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Perceived Racism in Relation to Weight Change in the Black Women's Health Study

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Abstract

PURPOSE—Obesity is more common in black women than in white women. Racial discrimination is a form of chronic stress that may influence weight.

METHODS—We assessed the association of perceived racism with weight change between 1997 and 2005 in 43,103 women from the Black Women's Health Study, a prospective follow-up of U.S. black women aged 21–69 years at entry in 1995. Eight questions about perceptions and experiences of racism were asked in 1997 from which two summary variables were created: everyday racism (e.g., how often do people act “as if you are not intelligent?”), and lifetime racism (e.g., unfair treatment due to race “on the job”). Mixed linear regression models were used to calculate the multivariate adjusted means for changes in body weight across categories of perceived racism.

RESULTS—Weight gain increased as levels of everyday and lifetime racism increased. The mean multivariable-adjusted difference in weight change between the highest and the lowest quartile of everyday racism was 0.56 kg. The mean difference comparing the highest category of lifetime racism to the lowest was 0.48 kg.

CONCLUSION—These prospective data suggest that experiences of racism may contribute to the excess burden of obesity in U.S. black women.

Keywords

Racism; Racial Discrimination; Black Women; Obesity; Weight; Stress; Psychosocial Stress

INTRODUCTION

Obesity is an established risk factor for numerous health conditions, including cardiovascular disease, and mortality (1–3). Black women have a higher prevalence of over-weight, obesity, and extreme obesity than white women (4,5). Between 1999 and 2002, 77% of black women were overweight or obese and 14% were extremely obese (body mass index [BMI] ≥ 35.0) compared with 57% and 5.5%, respectively among white women (5).

Despite extensive research, the observed racial disparities in obesity are poorly understood (6). Stress has been associated with weight gain and obesity in both animals (7,8) and humans (9–11). Specifically, psychosocial stress associated with low income and low education has been associated with weight gain (10), and it is hypothesized that such stress results in neuroendocrine-autonomic dysregulation which, in turn, influences the accumulation of excess body fat (12–14). Racial discrimination may be an important psychosocial stressor in the lives

of black women (15–17). Cross-sectional studies in non-U.S. populations have found associations of internalized racism with increased obesity (18) and waist circumference (19, 20). Across-sectional study in the United States found an association of experiences of racial discrimination with increased obesity (21), while another found an inverse relationship with waist-to-hip ratio (22). The sample sizes in these studies were relatively small, ranging from 129 (18) to 1,956 (21) study subjects.

In the present report, we prospectively evaluate the association of perceived racism with weight change over 8 years of follow-up among 43,103 U.S. black women, using data from the Black Women's Health Study (BWHS). We also explore whether perceived racism is associated with change in waist circumference.

METHODS

The human subjects' protocol for this study was approved by the Boston University Medical Center and Howard University Cancer Center Institutional Review Boards. The BWHS is a follow-up study of U.S. black women that began in 1995 when 59,000 women aged 21–69 years enrolled through postal health questionnaires, which were sent mainly to subscribers of *Essence* magazine, members of selected black women's professional organizations, and friends and relatives of early respondents. Participants indicated their informed consent by completing the questionnaires. At baseline, subjects were 21 to 69 years of age (median, 38 years), 97% had completed high school, and 44% had completed college. Over 80% were from California, Georgia, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Michigan, New Jersey, New York, South Carolina, Virginia, and the District of Columbia. Participants are mailed biennial questionnaires to obtain updated health information. As of 2007, cohort retention has been 80%.

Exposure Variables

The 1997 follow-up questionnaire contained eight questions on perceptions and experiences of racism adapted from an instrument developed by Williams and colleagues (23). Five questions asked about the frequency in daily life (everyday racism) of the following experiences: “you receive poorer service than other people in restaurants or stores,” “people act as if they think you are not intelligent,” “people act as if they are afraid of you,” “people act as if they think you are dishonest,” and “people act as if they are better than you”. Response options were “never,” “a few times a year,” “once a month,” “once a week,” “almost every day”. Three questions asked about lifetime experience of being “treated unfairly due to your race” on the job, in housing, and by the police (lifetime racism). Response categories were “yes” and “no”. Based on the results of principal components factor analysis, two summary racism variables were created from the eight individual variables (24). The first variable, summary everyday racism, averaged subjects' responses to the five questions of everyday racism and was divided into quartiles. The second variable, summary lifetime racism, categorized responses to the three questions of lifetime racism according to the number of positive responses (none to all, “yes” to one, “yes” to two, and “yes” to all three).

Covariates

In 1995, we collected information on self-reported height (feet and inches), current weight (given in pounds), waist circumference (in inches), and hip circumference (in inches). Current weight was updated every 2 years by follow-up questionnaire. BMI was calculated as weight (in kilograms) divided by height squared (in square meters). Education (in years) was collected on the 1995 and 2003 surveys; data on smoking status, alcohol consumption, vigorous physical activity, parity, menopausal status, and geographic region were collected on each follow-up questionnaire. Modified versions of the Block-National Cancer Institute food frequency

questionnaire (25) were included in the 1995 and 2001 surveys; from these we obtained measures of total daily energy intake (in kilocalories), percent of calories from fat and total saturated fat (in grams), and weekly fast food consumption. Household income was assessed in 2003, and data on coping were collected on the 2005 survey by use of the Abbreviated Carver Coping Scale (26).

Change in Weight and Waist Circumference

Weight change was calculated as the difference between self-reported weight in 2-year intervals from information provided on the 1997, 1999, 2001, 2003, and 2005 follow-up questionnaires; for example, weight change for the 1997–1999 follow-up interval was the difference between weights reported in 1997 and 1999 given in pounds, which was converted to kilograms. Cumulative change in waist circumference was calculated as the difference between waist circumferences (inches) reported in 1995 and 2005, converted to centimeters.

Validation of Weight, Height, and Waist Circumference

We assessed the validity of self-reported weight, height, and waist circumference among 115 BWHS participants residing in the Washington, DC metropolitan area who participated in a validation study of physical activity conducted at Howard University Cancer Center. The participants were weighed and measured by clinic personnel in 2000–2001. The Spearman correlation between self-reported and technician-measured weight (mean, 176 vs. 181 lb, respectively) was 0.97; the correlation between self-reported and technician-measured height (mean, 64.4 inches vs. 64.0 inches, respectively) was 0.93. Self-reported waist circumference reported on the 1995 questionnaire was, on average, 4.7 inches lower than technician measurements with a correlation coefficient of 0.75 (27).

Data Analysis

Follow-up for the current analysis began in 1997, as the racism questions were included on that questionnaire. The analytic sample consisted of women who completed the 1997 questionnaire and at least one of the follow-up surveys. We excluded women with missing values for baseline weight or height ($n = 2,582$), education ($n = 60$), and one or more of the racism questions ($n = 4,068$). Further exclusions were made for women with baseline weight of ≤ 80 lb or ≥ 300 lb ($n = 652$), who reported undergoing gastric bypass surgery on the 1999 questionnaire ($n = 75$), were currently pregnant in 2005 ($n = 278$), or who reported cancer at baseline or during follow-up ($n = 2,440$), leaving 43,103 women for the analysis of weight change. Excluded women were similar to the analytic sample: age (median = 38 vs. 40 years, respectively), BMI (median = 27.1 vs. 26.8 kg/m², respectively), and education (median = 14 vs. 15 years, respectively). Missing weight values for a given follow-up period were calculated by averaging a subject's last known and next known weight values (28).

All analyses were performed using SAS version 9.1 (SAS Institute, Cary, NC). Mixed linear regression models that adjusted for within-person correlation of weight over each 2-year cycle were used to calculate the multivariate adjusted least-squares means for changes in body weight across categories of perceived racism. Continuous covariates were fixed at their respective median values and the categorical values at their modal values. Regression coefficients, representing average weight change in each 2-year interval, were multiplied by 4 to obtain average weight change over the 8-year follow-up period. We constructed two separate analytic models to control for potential confounders. Model 1 controlled for age (years) only. Model 2 controlled for age, education (<12 , 13–15, ≥ 16 years), alcoholic beverages consumed per week (none, <7 , 7–13, ≥ 14), cigarettes smoked per day (none, <5 , 5–14, 15–24, ≥ 25), vigorous physical activity per week (none, <5 , ≥ 5 hours), parity (0, 1, 2, ≥ 3 births), menopausal status (pre-, post-, unknown), total energy (measured in kilocalories) (quintiles), percentage of calories from fat (quintiles), total saturated fat intake (in grams) (quintiles), frequency of fast

food consumption (<2/month, 2–3/month, 1/week, 2–3/week, 4–6/week, ≥ 7 /week), family income ($\leq \$25,000$, $\$25,001$ – $\$50,000$, $> \$50,000$, missing), the number of people supported by this income in the household (0, 1, 2, 3, 4, ≥ 5), and geographic region (Northeast, South, Midwest, West). Age, alcohol consumption, smoking status, physical activity, parity, menopausal status, and geographic region were treated as time-varying covariates. We performed tests for trend by including the summary racism variables in the model as ordinal variables.

Obese individuals report experiencing discrimination and mistreatment because of their weight (29,30). Therefore we performed subgroup analyses within categories of BMI. Additionally, we assessed whether the association between perceived racism and weight gain was modified by years of education, median coping score (<median score, $\geq$ median score), and geographic region. Formal Wald tests for interaction were performed using cross-product terms between each covariate and each summary racism variable (coded in its ordinal form).

We also assessed the relationship between perceived racism and the cumulative change in waist circumference from 1995 to 2005. For these analyses, 1,395 women were excluded who reported either improbable waist values (<18 inches or >65 inches) in 1995 or 2005 or demonstrated a greater than 20% change in waist-to-hip ratio between 1995 and 2005, leaving a total of 20,389 women.

RESULTS

In 1997, half of the study sample was under the age of 40. The median weight was 72.6 kg (range, 38.6–135.8 kg), and 31% of the women had a BMI that was ≥ 30 kg/m². Overall, 34% of women reported one or more experiences of everyday racism occurring at least one time per month, and 80% reported at least one major discriminatory event in their lifetime. As shown in Table 1, younger age, higher BMI, more years of education, current smoking, alcohol consumption, nulliparity, higher energy, fat, and fast food intake, and residing in the Midwest were associated with higher mean values of the summary everyday racism variable. Lifetime racism was positively associated with middle age (40–59 years), higher educational attainment, higher total energy, higher income, and residing in the West.

Perceived everyday racism was associated with higher mean 8-year weight change, as shown in Table 2. In model 1, which accounted for age only, the mean difference in weight change between the highest quartile (5.79 kg) and the lowest quartile (5.19 kg) was 0.60 kg (*p* value, test for ordinal trend: <0.0001). Controlling for all covariates with model 2 reduced the mean difference to 0.56 kg (*p* value, test for ordinal trend: <0.0001). For lifetime racism, after accounting for age only, women who reported “yes” to the occurrence of racism in all three events (job, housing, by police) had higher mean weight change, 0.64 kg, than women who reported no events (*p* value, test for ordinal trend: 0.0009). The difference in mean weight change controlling for all covariates, was 0.48 kg (*p* value, test for ordinal trend = 0.0022).

Table 3 shows the associations between perceived racism and weight change within subgroups of BMI, education, coping, and geographic region. Estimates are adjusted for all covariates. For everyday racism, an association between higher perceived racism and greater weight change was present at all levels of BMI, including the leanest women (BMI <25 kg/m²), and at each level of education, coping, and geographic region. For lifetime racism, weight change was generally greater among women who reported the occurrence of all three types of events within all categories of BMI, education, coping, and geographic region. Among the leanest women, the difference in mean weight change between women reporting “no to all” and those reporting “yes to all” was 0.86 kg (*p* value, test for ordinal trend 0.0089).

Results on perceived racism and mean cumulative change in waist circumference are given in Table 4. For everyday racism, the increase in waist circumference was greatest among women in the third quartile. For lifetime racism, the multivariate adjusted models showed the increase in waist circumference to be greatest among women reporting “yes to all”. The addition of BMI into the model did not appreciably change the results for either variable. The p values for tests for ordinal trend were below 0.05 for the everyday racism variable, but not for the lifetime racism variable.

DISCUSSION

To our knowledge, this is the first study to prospectively examine self-reported perceptions of racism in relation to changes in weight and waist circumference. We observed a positive association between perceived racism and weight gain. The association was similar for everyday racism and lifetime racism and was present within all levels of BMI, education, coping, and geographic region. Change in waist circumference was also associated with perceived racism. Because the first report of waist circumference was elicited 2 years before reports of perceived racism, the temporality of the association is not established.

Three studies conducted in the Caribbean found associations of internalized racism, defined as the extent to which blacks identify with racial stereotypes of blacks, with BMI and waist circumference. (8–20). Self-reported internalized racism was associated with BMI and waist circumference in a sample of 129 women, aged 20–55, residing in Barbados (18). Self-reported internalized racism was positively associated with waist circumference among 244 black women in Dominica (19), and a similar relationship among 172 black girls, aged 14–16, was found in Barbados (20). Within the United States, self-reported experiences of racial discrimination were associated with BMI in a national sample of 1,956 Asian Americans (21). In contrast, there was an inverse association between higher rates of perceived racism, measured using the Telephone-Administered Perceived Racism Scale (31), and technician-measured waist-hip ratio in a study of 476 African American women (22). Each study was cross-sectional and sample sizes were limited. The three Caribbean studies (18–20) used the Nadanolitization Scale (32) to measure internalized racism. This instrument addresses the relative racial homogeneity of most Caribbean countries where overt experiences of racism are not a part of the daily experience of most Afro-Caribbean people as they can be for African Americans (19).

Activation of the central sympathetic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis comprises the major stress response pathway in humans. The HPA axis, via corticotropin-releasing hormone, stimulates adrenocorticotrophic hormone production and thereby cortisol secretion (33). Cortisol activates lipoprotein lipase, which regulates lipid accumulation in adipocytes, increasing fat retention, particularly in the abdominal region due to the high density of cortisol receptors located there (13,14).

Animal and human data suggest that stressors can lead to weight gain. Rats exposed to physical stressors, such as tail pinch, brief restraint, and handling, increased their food intake (7) and Syrian hamsters exposed to either social defeat or foot shock stress had increased weight gain (8). Psychosocial stress, including low income status, has been associated with increased food intake and weight gain among both men and women (9–11). In both animal and human studies, stress-driven eaters were found to prefer foodstuff rich in fats and high in palatability, and it is hypothesized that the consumption of larger, energy-dense meals (“comfort food”) is an adaptive coping mechanism in response to stress related secretion of glucocorticoids (11,34, 35). Our data support this observation as mean scores of everyday racism were positively associated with frequency of consuming fast food (see Table 1).

Obese individuals experience discrimination in many settings (29,30). To examine whether the observed associations between racism and weight change were confounded by weight discrimination, we conducted analyses within levels of BMI. The association was present at all levels of BMI and, notably, among the leaner women ($\text{BMI} < 25 \text{ kg/m}^2$) for whom there was little chance of experiencing discrimination due to their weight.

Individual evaluation and coping in response to an event is what determines whether a psychological stress response follows the event (36). Coping was found to influence weight control behaviors in a study of perceived stress and coping in relation to BMI among 178 premenopausal African American women (37). Specifically, normal-weight women were more likely to use confrontive coping (“tried to change the situation”), while overweight and obese women were more likely to use evasive coping (“put off facing the problem”) (37,38). In the present analysis there was no statistically significant interaction between racism and coping, but women with higher coping skills had lower absolute weight gain over the 8-year period.

The association between weight gain and perceived everyday racism was present within all categories of geographic region, with statistically significant trends within all regions except for the Midwest. Lifetime racism was also associated with weight gain in all geographic regions, but only the Northeast showed a statistically significant trend.

Strengths of the present study include its prospective design. Perceived racism was reported before changes in weight, establishing the temporal sequence between exposure and outcome and eliminating the possibility of recall bias. An additional strength is the large sample size and therefore high statistical power. We controlled for important potential confounding factors, including age, education, alcohol consumption, smoking, physical activity, parity, menopausal status, diet, household income, number of people in the household, and geographic region. The proportion of women successfully followed was high, lessening the impact of selective losses.

We relied on self-reported weight and waist circumference. Results from a validation study of BWHHS participants showed strong correlations between self-reported and measured anthropometric variables (27). Random errors in reporting or systematic underreporting of weight by the heavier women would have diluted associations with weight change. Women weighing less than 80 pounds or more than 300 pounds were excluded to avoid distortion of results by a relatively small number of women with extreme weight values.

We used waist circumference to measure central adiposity (39,40). Three previous smaller studies have observed positive associations between internalized racism and waist circumference (18–20), whereas another observed an inverse relationship between self-reported experiences of racism and waist-hip ratio (22). In the current analysis, the relationship between racism and change in waist circumference was less clear than that with weight change. As was the case with weight, random or systematic reporting errors of waist circumference could have affected our results. Data from our validation study indicated greatest measurement error was associated with waist circumference (correlation coefficient = 0.75) (27). In addition, our assessment of changes in waist circumference involved only two time points, 1995 and 2005. Because the baseline measure of waist circumference was assessed before the racism measurement, the temporal relationship between perceived racism and change in waist circumference is not certain.

The measures of perceived racism used in the present study have been used previously (23, 24,27,41) and demonstrate high reproducibility both within our cohort (24) and in other studies (21,23). The results of factor analysis suggest that these questions adequately capture the underlying constructs of “everyday” and “lifetime” experiences of racism (24). The high prevalence of reported perceived discrimination in our cohort is consistent with other studies that have measured perceived racism (21–23). Because of the prospective collection of data,

any error in the reporting of racial discrimination is likely to be random, which will generally result in an underestimation of the association.

The BWHS is not a representative sample of U.S. black women, and participants have higher educational levels than black women nationally (42). However, the association between racism and weight gain was present within all levels of BMI, education, and geographic region, suggesting that our results might apply to a larger population of U.S. black women.

In conclusion, we found that self-reported perceptions of racial discrimination are positively associated with higher weight gain in U.S. black women. These results add to the body of evidence that experiences of racism may contribute to the excess burden of obesity observed in U.S. black women (18–22) and underscore the public health importance of continuing antidiscrimination efforts in this country and worldwide.

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Selected Abbreviations and Acronyms

BMI, body mass index; BWHS, Black Women's Health Study; HPA, hypothalamic-pituitary-adrenal.

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TABLE 1

Mean summary racism values in relation to selected characteristics of the Black Women's Health Study participants ($N = 43,103$)

	No. of women	Racism summary variables	
		Everyday racism Mean score (SD) [*]	Lifetime racism Mean score (SD) [†]
Age (yr), 1997			
<30	6,942	2.29 (0.81)	0.33 (0.31)
30–39	14,571	2.20 (0.81)	0.38 (0.32)
40–49	13,409	2.13 (0.80)	0.42 (0.34)
50–59	5,870	2.00 (0.77)	0.42 (0.34)
≥60	2,311	1.73 (0.63)	0.35 (0.32)
Body mass index (kg/m ²), 1997			
<25	15,274	2.10 (0.78)	0.38 (0.33)
25–29	14,290	2.13 (0.80)	0.39 (0.33)
≥30	13,539	2.20 (0.84)	0.40 (0.33)
Education (yr), 1995			
≤12	7,525	2.05 (0.81)	0.32 (0.32)
13–15	15,481	2.17 (0.83)	0.39 (0.33)
≥16	20,097	2.15 (0.78)	0.41 (0.33)
Smoking status, 1997			
Current	6,815	2.19 (0.87)	0.41 (0.33)
Past	8,382	2.12 (0.82)	0.41 (0.34)
Never	27,902	2.10 (0.78)	0.37 (0.32)
Alcohol consumption, 1997			
Current	11,751	2.17 (0.82)	0.40 (0.33)
Past	9,518	2.19 (0.84)	0.41 (0.34)
Never	21,595	2.10 (0.78)	0.37 (0.32)
Vigorous activity (hr/wk), 1997			
<1	18,820	2.10 (0.80)	0.37 (0.33)
1–4	19,518	2.18 (0.80)	0.40 (0.33)
≥5	3,904	2.19 (0.83)	0.41 (0.33)
Parity, 1995			
No children	15,798	2.20 (0.81)	0.37 (0.32)
1 child	9,473	2.14 (0.79)	0.40 (0.33)
2 children	9,734	2.10 (0.80)	0.40 (0.33)
≥3 children	8,058	2.07 (0.80)	0.41 (0.34)
Menopausal status, 1997			
Menopausal	11,680	2.03 (0.80)	0.41 (0.33)
Premenopausal	31,139	2.18 (0.80)	0.38 (0.33)
Total energy, 1995			
Quintile 1	8,445	2.01 (0.74)	0.36 (0.32)
Quintile 2	8,453	2.08 (0.76)	0.38 (0.32)

		Racism summary variables	
		Everyday racism Mean score (SD) [*]	Lifetime racism Mean score (SD) [†]
	No. of women		
Quintile 3	8,452	2.13 (0.80)	0.39 (0.33)
Quintile 4	8,444	2.19 (0.82)	0.40 (0.33)
Quintile 5	8,455	2.30 (0.87)	0.43 (0.34)
Percentage fat, 1995			
Quintile 1	8,354	2.11 (0.82)	0.39 (0.33)
Quintile 2	8,359	2.13 (0.79)	0.39 (0.33)
Quintile 3	8,359	2.15 (0.80)	0.40 (0.33)
Quintile 4	8,364	2.16 (0.80)	0.39 (0.33)
Quintile 5	8,365	2.16 (0.81)	0.39 (0.33)
Fast food, 1995			
<2/mo	9,169	2.00 (0.78)	0.38 (0.33)
2–3/mo	8,828	2.10 (0.78)	0.40 (0.33)
1/wk	10,681	2.16 (0.79)	0.39 (0.33)
2–3/wk	8,715	2.20 (0.81)	0.39 (0.33)
4–6/wk	3,047	2.27 (0.86)	0.39 (0.33)
≥7/wk	2,672	2.33 (0.88)	0.40 (0.33)
Total saturated fat, 1995			
Quintile 1	7,978	2.02 (0.76)	0.37 (0.33)
Quintile 2	7,985	2.08 (0.77)	0.38 (0.32)
Quintile 3	7,982	2.12 (0.78)	0.38 (0.32)
Quintile 4	7,979	2.17 (0.80)	0.39 (0.33)
Quintile 5	7,975	2.25 (0.84)	0.41 (0.33)
Household income, 2003			
<\$25,000	3,980	2.15 (0.87)	0.37 (0.34)
\$35,000–\$50,000	10,360	2.15 (0.81)	0.37 (0.32)
>\$50,000	18,834	2.14 (0.77)	0.41 (0.33)
Geographic region, 1997			
Northeast	11,326	2.13 (0.81)	0.39 (0.33)
South	13,652	2.13 (0.79)	0.36 (0.32)
Midwest	9,926	2.16 (0.80)	0.40 (0.33)
West	8,106	2.15 (0.83)	0.42 (0.34)

SD = standard deviation.

^{*} Range: 1.0–5.0.

[†] Range: 0–1.0.

weight change (1997–2005) according to summary racism variables (N = 43,103)

Summary everyday racism				Summary lifetime racism						
Quartile				p for ordinal trend	No to all (n = 13,106)	Yes to one (n = 14,415)	Yes to two (n = 10,736)	Yes to all (n = 4,846)	Difference [†]	p for ordinal trend
2 (n = 12,177)	3 (n = 12,233)	4 (n = 10,694)	Difference [*]							
5.30 (5.07–5.53)	5.30 (5.12–5.48)	5.79 (5.45–6.13)	0.60	<.0001	5.40 (5.24–5.56)	5.56 (5.32–5.80)	5.61 (5.36–5.92)	6.04 (5.68–6.40)	0.64	0.0009
5.21 (4.97–5.45)	5.20 (5.15–5.25)	5.67 (5.58–5.76)	0.56	<.0001	5.26 (4.69–5.83)	5.43 (5.17–5.69)	5.42 (5.14–5.70)	5.74 (5.37–6.11)	0.48	0.0022

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el 2: adjusted for age, education, smoking, alcohol consumption, vigorous physical activity, parity, menopausal status, fast food consumption, total energy intake, household income, number of people in the household, and geographic region.

quartile 1.

o to all.

total saturated fat, total energy intake, percentage of dietary fat, total saturated fat, household income, and number of people in the household.

* Difference between quartile 4 and quartile 1.

† Difference between Yes to all and No to all.

‡ Adjusted for age, education, smoking, alcohol consumption, vigorous physical activity, parity, menopausal status, fast food consumption, total energy intake, percentage of dietary fat, total saturated fat, household income, and number of people in the household.

§ Adjusted for all covariates excluding education.

|| Adjusted for all covariates excluding geographic region.

TABLE 4
Five 10-year waist change (cm) (1995–2005) according to summary racism variables (N = 20,389)

Everyday racism				Lifetime racism						
Quartiles										
2 (n = 5,750)	3 (n = 5,995)	4 (n = 5,005)	Difference *	p for ordinal trend	No to all (n = 5,922)	Yes to one (n = 6,833)	Yes to two (n = 5,228)	Yes to all (n = 2,406)	Difference	p for ordinal trend
6.31 (5.96–6.67)	6.48 (6.20–6.77)	6.16 (5.63–6.69)	−0.03	0.013	6.61 (6.33–6.89)	6.88 (6.50–7.26)	6.90 (6.50–7.31)	6.85 (6.30–7.39)	0.24	0.24
6.32 (5.95–6.69)	6.48 (6.18–6.78)	6.24 (5.69–6.80)	0.06	0.0099	6.69 (6.04–7.34)	6.85 (6.45–7.25)	6.81 (6.39–7.24)	6.82 (6.25–7.40)	0.13	0.60
6.00 (5.63–6.37)	6.19 (5.89–6.49)	5.95 (5.39–6.50)	0.10	0.0019	6.47 (5.81–7.12)	6.62 (6.22–7.02)	6.59 (6.17–7.01)	6.63 (6.05–7.20)	0.16	0.55

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