addition, African American women who perceived their body size as too thin were more likely to report weight discrimination than those who endorsed an acceptable body size. These findings suggest that different attitudes and norms across racial/ethnic groups may influence the experience of weight discrimination. However, future research is needed to

identify and disentangle the socio-cultural factors that may influence the relationships between race, body weight, and discrimination.

Weight discrimination was unrelated to participants' age or education level, and this was true across all four race-sex groups. This finding is not consistent with previous research indicating that younger adults were more likely to report experiencing weight-related discrimination (14,16). The current lack of an association between age and weight discrimination could be due to the relatively restricted age range of the sample, which consisted of adults 43–55 years. While some researchers have found that individuals with higher levels of education are more likely to report weight discrimination (14), others have found no association (16), which is consistent with our findings.

Current findings may have several clinical and policy implications. In a recent review, Puhl and Heuer (39) concluded that experiencing weight discrimination was associated with increased engagement in unhealthy eating behaviors, avoidance of physical activity, and decreased willingness to engage in weight loss. Therefore, weight discrimination may hinder healthy behavior change, which is particularly concerning given the high rates of discrimination observed. The finding that African Americans may experience weight discrimination for being normal-weight or underweight warrants continued investigation of whether weight discrimination differentially impacts behaviors or intentions across racial/ethnic groups.

In addition to influencing health behaviors and weight loss attempts, weight discrimination may also impact other aspects of physical and psychological health. In fact, racial discrimination has been linked to negative physical and psychological outcomes (29, 39), and weight discrimination may confer similar risks (39). For instance, previous findings suggest that the positive association between depression and obesity is more pronounced for women than men (40). It is possible that women's increased risk of weight discrimination contributes to gender differences in the obesity-depression association.

From a policy perspective, these findings confirm the previously-documented high prevalence of weight discrimination experienced by obese individuals (19). In fact, weight discrimination may have increased in prevalence in recent years and currently rivals racial and age discrimination (19). Unlike these other forms of discrimination, however, there are no consistent legal protections for individuals suffering from weight discrimination.

There are several limitations to the current study worth noting. First, the sample included African Americans and Whites only, so conclusions about other racial/ethnic groups cannot be drawn. Our sample consisted of middle-aged adults, so results may not be generalizable to other age groups. Similarly, CARDIA participants were recruited from four urban areas and may not reflect the general U.S. population. Also, the current analyses relied upon cross-sectional data, so it is not possible to explore how the experience of weight discrimination may impact subsequent health outcomes. Finally, this study employed a self-report measure of weight discrimination not previously used in other studies. Also, this measure assessed lifetime experience of weight discrimination, and analyses included a dichotomous outcome. This may provide an overly simplistic assessment of this construct.

On a related note, this measure did not specify whether discrimination was due to being overweight/obese, and some of our results suggest that African Americans may have perceived weight discrimination based on being too thin or even normal-weight. This represents an interesting finding that warrants additional research to understand not only the occurrence of weight discrimination but also the individual's attributions for why they are experiencing discrimination.

These study limitations are balanced by several strengths, including the large, community-based sample with a high proportion of African Americans. In fact, this is the first published report to our knowledge that compared the experience of weight discrimination reported by African American and White men and women utilizing a large and racially diverse sample. Additional strengths include objective measurement of height and weight, the use of a discrimination measure specifically focused on weight-based discrimination, and analyses that accounted for other forms of perceived discrimination (i.e., race and gender).

While our study offers a unique contribution, it also highlights several areas for future investigation, including the need to replicate the sex by race interaction we observed and to seek potential psychological, social, or cultural mechanisms explaining these group differences. Future research should also explore longitudinal associations between weight discrimination and relevant health outcomes across different racial and sex groups.

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What is already known about this subject

- Weight discrimination against overweight/obese individuals is very prevalent.
- Weight discrimination is associated with a number of negative outcomes.
- Risk of experiencing weight discrimination may differ between sex and racial/ethnic groups.

What this study adds

- Confirms previous observations that prevalence of weight discrimination is positively associated with BMI.
- Provides novel evidence for a race-sex interaction on perceived weight discrimination; White women are more likely to report discrimination at all levels of overweight and obesity.

Table 1

Age, body-mass index (BMI), and educational level overall and by race-sex group: CARDIA 2010–11 ^a

Characteristic	Overall sample (N=3,466)	African American men (n=646)	African American women (n=976)	White men (n=860)	White women (n=984)	P-value
Age, years (SD)	50.16 (3.63)	49.42 (3.78)	49.59 (3.84)	50.67 (3.36)	50.76 (3.38)	<0.0001 ^b
BMI, kg/m ² (SD)	30.25 (7.16)	30.58 (6.78)	33.44 (7.82)	28.78 (4.96)	28.14 (7.10)	<0.0001 ^b
BMI category (%)						<0.0001 ^c
18.5 –24.9 kg/m ²	24.75	17.80	13.73	23.26	41.57	
25.0 – 29.9 kg/m ²	31.36	36.69	22.95	42.44	26.52	
30.0 – 34.9 kg/m ²	22.65	25.85	26.64	22.79	16.46	
35.0 kg/m ²	21.23	19.66	36.68	11.51	15.45	
Education (%)						<0.0001 ^c
High school or less	22.41	39.25	28.63	14.53	12.13	
At least some college	52.753	49.84	56.95	51.16	51.89	
At least some graduate school	24.843	10.90	14.42	34.30	35.98	

^aTable contains mean (SD) or %.^bANOVA test was conducted to test overall group mean difference. P-value reflects significance of omnibus test.^cChi-square test was conducted to test general association. P-value reflects significance of omnibus test.

Prevalence (%) of perceived weight discrimination across settings for overweight/obese participants (BMI ≥ 25 kg/m²): CARDIA 2010–11 ^a

Table 2

	African American men	African American women	White men	White women	<i>p</i> -value
At school	4.8 ^a	9.0 ^b	4.7 ^a	12.9 ^b	<0.00013
Getting a job	6.5 ^a	10.3 ^b	1.8 ^c	11.0 ^b	<0.00013
Getting housing	2.7 ^a	3.0 ^a	0.2 ^b	0.7 ^b	<0.00013
At work	7.8 ^{a,b}	9.6 ^b	3.8 ^a	13.5 ^c	<0.00013
At home	3.8 ^a	7.2 ^a	4.6 ^a	13.8 ^b	<0.00013
Getting medical care	2.9 ^a	6.6 ^b	1.5 ^a	6.5 ^b	<0.00013
In public	9.3 ^a	14.6 ^b	5.8 ^a	18.7 ^b	<0.00013
In any setting	14.9 ^a	24.6 ^b	12.0 ^a	30.2 ^c	<0.00013

^a Different letters indicate significant differences between cells using the Tukey-Kramer procedure for multiple comparisons to maintain an overall family-wise significance level of .05. Terms with common letters are not significantly different from each other.

Prevalence (%) of weight discrimination by BMI category (kg/m²) for each race-sex group: CARDIA 2010–11 ^{a,b}

Table 3

	BMI category				<i>p</i> -value
	18.5–24.9	25.0–29.9	30.0–34.9	35.0	
African American men	10.7 ^a	5.1 ^a	13.3 ^a	35.5 ^b	<0.0001
African American women	11.3 ^a	12.6 ^a	21.5 ^a	34.4 ^b	<0.0001
White men	3.6 ^a	5.5 ^a	13.9 ^b	32.7 ^c	<0.0001
White women	7.6 ^a	15.8 ^b	31.1 ^c	53.9 ^d	<0.0001

^a Dichotomous outcome (y/n) of experiencing weight discrimination in one or more of the seven assessed situations.

^b Different letters indicate significant differences between BMI groups using the Tukey–Kramer procedure for multiple comparisons to maintain an overall family-wise significance level of .05. Terms with common letters are not significantly different from each other.

Table 4

Adjusted odds ratios and 95% confidence intervals for perception of weight discrimination for each race-sex group: CARDIA 2010–11^{a,b}

Predictor	Odds ratio	95% CI
<i>African American men</i>		
Normal weight (BMI=18.5–24.9)	Ref	---
Overweight (BMI=25.0–29.9)	0.38	0.15 – 0.95
Obesity, Class 1 (BMI=30.0–34.9)	1.20	0.47 – 3.03
Obesity, Class 2/3 (BMI 35.0)	4.59	1.71 – 12.34
Age (per year)	1.01	0.95 – 1.08
High school or less	Ref	---
At least some college	0.85	0.49 – 1.47
At least some graduate school	0.61	0.25 – 1.50
Perceived racial discrimination	3.72	1.89 – 7.32
Perceived gender discrimination	1.82	1.04 – 3.17
Perceived weight status (too thin)	1.12	0.41 – 3.10
Perceived weight status (too heavy)	1.29	0.68 – 2.42
Depressive symptoms (CES-D)	1.02	0.99 – 1.06
Diabetes medication use	1.04	0.52 – 2.09
<i>African American women</i>		
Normal weight (BMI=18.5–24.9)	Ref	---
Overweight (BMI=25.0–29.9)	1.85	0.84 – 4.07
Obesity, Class 1 (BMI=30.0–34.9)	3.48	1.59 – 7.62
Obesity, Class 2/3 (BMI 35.0)	7.82	3.57 – 17.13
Age (per year)	0.98	0.93 – 1.02
High school or less	Ref	---
At least some college	0.78	0.52 – 1.17
At least some graduate school	0.98	0.56 – 1.70
Perceived racial discrimination	3.77	2.33 – 6.10
Perceived gender discrimination	2.59	1.68 – 3.90
Perceived weight status (too thin)	4.35	1.83 – 10.31
Perceived weight status (too heavy)	1.46	0.90 – 2.38
Depressive symptoms (CES-D)	1.05	1.03 – 1.07
Diabetes medication use	0.96	0.58 – 1.59
<i>White men</i>		
Normal weight (BMI=18.5–24.9)	Ref	---
Overweight (BMI=25.0–29.9)	1.04	0.38 – 2.89
Obesity, Class 1 (BMI=30.0–34.9)	2.56	0.89 – 7.38
Obesity, Class 2/3 (BMI 35.0)	6.99	2.27 – 21.49
Age (per year)	0.95	0.89 – 1.02
High school or less	Ref	---
At least some college	1.20	0.55 – 2.59

Predictor	Odds ratio	95% CI
At least some graduate school	1.91	0.87 – 4.20
Perceived racial discrimination	2.29	1.15 – 4.57
Perceived gender discrimination	2.80	1.36 – 5.79
Perceived weight status (too thin)	1.72	0.32 – 9.14
Perceived weight status (too heavy)	2.94	1.27 – 6.82
Depressive symptoms (CES-D)	1.03	1.00 – 1.07
Diabetes medication use	2.69	1.16 – 6.23
White women		
Normal weight (BMI=18.5–24.9)	Ref	---
Overweight (BMI=25.0–29.9)	2.10	1.11 – 3.96
Obesity, Class 1 (BMI=30.0–34.9)	6.13	3.05 – 12.32
Obesity, Class 2/3 (BMI ≥ 35.0)	18.60	8.97 – 38.54
Age (per year)	0.97	0.92 – 1.02
High school or less	Ref	---
At least some college	0.97	0.54 – 1.76
At least some graduate school	0.83	0.44 – 1.57
Perceived racial discrimination	2.42	1.52 – 3.83
Perceived gender discrimination	3.84	2.50 – 5.90
Perceived weight status (too thin)	0.92	0.11 – 7.90
Perceived weight status (too heavy)	1.31	0.71 – 2.44
Depressive symptoms (CES-D)	1.05	1.02 – 1.07
Diabetes medication use	0.23	0.08 – 0.68

^aResults are from 4 separate multiple logistic regression models, one for each race-sex group.

^bEstimates for perceived racial and gender discrimination are based on dichotomous variable (reporting discrimination in 1 or more of the situations vs. denied discrimination in any situation). Reference group=denied any discrimination.