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Socioeconomic status discrimination is associated with poor sleep in African-Americans, but not Whites

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ABSTRACT

Rationale: Research on self-reported experiences of discrimination and health has grown in recent decades, but has largely focused on racial discrimination or overall mistreatment. Less is known about reports of discrimination on the basis of socioeconomic status (SES), despite the fact that SES is one of the most powerful social determinants of health.
Objective: We sought to examine the cross-sectional association between self-reported SES discrimination and subjective sleep quality, an emerging risk factor for disease. We further examined whether associations differed by race or SES.
Methods: We used logistic and linear regression to analyze data from a population-based cohort of 425 African-American and White middle-aged adults (67.5% female) in the Southeastern United States. SES discrimination was assessed with a modified Experiences of Discrimination Scale and poor subjective sleep quality was assessed with the Pittsburgh Sleep Quality Index.
Results: In logistic regression models adjusted for age, gender, and education, reports of SES discrimination were associated with poor sleep quality among African-Americans ($OR = 2.39$ 95%, $CI = 1.35, 4.24$), but not Whites ($OR = 1.03$, 95% $CI = 0.57, 1.87$), and the race × SES discrimination interaction was significant at $p = 0.04$. After additional adjustments for reports of racial and gender discrimination, other psychosocial stressors, body mass index and depressive symptoms, SES discrimination remained a significant predictor of poor sleep among African-Americans, but not Whites. In contrast to findings by race, SES discrimination and sleep associations did not significantly differ by SES.
Conclusion: Findings suggest that reports of SES discrimination may be an important risk factor for subjective sleep quality among African-Americans and support the need to consider the health impact of SES-related stressors in the context of race.

1. Introduction

In the United States (U.S.) there are substantial disparities in health (Feagin and Bennefield, 2014) that disproportionately impact African-Americans and persons of lower socioeconomic status (SES) (Adler and Newman, 2002). These disparities have led many to conclude that these groups may have different life experiences in comparison to others. Research suggests that discrimination, or "the practice of unfairly treating a person or group of people differently from other people or groups of people (Merriam-Webster, 2015)," may be a part of these differential life experiences (Sennett and Cobb, 1972). Self-reported experiences of discrimination are conceptualized as a form of psychosocial stress (Slopen and Williams, 2014) and have been associated with important and costly pre-clinical and clinical endpoints such as breast cancer (Taylor et al., 2007), depression (Schulz et al., 2006), cardiovascular disease (Lewis et al., 2014), asthma (Coogan et al., 2014), and obesity (Hunte and Williams, 2009; Lewis et al., 2011).

The majority of research on discrimination and health has focused on racial discrimination or overall mistreatment (Lewis et al., 2015), but other forms of discrimination, specifically discrimination on the basis of SES, may also be important to consider given the well-documented association between SES and

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health (Adler and Stewart, 2010). SES has been a consistently powerful determinant of health in U.S. society historically and may gain greater significance in future decades as income inequality increases (Congressional Budget Office, 2011).

However, SES is related to race (Braveman, 2005). In 2010, Whites earned twice as much in income and had accumulated six times as much wealth, on average, than their African-American counterparts (McKernan et al., 2013). Further, research suggests that SES factors may operate differentially in African-Americans compared to Whites, particularly in relation to health (Williams and Mohammed, 2009). In a study examining the association between race, education, and weight change in 2,019 African-American and White women from the Study of Women's Health Across the Nation (SWAN), educational attainment was associated with lower body mass index (BMI) as education level increased among White women, whereas in African-American women, the "protective" effect of educational attainment on BMI was not observed (Lewis et al., 2005). A more recent longitudinal study examining educational attainment and change in inflammation levels among 2,670 African-American and White young adults, aged 18–30 years, found that each additional year of education reported in Whites was associated with a 7-mg/dl lower increase in fibrinogen levels over the 15-year follow-up. However, educational attainment was not associated with a lower rate of increase in fibrinogen levels over time in African-Americans (Fuller-Rowell et al., 2015).

Results from these studies in addition to others (Braveman et al., 2014; LaVeist, 2005) suggest that the impact of SES processes on health may differ by race. However, most of this research has focused on actual SES indicators. Few studies have examined the effect of SES-related stressors, particularly SES discrimination, on health in the context of race. Research suggests that African-Americans may be more vulnerable to the health effects of SES-related stressors as compared to Whites, because they have access to fewer economic, cultural, and social resources to cope with stress from negative SES-related events (Hardaway and McLoyd, 2009; Keene et al., 2014).

Thus, the current study was designed to examine the independent effects of SES discrimination on sleep quality in a cohort of African-American and White middle-aged adults. To date, we are aware of only one other study that has examined the association between SES discrimination and any indicator of health. In a nationally representative sample of 1659 individuals in the United States, Ren, et al. (Ren et al., 1999) found independent associations between SES discrimination, racial discrimination and each of their three outcomes: depressive symptoms, general health status, and mental health status. However, their cohort was predominantly White (86.3%), and they did not control for important confounders (Hall et al., 2008; Slopen and Williams, 2014), including financial stress, overall stress, and gender discrimination.

Sleep quality, our outcome of interest, is an emerging risk factor for chronic disease, that has been associated with an increased risk of obesity (Buxton and Marcelli, 2010; Jean-Louis et al., 2014), stroke (Qureshi et al., 1997), diabetes (Ayas et al., 2003), cancer (Marshall et al., 2014), cardiovascular disease (Jackson et al., 2015), and mortality (Gallicchio and Kalesan, 2009). According to the Centers for Disease Control and Prevention (CDC), the lack of quality sleep has become a "public health epidemic (Centers for Disease Control and Prevention)." Across studies, African-Americans and lower SES individuals have poorer quality sleep than Whites and higher SES individuals, respectively (Chen et al., 2015; Patel et al., 2010; Petrov and Lichstein, 2015; Piccolo et al., 2013). Additionally, studies suggest that psychosocial stressors –including both racial and overall discrimination– may be a risk factor for adverse sleep outcomes (Lewis et al., 2013; Slopen and Williams, 2014; Thomas et al., 2006; Tomfohr et al., 2012; Vaughn et al., 2015). However, it is currently unknown whether discrimination based on SES is independently associated with sleep quality.

Based on previous research, we hypothesized that self-reported experiences of SES discrimination would be independently associated with worse subjective sleep quality. The need to examine discrimination within the "larger social context of the multiple stressful exposures within which it is embedded" (Williams and Mohammed, 2009) has been recommended in recent work (Lewis et al., 2015); thus, we examined whether this association was independent of other stressors (i.e. perceived stress), stressors related to socioeconomic status (i.e. financial stress) as well as other forms of discriminatory stress (i.e. both racial and gender discrimination).

2. Methods

2.1. Participants

Participants were a subset of 469 non-Hispanic African-American and White adults from the Morehouse & Emory Team up to Eliminate Cardiovascular Health Disparities (META-HEALTH) Study. The META-HEALTH study aimed to examine psychosocial, cultural, and biological correlates of cardiovascular health and was a two-stage cross-sectional study of randomly sampled African-American and White males and females ages 30–65. Participants were selected from four distinct Metropolitan Atlanta, GA counties, stratified by county median income to ensure the inclusion of an adequate representation of individuals from varying levels of SES backgrounds. During the first stage, from March 2006 to October 2009, a total of 3,391 participants were contacted using random digit dialing methodology and completed phone interviews. Of these, 469 participated in the second stage of the study, which included an extended interview (with sleep assessment) and a clinical exam. In total, 44 participants were excluded due to missing information on experiences of SES discrimination and/or subjective sleep quality. Our final analytic sample of 425 included 215 African-Americans and 210 Whites, and was 67.5% female. An additional 14 participants were excluded due to missing data on covariates during analyses. This study was approved by the Emory and Morehouse institutional review boards and all participants provided written informed consent.

2.2. Reports of discrimination

Experiences of SES-discrimination were measured using a previously modified version of the Experiences of Discrimination Scale (Krieger et al., 2005). Participants were asked if they had ever "been prevented from doing something", or "been hassled or made to feel inferior" because of their SES, in seven different settings: at school, getting a job, at work, getting housing, getting medical care, from the police or in the courts on the street or in a public setting. Two additional questionnaires asked about experiences of discrimination in the same seven scenarios, but inquired whether experiences could be attributed to race, or gender, respectively. The Experiences of Discrimination scale has been widely used in both African-American and White study populations and has demonstrated high levels of validity and reliability (Krieger et al., 2005). In the current cohort, discrimination scores were highly skewed, with most participants reporting no or only one experience of discrimination; thus, a dichotomous ever/never variable was created for each type of discrimination (Hunte and Williams, 2009).