Discrimination and sleep quality among older US adults: the mediating role of psychological distress

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ABSTRACT

Objective: To examine the association between everyday discrimination and sleep quality and identify mediating pathways between discrimination and sleep quality.
Design: Longitudinal.
Setting: Health and Retirement Study (HRS).
Participants: Participants (N = 9223, mean age 66.7 years, 12.8 years of education; 85% White, 12% African American, and 3% another race or ethnicity) who participated in 2006, 2008, 2010, and 2012.
Measurements: At each assessment, participants completed measures of everyday discrimination, lifetime discrimination, attributions of discrimination, depressive symptoms, anxiety symptoms, sleep quality, and non-restfulness.
Results: More experiences with everyday discrimination were associated with worse sleep quality (β = 0.048, SE = 0.009, P < .01). When psychological distress was added to this model, the direct effect was lower in both magnitude and significance (β = 0.029, SE = 0.011, P < .05), which indicated partial mediation. Psychological distress also fully mediated the relation between everyday discrimination and non-restfulness (direct effect: β = −0.003, SE = 0.010, ns). Individuals who experienced physical disability-based discrimination had worse sleep quality than those who did not experience this form of discrimination (β = 0.114, SE = 0.029, P < .01); psychological distress fully mediated this relation (direct effect: β = −0.025, SE = 0.031, ns). Among individuals with obesity, psychological distress fully mediated the relation between weight discrimination and sleep quality (direct effect: β = 0.036, SE = 0.025, ns), and partially mediated the relation between weight discrimination and non-restfulness (direct effect: β = 0.049, SE = 0.025, P < .05).
Conclusions: Everyday discrimination and discrimination based specifically on weight or a physical disability were associated with worse sleep quality. The findings suggest that psychological distress may be one pathway through which these experiences are associated with worse sleep.

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Sleep quality tends to decrease with age; about 50% of older adults experience chronic sleep difficulties.[1] Older adults tend to wake up more frequently during the night, remain awake for longer periods of time, and experience less total sleep time than younger adults.[2,3] Even among individuals classified as good sleepers, older adults experience worse sleep quality than their younger counterparts.[4] Although sleep quality declines with age, factors other than the aging process may contribute to poor sleep quality.[5,6] Past research suggests discrimination may be related to poor sleep quality among older adults.[7–12]

Perceived discrimination is associated with worse self-rated sleep quality, greater daytime sleepiness, and shorter sleep duration.[7–14] More specifically, everyday discrimination is associated with poorer subjective sleep and an increase in wakefulness.[10] Perceived racism is associated with sleep disturbance and greater daytime fatigue.[14] Major experiences of racial and non-racial discrimination are related to more sleep difficulties.[11] Although perceived discrimination is related to declines in sleep quality, it is unclear whether this relation explains declines in sleep quality among older adults. Perceived discrimination may be a salient risk factor for poor sleep quality among older adults because exposure to discriminatory experiences accumulates across the life course.[15] The bodies of older individuals hold a lifetime experience of discrimination[16,17] that may have an impact on

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sleep quality. Specific experiences of discrimination based on marginalized statuses such as age, weight, or gender are also salient for health outcomes among older adults.[18,19]

Not only is it important to examine the relation between perceived discrimination and sleep quality among older adults, it is also important to identify the mediating pathways between discrimination and sleep quality.[12] One pathway may be through psychological distress. Among older adults, psychological distress is a risk factor for poor sleep quality.[5] In addition, discrimination may increase psychological distress,[20] which may lead to declines in the quality of sleep.[21] Although research suggests that psychological distress mediates the relation between discrimination and sleep quality, some studies have found that this relation exists independent of depression.[12,13] Taken together, this research suggests that the associations between discrimination, psychological distress, and sleep quality are unclear. The current study's investigation into these relations may provide insight into why sleep quality declines in old age.

The present study examines the association between perceived discrimination and sleep quality among older adults. This study also examines the association between attributions for discrimination and sleep quality to determine how different types of discrimination impact sleep in an older population. Given the possible associations between psychological distress, sleep quality and discrimination, this study also examines psychological distress as a mediating pathway between everyday discrimination and sleep quality. Using the Health and Retirement Study, we test cross-sectional associations at baseline and then examine the predictive ability of discrimination on sleep quality while controlling for baseline sleep quality.

Methods

Participants

Participants were drawn from the Health and Retirement Study (HRS), a nationally representative longitudinal study of individuals aged 50 and older within the United States.[25] Participants are re-interviewed every 2 years. Starting in 2006, respondents participated in an enhanced face-to-face interview that included a psychosocial questionnaire.[26] About half of the participants completed this questionnaire in 2006 and the other half in 2008. We used the combined 2006 and 2008 assessments as baseline measures in our analysis, and combined 2010 and 2012 assessments as follow up measures. Respondents who did not complete the psychosocial leave-behind questionnaire in 2006 or 2008 were excluded from the sample. Across the 2006 to 2008 assessments, a total of 9223 participants completed all of the measures of interest. About 9% of the sample did not complete the follow-up (2010-2012) interview; 92% of these respondents were lost from the follow-up due to mortality. Compared to data at both time-points, participants who did not complete the follow-up were older ($M = 73.2$ [$SE = 0.76$] vs. 64.4 [$SE = 0.17$] years old; $F(1, 141.46) = 558.29$ $P < .001$) and less educated ($M = 12.07$ [$SE = 0.15$] vs. 13.19 [$SE = 0.06$] years of education; $F(1,56) = 67.82$, $P < .001$). Participants were also more likely to be male (2.03% of men compared to 1.99% of women did not complete the follow-up survey; Rao-Scott adjusted χ^2 [1, 56] = 6.42, $P < .01$). There were no differences by race. At baseline, participants were, on average, 66.7 ($SE = 0.17$) years old, had an average of 12.08 ($SE = 0.07$) years of education, and were 84.8% white, 12.2% African-American, and 3% other ethnicities (self-reported). The study employed use of a baseline respondent weight variable (provided by the HRS) to account for any oversampling or potential attrition-based bias. Non-institutionalized respondents who were born before 1948 and alive for the interview received a non-zero value for the respondent variable. This non-zero value was scaled to correspond with the number of individuals in the U.S. population as defined by the March Current Population Survey for the year of data collection. In addition, the deceased, non-respondents, and respondents living in nursing homes received a value of zero for the respondent weight. We received institutional review board approval to conduct analysis of this secondary data from our home institution.

Measures

Poor sleep quality

This measure assessed quality of sleep at night (eg, "How often do you have trouble falling asleep?"; "How often do you have trouble waking up during the night?"; "How often do you have trouble waking too early and not being able to fall asleep again?") Participants rated items as *most of the time, sometimes,* or *rarely or never.* These items were reverse coded and combined into a poor sleep quality scale that ranged from 1 to 3.

Non-restfulness

This measure assessed feelings of non-restfulness in the morning (ie, "How often do you feel really rested when you wake in the morning?"). Participants rated this item as *most of the time, sometimes, or rarely or never.* The non-restfulness scale ranged from 1 to 3.

Discrimination

Participants rated their experience of everyday discrimination.[27] Participants were given a list of experiences and asked to assess how often the experiences occurred in their day-to-day lives (eg, "You are treated with less courtesy or respect than other people.") Responses ranged from almost every day (1) to never (6). All items were reverse coded and then averaged to create an index of everyday discrimination. This index has a Cronbach's α of 0.75. Participants were also asked to attribute experiences of discrimination to a number of personal characteristics.[28] Participants were asked, "If any of the above have happened to you, what do you think were the reasons why these experiences happened to you? (Mark all that apply.)" They could attribute experiences of discrimination (yes or no) to ancestry, race, sex, age, weight, physical disability, other aspects of physical appearance, and/or sexual orientation. Participants could choose as many or as few attributions as applicable. Participants also rated major experiences of lifetime discrimination (e.g. unfairly dismissed from a job, unfairly denied promotion, unfairly denied a bank loan, etc.).[27] Participants rated items as either yes or no. The sum of positive responses was an index of major lifetime discrimination. The scale had a range of 0 to 6 and a Cronbach's α of 0.71.

Psychological distress

Psychological distress was assessed using measures of symptoms of depression and anxiety. Depressive symptoms were assessed through a 9-item version of the Center for Epidemiological Studies-Depression (CES-D) scale (eg, "You felt depressed."[29]). The HRS uses an 8-item measure of CES-D, which is recommended for use with older adults and has similar predictive accuracy when compared to the 20-item form.[30] We also included the item "had no energy" in our measure of depression, which is both theoretically and empirically related to depression.[30] Participants rated items as either yes or no, and an index of depressive symptoms was created by summing the number of positive responses to items. In addition, items reflecting positive affect (eg, "You enjoyed life.") were reverse coded. The scale ranged from 0 to 9, and had a Cronbach's α of 0.87. Anxiety symptoms were assessed through a 5-item version of the Beck Anxiety Inventory (BAI) scale (eg, "I fear the worst happening."[26]). The BAI has been shown to be valid for use among older populations.[26] Participants rated each item as never (1), hardly ever (2), some of the time (3), or most of the time (4). Responses were