Cardiovascular Disease and Perceived Weight, Racial, and Gender Discrimination in U.S. Adults

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Abstract

Objective—To date, most research on perceived discrimination and cardiovascular disease (CVD) has examined racial discrimination although other forms of discrimination may also impact physical and mental health. The current study investigated the relationship between three forms of discrimination (weight, race, and gender) and 3-year incidence of CVD in a large national sample of U.S. adults.

Methods—26,992 adults (55.5% women) who participated in the 2001–2002 and 2004–2005 National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) were included in this study. Multiple logistic regression analyses were used to calculate odds ratios (OR) and 95% confidence intervals (CI) for three forms of perceived discrimination (simultaneously included in equations after adjusting for relevant potential confounds) for predicting CVD incidence at Wave 2.

Results—Perceived weight and racial discrimination were associated with significantly greater likelihood of reporting myocardial infarction (OR=2.56 [95% CI=1.31–4.98], OR=1.84 [95% CI=1.19–2.84], respectively) and minor heart conditions (OR=1.48 [95% CI=1.11–1.98], OR=1.41 [95% CI=1.18–1.70], respectively). Perceived racial discrimination was also significantly associated with greater likelihood of reporting arteriosclerosis (OR=1.61 [95% CI=1.11–2.34]). Odds ratios for diagnoses of arteriosclerosis, myocardial infarction, and other minor heart disease were largest for individuals reporting multiple forms of discrimination.

Conclusions—Adults who experience weight and racial discrimination, and especially multiple forms of discrimination, may be at heightened risk for CVD. Perceived discrimination may be important to consider during assessment of life stressors by health providers. Future research

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should address the mechanisms that link discrimination and CVD to assist public health and policy efforts to reduce discrimination.

Keywords

Perceived discrimination; cardiovascular disease; weight discrimination; racial discrimination; gender discrimination

1. Introduction

Despite recent declines in mortality associated with cardiovascular disease (CVD), CVD still accounts for approximately 30% of all-cause deaths [1]. This indicates the need to further our understanding of malleable risk factors in order to inform continued refinements in prevention and intervention efforts for reducing CVD mortality [2]. Psychosocial stress has been increasingly studied as an important malleable risk factor for CVD. In addition to causing dysregulation in stress responses that contribute to CVD pathology and events, psychosocial stress increases unhealthy lifestyle behaviors that are risk factors for CVD, such as smoking, physical inactivity, and excessive alcohol intake [3]. European guidelines for CVD prevention emphasize the importance of evaluating psychological stress from work, family, social isolation, negative emotions, and low socioeconomic status as part of clinical assessment [4].

Perceived discrimination is increasingly recognized as a psychosocial stressor with potentially profound impacts on mental and physical health [5, 6]. Among different forms of discrimination, racial discrimination has been the most extensively studied in relation to possible clinical and public health implications, including CVD [6]. For example, although findings are somewhat mixed, a number of studies have reported significant associations between perceived racial discrimination and elevated risk for hypertension, particularly among African Americans [7–13]. Perceived racial discrimination was also associated with severe coronary artery obstruction in African Americans but not in White veterans [14]. However, Everson-Rose et al. [8] reported that while unfair treatment in general was significantly associated with incident CVD, additional analyses of unfair treatment experiences, specifically attributed to race, revealed no significant associations. Albert et al. [15] also reported no significant association between racial discrimination and CVD risk variables (coronary calcium, aortic plaque area and wall thickness, and C-reactive protein [CRP]) among African Americans and Hispanics after adjusting for other traditional risk factors for CVD and medication use.

Gender discrimination is another form of discrimination that has increasingly been the focus of research [6]. Most research on gender discrimination and health has focused on psychological health in women and sex differences in frequency, perception, and sequelae [16–19]. However, the potential effects of perceived gender discrimination on physical health, including CVD, have received relatively little attention. Women of midlife age who experienced three or more gender discrimination incidences had significantly increased risk for reporting at least one physical health condition; this association, however, became non-significant after adjusting for BMI, income, race/ethnicity, and perceived racial

discrimination [20]. One study reported that gender discrimination may be associated with increased risk for hypertension, particularly among racial minority groups [21].

Compared with race/ethnic or gender discrimination, perceived weight discrimination is a relatively new topic of research. Yet, emerging evidence suggests the potentially negative impact weight discrimination can have on health. A national survey of U.S. midlife adults found that weight discrimination was the third most prevalent form of discrimination reported by women and the fourth most prevalent form reported by men [22]. Perceived weight discrimination has been associated with elevated risk for various psychiatric disorders [23] and all-cause mortality [24] above and beyond the effects of body mass index (BMI). Individuals reporting perceived weight discrimination also showed significantly elevated level of CRP [23], a CVD risk indicator. Perceived weight discrimination has also been associated with increased risk for a variety of medical diagnoses, including diabetes and certain forms of CVD among overweight and obese adults in the U.S. [25].

Overall, particularly for racial and gender discrimination, the majority of previous research on the relationship between perceived discrimination and CVD has focused on hypertension. Thus, less is known about the relationship between perceived discrimination and other forms of CVD. In addition, while some studies have adjusted for other forms of discrimination when exploring associations between perceived discrimination and health (e.g., adjusting for report of gender discrimination when testing the relationship between racial discrimination and physical conditions [20]), no study has compared the strength of association between CVD and different forms of perceived discrimination. A meta-analysis by Schmitt and colleagues [5] concluded that the association between perceived discrimination and psychological well-being was weaker for racial and gender discrimination relative to stigma based on mental health, weight, medical condition, or disability. This suggests that different forms and combinations of discrimination might be differentially associated with risk for CVD. Thus, further research with larger and representative epidemiological samples that assesses for specific attributions and forms of perceived discrimination is needed to disentangle potential associations with CVD.

Research has also suggested that cumulative exposure to discrimination over time, rather than single or isolated exposures, may better predict cardiovascular health outcomes [9, 26]. For example, cumulative exposure to unfair treatment (calculated as the average of unfair treatment experiences assessed at six time points) over the course of 10 years has been linked with subclinical CVD in middle-aged Caucasian women [26]. Similarly, Everson-Rose et al. [27] found that perceived discrimination in multiple domains (defined as lifetime experiences of unfair treatment with respect to employment, housing, education, police, and neighbor interactions) increased significantly the risk for incidence of cardiovascular events over the course of approximately 10 years. In addition to repeated chronic experience with one form of discrimination, cumulative exposure can also be conceptualized as experiences with multiple forms of discrimination. An epidemiological study that compared prevalence of different forms of discrimination found that 46% of U.S. adults endorsed experiencing one form of discrimination in their lifetime and 18% endorsed experiencing more than one form of discrimination [22]. As in repeated exposure to one form of discrimination, three or more experiences with racial and gender discrimination were associated with elevated risk

for reporting at least one chronic medical condition. Although CVD was one of the disease conditions that was included in this study, the study did not examine the cumulative effects of perceived discrimination on CVD specifically. Thus, the association between experiencing multiple forms of discrimination and CVD risk is unknown.

The present study aimed to examine and compare the associations between different forms of perceived discrimination, alone and in combination, with CVD risk using the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a large epidemiological survey of U.S. adults over 18 years old. Three common specific forms of discrimination were included: race, gender, and weight. Following a meta-analysis study reporting stronger associations between discrimination due to controllable traits and psychological well-being [5], it was hypothesized that perceived weight discrimination would be associated with higher likelihood of CVD than perceived racial or gender discrimination. We also examined whether the number of different forms of perceived discrimination reported by individuals for the past 12 months was associated with the likelihood of reporting CVD diagnoses.

2. Methods

2.1. Sample

The NESARC Wave 1 and Wave 2 surveys were U.S. household epidemiological surveys that were conducted by the National Institute on Alcoholism and Alcohol Abuse (NIAAA.). Two data collection waves were performed 3 years apart. The NESARC 2001–2002 Wave 1 interview included 43,093 non-institutionalized civilians aged 18 and older who were randomly selected from a roster of individuals living in each household [28]. During the 2004–2005 Wave 2 interview, 34,653 out of all eligible individuals were re-interviewed [see, 28, 29, for the details about the NESARC Wave 1 and Wave 2 Studies]. Individuals were excluded if they had missing weight information in either Wave 1 or Wave 2 interview, missing height information in both Wave 1 and Wave 2 ($n = 1,228$), or if they did not answer questions regarding perceived weight, racial, or gender discriminations ($n = 6433$). The resulting total sample for the present study comprised 26,992 individuals.

2.2. Measures

2.2.1. Perceived Discrimination Questions—The NESARC Wave 2 interview included assessment of perceived experiences with discrimination due to various attributions, including weight, race/ethnicity, and gender. The questions were developed based on the Experiences with Discrimination scales [30]. Test-retest reliability (intra-class correlation coefficient) for perceived weight, racial, and gender discrimination was 0.79, 0.68, 0.62, respectively, and internal consistency (Cronbach's alpha) was 0.75, 0.74, and 0.72 [31].

2.2.1.1. Perceived Weight Discrimination: The NESARC Wave 2 interview included five domains of perceived discrimination that individuals experienced and attributed to his/her weight during the past year: 1) Obtaining health care or health insurance; 2) How you were treated when you got care; 3) Public settings such as on streets, in restaurants, stores, and

public transportation); 4) Obtaining a job, on the job, or getting admitted to school or training program; and 5) In any other situation such as in courts, by police, and obtaining housing. For all questions, response options were: 1= Never, 2 = Almost never, 3 = Sometimes, 4 = Fairly often, and 5 = Very often. Based on preliminary analysis of response frequency, respondents were categorized as reporting perceived weight discrimination if they responded "Sometimes," "Fairly often," or "Very often" in any domain of discrimination, which is consistent with previous studies [32, 33].

2.2.1.2. Perceived Racial Discrimination: The questions included the following six domains: 1) Obtaining health care or health insurance; 2) How you were treated when you got care; 3) Public settings such as on streets, in restaurants, stores, and public transportation); 4) In any other situation such as obtaining a job, on the job, getting admitted to school/training program, in courts, by police, and obtaining housing; 5) Called a racist name; and 6) Made fun of, picked on, pushed, shoved, hit or threatened with harm. For all questions, response options were: 1= Never, 2 = Almost never, 3 = Sometimes, 4 = Fairly often, and 5 = Very often. These six questions focused on the past year. Respondents who identified themselves as Hispanic/Latino were asked about discrimination experiences specifically due to their Hispanic/Latino origin. Respondents with other racial/ethnic origins were asked the same questions, but questions were phrased as "because of your race/ethnicity". Consistent with perceived weight discrimination, regardless of Hispanic/Latino or other race/ethnicity, respondents were categorized as reporting perceived racial discrimination if they responded "Sometimes," "Fairly often," or "Very often" in any one domain of discrimination.

2.2.1.3. Perceived Gender Discrimination: The questions included the following five domains: 1) Obtaining health care or health insurance; 2) How you were treated when you got care; 3) Public settings such as on streets, in restaurants, stores, and public transportation); 4) In any other situation such as obtaining a job, on the job, getting admitted to school/training program, in courts, by police, and obtaining housing; and 5) Called a sexist name. For all questions, response options were: 1= Never, 2 = Almost never, 3 = Sometimes, 4 = Fairly often, and 5 = Very often. Similar to weight and racial discrimination, the questions focused on the past year, and respondents were categorized as reporting perceived gender discrimination if they responded "Sometimes," "Fairly often," or "Very often."

2.2.4. Cardiovascular Conditions—The NESARC Wave 1 and Wave 2 interviews included questions about whether respondents received or were aware of their doctor's diagnoses regarding arteriosclerosis, hypertension, myocardial infarction, and all other heart diseases (including angina pectoris, tachycardia, and other forms) (1 = Yes, 0 = No). Incidence of each cardiovascular condition was calculated as the number of individuals who reported the diagnosis during Wave 2 over the number of individuals who reported absence of the diagnosis during Wave 1.

2.2.5. Co-variates

**2.2.5.1. Socio-demographic variable:** Sociodemographic information obtained during Wave 2 interviews considered as covariates in the analyses included: age, gender, race/ethnicity (white: Yes = 1, No = 0, black: Yes = 1, No = 0, Hispanic/Latino: Yes = 1, No = 0), income (< $10,000, $10,000–$24,999, $25,000–$50,000, $50,000), education (less than high school, high school or GED, more than high school), marital status (married: Yes = 1, No = 0).

2.2.5.2. Cigarette and alcohol use: The NESARC Wave 2 interviews included questions regarding lifetime smoking status (never, former, and current) and patterns of alcohol consumption in the 12 months prior to the Wave 2 interviews. For the quantity of alcohol consumption, respondents provided the average number of drinks they usually consumed on the days they drank in the past 12 months. For the frequency of alcohol consumption, the response options and the estimated number of days of alcohol consumption in the past 12 months for each response option (in parentheses) were: Every day (365 days); Nearly every day (260 days); 3 to 4 times a week (182 days); 2 times a week (104 days); Once a week (52 days); 2 to 3 times a month (30 days), Once a month (12 days), 7 to 11 times in the last year (9 days), 3 to 6 times in the last year (4.5 days), 1 or 2 times in the last year (1.5 days) [34]. We included both variables in the analyses as covariates since the pattern of alcohol consumption is often defined by both frequency and quantity of alcohol use [35, 36].

2.2.5.3. Major depressive disorder: In addition to DSM-IV alcohol and drug use disorders, the NESARC Wave 2 survey also included DSM-IV diagnoses of other psychiatric disorders, including major depressive disorder (MDD). The MDD diagnosis excluded substance-induced disorder or depressive episodes due to general health conditions.

2.2.5.4. Body Mass Index (BMI): BMI at Wave 2 was calculated as self-reported weight [lb]/self-reported height [in2] × 703.

2.2.5.5. Stressful life events: The Wave 2 survey asked whether the following 14 stressful events occurred in the past 12 months (1 = Yes, 0 = No): 1) Moved or anyone new came to live with the respondent; 2) Fired or laid off from a job; 3) Unemployed and looking for a job longer than a month; 4) Have had trouble with a boss or coworker; 5) Changed jobs, job responsibilities or work hours; 6) Got separated or divorced or broke off a steady relationship; 7) Have had serious problems with a neighbor, friend, or relative; 8) Have experienced a major financial crisis, declared bankruptcy or have been unable to pay bills on time more than once; 9) Had serious trouble with the police or the law; 10) Something was stolen that the respondent was carrying or from inside or outside the home; 11) Someone intentionally damaged or destroyed property owned by the respondent or someone else in the house; 12) Family members or close friends have died; 13) Family members or close friends physically assaulted, attacked or mugged; 14) Family members or close friends have serious trouble with the police or the law. A total number of stressful life events were calculated.

2.3. Statistical Analysis

Statistical Analysis System (SAS) (release 9.4, 2002–2012, SAS Institute, Cary, NC) was used to complete all analyses. Chi-square tests were used to compare the 3-year incidence of four cardiovascular conditions by reports of perceived weight, race, and gender discrimination. Two separate multiple logistic regression analyses were performed to calculate odds ratios (ORs) and 95% confidence intervals (CIs) of reporting diagnosis of each cardiovascular condition at Wave 2 interview by those who reported perceived discrimination, relative to those who did not report perceived discrimination. In the first model, we adjusted for socio-demographic variables, including age, gender, income, education, and race/ethnicity. In the second model, BMI, lifetime cigarette use (lifetime non-smoker, past smoker, current smoker), alcohol use (average quantity and frequency of use in the past year), a psychiatric diagnosis of major depressive disorder, and stressful life events in the past 12 months (all collected at Wave 2) were additionally adjusted. All three forms of discrimination were simultaneously entered in the model to allow comparison of the strength of specific associations with cardiovascular conditions.

We also examined whether experiencing multiple forms of discrimination was associated with increased likelihood of developing cardiovascular diseases. Multiple logistic regression analyses were conducted to calculate ORs and 95% CIs in two steps: (1) adjusting for socio-demographic variables only, and (2) adjusting additionally for BMI, lifetime cigarette use, alcohol use, a MDD diagnosis , and stressful life events in the past 12 months.

3. Results

Table 1 summarizes the sample characteristics. Table 2 shows that a significantly greater proportion of individuals who reported perceived weight discrimination reported diagnoses of hypertension and minor heart conditions than those who did not perceive weight discrimination. A significantly greater proportion of individuals who reported perceived racial discrimination reported minor heart conditions than those who did not perceive racial discrimination. The proportion of individuals reporting any cardiovascular conditions did not differ significant by perceived gender discrimination.

3.1. Likelihood of Diagnosis for Cardiovascular Conditions

Table 3 summarizes the results of the multiple logistic regression analyses. After adjusting for socio-demographic variables, perceived weight discrimination was associated with a significantly greater likelihood of reporting hypertension. Perceived weight and racial discriminations were associated with a significantly greater likelihood of reporting myocardial infarction. All three forms of perceived discrimination were associated with a significantly greater likelihood of reporting minor heart conditions. When further adjusting for BMI, smoking history, current alcohol use, major depressive disorder, and stressful life events, perceived weight and racial discrimination were associated with a significantly greater likelihood of reporting myocardial infarction and minor heart conditions and perceived racial discrimination was associated with a significantly greater likelihood of diagnosis of arteriosclerosis. No significant associations were observed between perceived gender discrimination and any of the cardiovascular conditions.

3.2. Cumulative Effects of Experiencing Multiple Forms of Discriminations

Table 4 shows that, after adjusting for socio-demographic variables, reporting two forms of perceived discrimination was associated with a significantly greater likelihood of reporting all the cardiovascular conditions, relative to reporting no form of perceived discrimination. Reporting one form of perceived discrimination was also associated with a significantly greater likelihood of arteriosclerosis, myocardial infarction, and minor heart conditions, relative to reporting no form of discrimination. Reporting two forms of perceived discrimination was associated with a greater likelihood of reporting hypertension and minor heart conditions, relative to reporting one form of perceived discrimination.

When adjusting further for BMI, smoking history, current alcohol use, MDD diagnosis, and stressful life events, reporting one or two forms of perceived discrimination was associated with a significantly greater likelihood of reporting arteriosclerosis, myocardial infarction, and minor heart conditions. There were no significant differences observed between participants reporting one or two forms of perceived discrimination.

4. Discussion

The present study examined the relationship between three forms of perceived discrimination (weight, race, and gender) and 3-year incidence of CVD (arteriosclerosis, hypertension, myocardial infarction, and minor heart conditions) in a large national sample of U.S. adults. Our findings suggest that adults who perceive weight and racial discrimination, and especially multiple forms of discrimination, may be at heightened risk for certain forms of CVD. Importantly, the heightened risk for CVD associated with perceived weight and racial discrimination was observed even after adjusting for socio-demographic factors and for several important relevant predictor variables, including smoking, alcohol use, depression, BMI, and stressful life events.

Our findings highlight the importance of weight-based discrimination. Across different cardiovascular conditions, perceived weight discrimination appeared to have stronger associations than did racial and gender discrimination. These findings are consistent with the Schmitt et al. [5] hypothesis that unfair treatment about observable but perhaps controllable features such as obesity may show stronger associations with negative sequelae. This finding is striking in light of the high prevalence rate of obesity among the U.S. [i.e., roughly 34.9% for adults over 20 years old; 37], and research findings that weight-based discrimination is as prevalent as racial discrimination, particularly among those with obesity and women [22]. Experimentally-manipulated perceived weight discrimination in a laboratory setting has been linked to increases in arterial blood pressure in women [38]. Our findings add important new empirical evidence that the association between perceived weight discrimination and CVD may be above and beyond the effects of high BMI and other known behavioral risk factors (such as smoking, alcohol, depression). More broadly, our findings suggest that weight-based discrimination may play an important role in heightened CVD risk in addition to representing a salient aspect of the psychosocial burden of obesity [39, 40].

We also found partial support for a dose-response relationship between CVD and the number of forms of discrimination that individuals may experience. Relative to reporting no discrimination, those who reported either only one form of discrimination or two or more forms of discrimination both showed significantly increased risk for arteriosclerosis, myocardial infarction, and other minor heart conditions. Even after adjusting for socio-demographic variables, reporting multiple forms of perceived discrimination was associated with significantly increased risk for hypertension and minor heart conditions, relative to reporting one form of discrimination. These findings are consistent with those from a previous study which found increased risk for reporting at least one physical condition among women in midlife who reported three or more discrimination experiences [20]. When further statistical adjustments were made for additional co-variates (BMI, smoking, alcohol use, depression, and stressful life events in the past 12 months), however, dose-response associations were no longer significant in our study, although the odds ratios were greater for those reporting multiple forms of discrimination, relative to those reporting one form of discrimination. This suggests that while the association with CVD is the strongest when experiencing multiple forms of discrimination, experiencing one form of discrimination may be enough to significantly elevate risk for CVD.

Our findings regarding a lack of significant association between perceived discrimination and hypertension add to the negative albeit mixed and debated literature regarding the potential role of different forms of discrimination in health disparities in hypertension [11, 13, 41–43]. A recent review of the literature concluded that ambulatory blood pressure was associated more consistently with perceived discrimination than with a diagnosis of hypertension or with resting blood pressure [10]. Methodological differences may also partially explain the mixed findings and our lack of significant findings; for example, the present study included a wider age range, was more ethically/racially diverse, and used different measures of discrimination than the previous studies.

We also note several limitations of the present study for context. NERSAC, a survey-based large epidemiological study, relied on self-report, including CVD diagnoses. NESARC also did not include data regarding current medication use and treatment history. Because perceived discrimination was assessed and analyzed cross-sectionally, the present study cannot speak to the causal relationship between perceived discrimination and CVD diagnoses or to the impact of repeated, chronic exposure to multiple forms of discrimination on cardiovascular health. Given that the timeframe of perceived discrimination was the past 12 months whereas the timeframe for CVD diagnoses was three years, diagnosis of CVD could have occurred prior to experiencing perceived discrimination. Along this line, it is also possible that individuals with CVD diagnoses may be more vulnerable to experiencing certain types of discrimination, such as obtaining insurance or medical care.

The study also has important implications for future research directions. Future research should attempt to replicate our findings and to extend them using prospective and experimental designs that might also probe for the causal relationship between perceived discrimination and CVD, as well as for mediators and mechanisms. For example, psychosocial stress has been recognized as a potential trigger for myocardial infarction, where it may be involved in vascular pathology in cardiovascular conditions that develop

over time [e.g., arteriosclerosis, angina pectoris; 3]. The relationship between perceived discrimination and health may be heterogeneous making research on potential moderators essential [7]. For example, the strengths of associations between perceived discrimination and physical or mental health may differ by gender or race [7, 20, 26, 44]. With regard to subthreshold CVD, cumulative unfair treatment was significantly associated among Caucasian women, but not observed for African-American, Hispanic-American, or Chinese-American women [26]. While majority of research on perceived weight discrimination has focused on individuals with overweight and obesity (i.e., given its positive correlations with BMI), perceived weight discrimination also has been reported by persons with lower BMIs [22].

In summary, our findings suggest that adults who perceive weight and racial discrimination, and especially multiple forms of discrimination, may be at heightened risk for certain forms of CVD. Our findings regarding the particular strength of associations between perceived weight discrimination and CVD adds to emerging literature regarding the negative health consequences associated with obesity-stigma [24]. Clinically, our findings suggest that perceived discrimination may be important to consider during assessment of life stressors by health providers. Importantly, anti-obesity attitudes are common across the weight spectrum, and persons with overweight/obesity frequently have negative attitudes about themselves [39, 40]. Our findings also highlight the need for improved training of health-care professionals around these issues [45], as well as public health and policy efforts to address and reduce discrimination, including but not limited to greater sensitivity regarding language [46].

Acknowledgments

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Highlights

- Perceived discrimination may be important cardiovascular disease (CVD) risk

- Strength of association was compared between weight, racial, and gender discrimination

- Perceived racial and weight discriminations were significantly associated with CVD

- Association was strongest for those reporting multiple forms of discrimination

- Perceived weight and racial discrimination should be assessed for prevention of CVD

Table 1

Sample Characteristics

Variables	Mean (SD)
Age	49.2 (16.4)
Female (%)	55.5
Race/ethnicity (%)	
Non-Hispanic white	57.5
Non-Hispanic black	20.0
Hispanic	18.9
Education (%)	
< High school	16.4
High School or GED	27.8
> High school	55.9
Income (%)	
< $10,000	8.2
$10,000–$24,999	22.0
$25,000–$50,000	28.5
$50,000	41.3
Report of perceived discrimination (%)	
Weight	2.7
Race	10.4
Gender	7.4
# of forms of perceived discrimination (%)	
0	83.9
1	12.3
2 or 3	3.8
BMI	29.2 (5.7)
% BMI < 25	21.0
% 25 BMI < 30	35.2
% BMI 30	43.8
Lifetime cigarette use (%)	
Never	51.4
Former	25.6
Current	23.1
Alcohol use	
Quantity (# of drinks per drinking day)	1.7 (3.2)
Frequency (# days in the past year)	50.9 (89.5)
Diagnosis of major depressive disorder (%)	1.3
Stressful life events	1.5 (1.7)

Notes. BMI = body mass index. Stressful life events included 14 major life events in the past 12 months (1 = Yes, 0 = No; score range = 0–14).

Table 2

Percentage (%) of individuals reporting new diagnosis of each medical condition at Wave 2 by report of perceived discrimination

	Weight	Race	Gender
Reported perceived discrimination			
Arteriosclerosis	1.5	1.4	1.3
Hypertension	18.2 ‡	13.6	13.3
Myocardial infarction	1.3	1.1	0.7
Other minor heart disease [1]	9.8 ‡	7.9 ‡	7.5
Reported no perceived discrimination			
Arteriosclerosis	1.6	1.6	1.6
Hypertension	14.6	14.8	14.8
Myocardial infarction	0.8	0.8	0.8
Other minor heart disease [1]	6.2	6.1	6.2

Notes.

[1] = other minor heart disease include angina pectoris, tachycardia, and other forms.

†, ‡ = a chi-square test indicates significantly different from individuals reporting no perceived discrimination at $p < .05$ and $p < .01$.

Table 3

Odds ratios (95% confidence intervals [CIs]) for reporting new diagnosis for each medical condition at Wave 2 by three types of discrimination

	Weight	Race	Gender
Adjusting for sociodemographic variables			
Arteriosclerosis	1.80 (0.92–3.54)	1.46 (0.50–2.24)	1.57 (0.93–2.64)
Hypertension	**1.96** (1.53–2.51)‡	1.05 (0.90–1.22)	1.08 (0.91–1.28)
Myocardial infarction	**3.00** (1.59–5.67) ‡	**1.97** (1.28–3.05) ‡	1.07 (0.59–1.96)
Other minor heart disease [1]	**2.08** (1.58–2.73) ‡	**1.51** (1.26–1.82) ‡	**1.28** (1.04–1.59) ‡
Adjusting for sociodemographic variables and other covariates [2]			
Arteriosclerosis	1.60 (0.83–3.09)	**1.61** (1.11–2.34) †	1.46 (0.93–2.31)
Hypertension	0.99 (0.76–1.29)	1.05 (0.90–1.22)	1.07 (0.90–1.28)
Myocardial infarction	**2.56** (1.31–4.98) ‡	**1.84** (1.19–2.84) ‡	0.94 (0.51–1.74)
Other minor heart disease [1]	**1.48** (1.11–1.98) ‡	**1.41** (1.18–1.70) ‡	1.17 (0.95–1.45)

Notes.

[1] = other minor heart disease include angina pectoris, tachycardia, and other forms;

[2] = other covariates include BMI, cigarette use, alcohol use, major depressive disorder, and stressful life events. Odds ratios (ORs) were calculated as no perceived discrimination as a reference group. Sociodemographic variables included were: age, gender, income, education, and race/ethnicity all reported at Wave 2.

†, ‡ = significant ORs at $p < .05$ and $p < .01$.

Table 4

Odds ratios (95% confidence intervals [CIs]) for reporting new diagnosis for each medical condition at Wave 2 by the number of form of discrimination in the past 12 months

	0. vs. 1	0 vs. 2	1 vs. 2
Adjusting for sociodemographic variables			
Arteriosclerosis	**1.85** (1.36–2.61) [‡]	**2.38** (1.41–4.01) [‡]	1.28 (0.73–2.28)
Hypertension	1.10 (0.97–1.25)	**1.55** (1.27–1.90) [‡]	**1.41** (1.13–1.76) [‡]
Myocardial infarction	**2.26** (1.57–3.27) [‡]	**2.86** (1.55–5.27) [‡]	1.26 (0.65–2.44)
All other heart disease [1]	**1.61** (1.39–1.87) [‡]	**2.19** (1.72–2.78) [‡]	**1.36** (1.04–1.77) [†]
Adjusting for sociodemographic variables and other covariates [2]			
Arteriosclerosis	**1.75** (1.29–2.39) [‡]	**2.11** (1.24–3.60) [‡]	1.21 (0.68–2.14)
Hypertension	1.00 (0.88–1.14)	1.19 (0.96–1.47)	1.18 (0.94–1.49)
Myocardial infarction	**2.04** (1.41–2.97) [‡]	**2.26** (1.21–4.21) [‡]	1.10 (0.57–2.15)
All other heart disease [1]	**1.42** (1.22–1.66) [‡]	**1.61** (1.26–2.07) [‡]	1.14 (0.87–1.49)

Notes.

[1] = other heart conditions include angina pectoris, tachycardia, and other forms;

[2] = other covariates include BMI, cigarette use, alcohol use, major depressive disorder, and stressful life events. Odds ratios (ORs) were calculated as no perceived discrimination as a reference group. Sociodemographic variables included were: age, gender, income, education, and race/ethnicity all reported at Wave 2.

[†], [‡] = significant ORs at $p < .05$ and $p < .01$.