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

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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 = 1228), 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