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Workplace Discrimination and Depressive Symptoms: A Study of Multi-Ethnic Hospital Employees

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Abstract

Workplace discrimination reports have recently increased in the U.S. Few studies have examined racial/ethnic differences and the mental health consequences of this exposure. We examined the association between self-reported workplace discrimination and depressive symptoms among a multi-ethnic sample of hospital employees. Data came from the prospective case–control Gradients of Occupational Health in Hospital Workers (GROW) study (N = 664). We used the Center for Epidemiological Studies Depression Scale (CES-D) to assess depressive symptoms and measured the occurrence, types, and frequency of workplace discrimination. African Americans were more likely than other racial/ethnic employees to report frequent and multiple types of discrimination exposure. Multivariate relationships were examined while controlling for socio-demographic factors, job strain, and general social stressors. After adjustment, workplace discrimination occurrence and frequency were positively associated with depressive symptoms. The positive association between workplace discrimination and depressive symptoms was similar across racial and ethnic groups. Reducing workplace discrimination may improve psychosocial functioning among racial/ethnic minority hospital employees at greatest risk of exposure.

Keywords

Discrimination; Workplace; Depression; Job strain; Race/ethnicity

Introduction

Workplace discrimination is a persistent problem in the U.S., despite legislation designed to prohibit and discourage these practices. According to the Equal Employment Opportunity Commission, 33,937 charges of race-based workplace discrimination, 24,582 age-based, 28,372 sex-based, and 10,601 charges related to national origin were filed in the 2008 fiscal year (EEOC 2009). These U.S. estimates mark a record high in formal complaints and a 15% increase over those filed in 2007(EEOC 2009). However, these statistics likely

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underestimate such occurrences because minority group members often minimize these experiences (Ruggiero and Taylor 1997), and are notably reluctant to file formal charges (Hirsh and Kornrich 2008). Workplace discrimination has been examined in a variety of racial and ethnic groups (e.g., whites, African Americans, Hispanic Americans, Filipino Americans, etc.) (Asakura et al. 2008; Bhui et al. 2005; de Castro et al. 2008; Deitch et al. 2003; Jackson et al. 1995; Mays et al. 1996; Pavalko et al. 2003; Roberts et al. 2004; Rospenda et al. 2008; Wadsworth et al. 2007; Yen et al. 1999). In general, researchers found that members of gender, racial, or ethnic minority groups report workplace discrimination more often, and the consequences of this exposure are distinguishable from effects produced by other psychosocial features (e.g., decision-making control and performance expectations) of their occupations (Pavalko et al. 2003; Roberts et al. 2004; Wadsworth et al. 2007).

In common day-to-day interactions, being treated unfairly because of one's personal characteristics produces wide-ranging deleterious impacts on mental and physical health such as anxiety, psychological distress, various cardiovascular effects, poor self-reported health status, and low birth weight in infants of mothers experiencing discrimination (Barnes et al. 2008; Clark et al. 1999; Gee et al. 2006; Kessler et al. 1999; Krieger 1990; Lewis et al. 2006; Rospenda et al. 2008; Schulz et al. 2006; Williams et al. 2003a, b; Williams et al. 1997; Yuan 2007). The most consistently described negative mental health consequence of discrimination is increased depressive symptomatology (Finch et al. 2000; Noh et al. 1999; Schulz et al. 2006; Williams et al. 2003a, b). Exposure to workplace discrimination has similarly been found to harm mental health from diminished psychological well-being, increased risk of psychological distress, and pronounced depressive symptoms (Bhui et al. 2005; Jackson et al. 1995; Roberts et al. 2004; Rospenda et al. 2008; Wadsworth et al. 2007).

While discrimination occurs in a variety of workplace environments, certain organizations may be structured in ways that increase the likelihood of biased treatment and subordination of employees occupying lower social status positions. Hospitals are complex hierarchical organizations with potential inequities in employee power distribution. Employees occupying lower status positions in these settings may also face especially high emotional demands (Landsbergis 1988). Workplace environments characterized by high emotional demands and low control, a combination referred to as "job strain," have also been associated with poor physical and psychological well-being (Markovitz et al. 2004; Netterstrom et al. 2008; Williams et al. 1997). Since job strain is marked by diminished control, it may further contribute to employees' perceptions of unfair treatment in the workplace. Employees may also enter the workplace with stressors unrelated to features of their occupations. Thus, it is important to account for the contribution made by more general social stress exposures to the discrimination–mental health relationship (Taylor and Turner 2002; Wheaton et al. 1994). General social stress reflects exposures that are more normative and unrelated to individual characteristics (e.g., race and age) but that also increase the risk of depressive symptoms of employees.

A few studies have examined workplace discrimination among hospital employees or have considered how job strain and general stress might affect the workplace discrimination–mental health relationship. Studies on work-place discrimination have also focused primarily on black–white differences or discrimination experiences of a single racial/ethnic minority group. However, with an increasingly diverse workforce, we need additional studies that document workplace discrimination among minority groups. We address these empiric gaps in our study of workplace discrimination and depressive symptoms in a multi-ethnic sample of hospital workers.

We build on general stress-and-coping frameworks (Folkman 1984; Folkman and Lazarus 1986; Folkman et al. 2000; Lazarus 1995), which have been commonly employed in investigations of discrimination, occupational stress, and mental health. We conceptualize workplace discrimination as a biopsychosocial stressor (Clark et al. 1999) and a product of person–environment transactions that can lead to negative psychological outcomes when they are appraised as demanding, threatening, and uncontrollable. Specifically, we hypothesized that reports of workplace discrimination, number of types, and frequency of these experiences would be positively associated with depressive symptoms. Further, we hypothesized that the positive association between workplace discrimination would be strongest among employees from racial/ethnic minority groups. Following the lead of previous researchers, (Pavalko et al. 2003; Wheaton et al. 1994) we also assessed other psychosocial aspects of the work environment (e.g., job strain) and general social stress exposures.

Methods

Participants

Study participants (n = 644; 166 cases and 498 controls) were recruited for a prospective case–control study, Gradients of Occupational Health in Hospital Workers (GROW), (Rugulies et al. 2004) of musculoskeletal injuries among hospital workers from approximately 6,000 employees of two healthcare institutions in northern California. Cases were recruited at the occupational health clinic where employees sought care for a work-related injury, defined as a new presentation of an acute or cumulative work-related musculoskeletal injury, and determined to be work-related. Controls were selected from a list obtained from each hospital's human resources department and were matched by job group, shift length, or at random, yielding a 3:1 ratio to cases. Personal identifiers were deleted from the interview responses accessible to study investigators for data analysis. No other individuals had access to individual level responses, even once purged of such personal identifiers. Supervisors could have been aware that employees participated in the study but not their injury status nor the nature of their responses. Employees did not receive any incentive for participation. Physicians were excluded from the eligible participant pool due to varying employee status among this group. Specifically, physicians were excluded from participation because most would have only been temporarily assigned to each hospital setting, resulting in a large number of exclusions at the outset. Additional information on the study sample has been reported elsewhere (Gillen et al. 2007; Rugulies et al. 2004). The present study analyzes data from the baseline wave, which included the full sample (n = 644; 166 cases and 498 controls) of hospital employees.

Study Measures

Study participants were administered a structured telephone-based questionnaire designed to assess the role of both physical and psychosocial workplace exposures in musculoskeletal injuries.

Workplace Discrimination

Workplace discrimination was assessed in three ways. First, participants were asked a screening question, "During the past year, have you been treated unfairly by coworkers or supervisors because of your race or ethnicity, nationality, gender, sexual orientation, or age." Possible responses to this question were "yes" or "no." Participants who responded "yes" were coded as having experienced discrimination by co-workers or supervisors. Those who responded "yes" to the initial screening question were asked 11 additional questions. Responses to the first six items, which asked participants to indicate the "types" (race, ethnicity, nationality, sex, sexual orientation, or age-based) of workplace discrimination they

experienced, were used to create the second measure of discrimination. Possible responses to these items were "yes" or "no." Yes (=1) responses to each type of discrimination were counted (potential range of 0–6). Due to a skewed distribution, these responses were re-categorized into three groups, "none," "only one," and "multiple." Individuals who reported experiencing no discrimination of any type, as well as individuals assigned a value of "0" on the basis of the initial screening question, were assigned to the "none" category. The "only one" category included those who reported experiencing one type of workplace discrimination. All others were assigned to the "multiple" category. The remaining five items, which addressed the frequency with which participants experienced discrimination in different aspects of work, (e.g., hiring, evaluation, work assignment, promotion, and day-to-day work interactions) were used to create the third measure. Participants responded to these questions on a six-point scale that ranged from "never" (coded as 0) to "very often" (coded as 5). Responses to these questions were re-categorized into three groups, "never," "sometimes," and "often." Individuals who reported no discrimination were assigned to the "never" category; those who responded that they had experienced discrimination "only once," "a few times," or "occasionally" to the "sometimes" group; and those who reported experiencing discrimination "often" or "very often" to the "often" group.

General Social Stressors

General social stress exposure was assessed with the 4-item version of the Perceived Stress Scale (Cohen et al. 1983). This scale measures an individual's appraisal of general stressors (i.e., "In the past month, have you felt that you were unable to control the important things in your life?" and "In the past month, have you felt confident about your ability to handle your personal problems?") using a four-point response scale from "never" (coded as 0) to "very often" (coded as 4). This measure has been widely used in studies investigating mental and physical health outcomes among ethnic minority populations (Cohen 1988; Flores et al. 2008; Kopp 2010; Sharp et al. 2007; Siqueira Reis et al. 2010). The Perceived Stress Scale is used to assess the amount of global stress in an individual's life, as opposed to their response to specific stressors. Previous studies among psychiatric (Hewitt et al. 1992; Pbert et al. 1992) and non-psychiatric (Cohen 1988; Cohen et al. 1983; Flores et al. 2008; Siqueira Reis et al. 2010) samples demonstrate good validity (i.e., predictive, discriminant, and concurrent), as well as test–retest reliability. Responses were summed to create a score (potential range 0–16). Internal consistency measured by Cronbach's alpha was 0.66 among study participants.

Job Strain

The 14-item version of the Job Content Questionnaire (JCQ) (Karasek et al. 1998) was used to evaluate job strain, including five questions on psychological demands and nine on job control (i.e., six items on skill latitude and three on decision authority). The JCQ has demonstrated good concurrent, predictive, factorial, and discriminant validity across a variety of populations (Karasek et al. 1998; Theorell and Karasek 1996). All responses were 4-point scales ranging from "strongly agree" to "strongly disagree." Consistent with prior studies using the JCQ (Landsbergis et al. 2000), we dichotomized the "demands" and "control" scales at their medians. Those who experienced high demands and low control were assigned a score of 1 (high job strain), while all others were coded as 0 (low job strain). The Cronbach's alpha for our sample was 0.77.

Depressive Symptoms

The Center for Epidemiological Studies Depression Scale (CES-D), (Radloff 1977) a 20-item, self-report scale developed for the general population, was used to measure depressive symptoms. The measure has been widely used and validated among a variety of racial/ethnic groups (Koji et al. 2007; Radloff 1977; Stahl et al. 2008). The CES-D has also demonstrated

good construct, discriminant, and predictive validity in more recent studies examining associations between psychosocial features of the workplace and depressive symptoms (Ertel et al. 2008; Inoue et al. 2010; Netterstrom et al. 2008). Overall scores range from 0 to 60 with higher scores indicating more depressive symptomatology (Weissman et al. 1977). We computed a summed score for each participant per scoring instructions. The Cronbach's alpha for our sample was 0.85.

Demographic Variables

Age, sex, educational attainment (categorized as no college, associate, bachelor, or post-graduate degree), annual household income (ascertained in $20,000 and $40,000 increments up to a category of $120,000 and greater), and nativity status (U.S. vs. foreign-born) were assessed. Individuals were asked to report their racial/ethnic background (white, Asian Pacific Islander, Latino, and African American) and to indicate whether they considered themselves to be of more than one race. These latter responses were classified as "Mixed and other."

Occupational Categories

We first created 13 occupational categories determined by status in the organization, education/licensing, amount and type of patient contact, and amount and type of physical labor. We further collapsed these categories into six groups: administrator and professional, nursing, other clinical, clerical (e.g., admissions and data entry clerks), technical (e.g., radiology and laboratory technologists), and support positions (e.g., physical plant and housekeeping staff). The "other clinical" occupations category included 34% mental health, 29% nursing-related, and 15% rehabilitation occupations.

All study procedures were approved by the (University of California, San Francisco) Institutional Review Board.

Data Analysis

We conducted simple (unadjusted) univariate (Chi-square) analyses to describe sample characteristics. We applied Yates' (Yates 1934) corrections for continuity to chi-square tests performed on cells that failed to meet the expected frequency assumption (Camilli and Hopkins 1978) (i.e., that have expected frequencies smaller than 5). We performed one-way analyses of variance to assess the relationship between three workplace discrimination measures and mean CES-D scores. We used linear regression models to analyze the association between workplace discrimination and depressive symptoms (Hypothesis 1). We tested a basic model that included race/ethnicity only (adjusted for age, sex, education, income, and occupation) (Model 1). Next, we tested a model that included reported workplace discrimination as a predictor (Model 2) and then added the covariates, general social stress (Model 3), and job strain (Model 4). Finally, we tested a model that included the demographic variables, workplace discrimination, general stress, and job strain (Model 5). Further, we used linear regression models to analyze the association between the types and frequency of workplace discrimination experiences and depressive symptoms. We tested models that included the number of types and the frequency of work-place discrimination experiences as predictors (adjusted model for race/ethnicity, age, sex, education, income, and occupation) (Models 6), general social stress (Models 7), and job strain (Model 8). In Model 9, we included the demographic variables, the frequency and types of work-place discrimination, general social stress, and job strain. We also tested interactions between race/ethnicity and workplace discrimination to evaluate whether this association was stronger among racial/ethnic minority employees (Hypothesis 2). For the interaction models, we also adjusted for age, sex, education, income, and occupation. We assessed

multicollinearity and found variance inflation factors that ranged from 1.04 to 2.06 suggesting that multicollinearity was not a concern in our models. Continuous measures were mean centered in our multivariate analyses. Statistical analyses were performed with Statistical Package for Social Sciences “SPSS for Windows Release 16” (2007).

Results

In Table 1, we display the characteristics of the study sample stratified by race/ethnicity. Our sample was comprised of 260 non-Hispanic whites, 185 Asian Pacific Islanders, 66 African Americans, 105 Latinos, and 48 individuals of “Mixed and other” race. The majority of the sample was women, between the ages of 45–55, had an annual household income of $80,000–$119,000, were nurses, college graduates, and born in the U.S. (see Table 1). There were no differences by race/ethnicity in mean CES-D or general social stress scores. Whites reported higher income and education levels compared to all other racial/ethnic groups. African Americans and Latinos reported lower levels of education and income than Asian Pacific Islanders. African Americans, Latinos, and individuals classified as “Mixed and other” were more likely than whites to occupy clerical or support positions. Asian Pacific Islanders and Latinos were more likely to be foreign-born than other groups. More Asian Pacific Islanders than whites, Latinos, and African Americans reported “low” job strain. Our analysis (table not shown) revealed no differences between cases and controls on most of our key socio-demographic variables (age, sex, income, education, and country of birth). However, cases were more likely to be nurses. This finding is likely an artifact of our sample, which contained a greater percentage of nurses (37%). We did find that cases had higher CES-D, job strain, and general social stress scores.

Fourteen percent of the participants reported experiencing workplace discrimination in the past year (Table 1). Reports of workplace discrimination did not differ by case status, sex, age, education, occupation, or country of birth. African Americans were more likely than employees of other racial/ethnic groups to report experiencing workplace discrimination and multiple types of discrimination and to categorize these experiences as occurring “sometimes.”

Fifty-seven percent of those reporting workplace discrimination attributed these events to race/ethnicity (Table 2). However, more African Americans noted this type of discrimination compared to other groups. A greater number of Asian Pacific Islanders and African Americans reported workplace discrimination based on nationality. There were no racial or ethnic differences in the frequency of reported discrimination in hiring, evaluation, work assignments, or promotion. However, more African Americans reported experiencing discrimination in day-to-day work-place interactions.

Each of our three measures of workplace discrimination was positively, significantly associated with higher mean CES-D scores (Table 3). Post-hoc comparisons revealed this association was primarily driven by differences in mean CES-D scores between individuals in the lowest (e.g., none and never) and highest (e.g., multiple and often) discrimination types and frequency groups. There were no racial/ethnic differences in bivariate associations between workplace discrimination and mean CES-D scores.

Table 4 displays results from the linear regression analyses investigating the multivariate association between three measures of workplace discrimination and depressive symptoms adjusted for case status, age, sex, education, income, and occupational category. We conducted the multivariate analysis with and without case status included as a covariate, and our results were virtually unchanged. Thus, we report the results with case status included as a covariate. Race/ethnicity was not a significant predictor of depressive symptoms (Model

1). Reported workplace discrimination (Models 2–5) and discrimination frequency (Models 6–9) were associated with more depressive symptoms. The positive association between workplace discrimination frequency and depressive symptoms was strongest and most consistent for individuals who experienced discrimination "often" (Models 6–8). There was no significant association between the number of discrimination types and depressive symptoms. General social stress (Models 3 and 7) and job strain (Models 4 and 8) were both statistically significantly associated with depressive symptoms, but adding these factors to the models did not eliminate the positive association between workplace discrimination frequency and depressive symptoms. In the final models (Model 5 and 9), general social stress exposure, job strain, and workplace discrimination frequency were all associated with greater depressive symptomatology.

Our tests for interactions between race/ethnicity and workplace discrimination were non-significant. Thus, we did not find support for our hypothesis that the association between workplace discrimination and depressive symptoms would be more pronounced among racial or ethnic minorities.

Discussion

This analysis represents one of a few multi-ethnic investigations of the association between the occurrence, types, and frequency of workplace discrimination and depressive symptomatology. Fourteen percent of our hospital employee sample reported experiencing workplace discrimination in the past year, a proportion similar to the 12 and 16% reported in a frequently cited study of workplace discrimination (Pavalko et al. 2003). Consistent with recent EEOC data (EEOC 2008), more of our sample attributed workplace discrimination to race/ethnicity than to any other personal characteristic. African American employees were especially likely to view their race/ethnicity as a source of unfair treatment in the workplace, which was not surprising given that other researchers have reported similar results (Pavalko et al. 2003).

Our multivariate findings generally support our study hypotheses. Specifically among hospital employees, we found that workplace discrimination occurrence, types, and frequency are associated with depressive symptomatology above and beyond job strain and general social stress. Thus, our study confirms and extends previous research (Pavalko et al. 2003; Roberts et al. 2004; Wadsworth et al. 2007) by documenting that the impact of workplace discrimination on mental health is distinguishable from that produced by other psychosocial and occupational stressors. Workplace discrimination accounts for an additional 1% of the variance over the controls and race. Building on arguments made by others (Prentice and Miller 1992), we offer a slightly different interpretation of this "small effect." These authors state: "showing that an effect holds even under the most unlikely circumstances possible can be as impressive as (or, in some cases, perhaps even more impressive than) showing that it accounts for a great deal of variance (p. 163)." The strength of our finding lies in the fact that workplace discrimination maintained an effect in the presence of socio-demographic controls and after general stress and job strain were added to the models.

Our findings are consistent with the burgeoning body of research linking workplace discrimination to poor mental health status (Pavalko et al. 2003; Roberts et al. 2004; Rospenda et al. 2008) and a higher prevalence of discrimination exposure among African Americans (Kessler et al. 1999). It is notable in the context of these findings that African Americans (as were Latinos) were also more likely to occupy clerical and support positions than whites and Asian Pacific Islanders. Thus, it is plausible that occupying these relatively subordinate positions in the hospital hierarchy may place this group at additional risk of

workplace discrimination and associated depressive symptoms. We offer this interpretation since low job control—a hallmark of job strain—is associated with lower occupational status (Marmot et al. 1997). Future studies should explore whether interactions between workplace discrimination and job strain explain racial/ethnic differences in depressive symptoms.

The association between workplace discrimination occurrence or types and depressive symptoms did not differ by race/ethnicity, which suggests that these aspects of discrimination exposure produced universally negative effects on the mental health of our sample. Differences in the way we asked about these aspects of workplace discrimination could have also contributed to these findings. Cumulative models of discrimination (Geronimus 1992) provide another possible explanation for these findings as they posit more pronounced negative health outcomes among individuals who experience frequent discrimination exposure. Our investigation indicates that single indicators might obscure important race/ethnic differences and thus highlights the importance of assessing multiple dimensions of workplace discrimination exposure.

Our study had limitations. We assessed self-reported workplace discrimination. Thus, it is possible that biases in report and recall exist. Attributional biases may have contributed to more vigilance or reports of discrimination. However, the likelihood of this effect is diminished in light of the “minimization hypothesis” (Ruggiero and Taylor 1997), which suggests that minority group individuals are more likely to downplay the discrimination they experience. The tendency to minimize or downplay experiences of discrimination may have been exacerbated if employees felt that their identity could have become known. As indicated earlier, personal identifiers were removed from the interview data, and employers did not know who the study participants were. However, it is likely that some employees may have felt less comfortable disclosing information about their workplace experiences. In this case, it is plausible that our study underestimates the effect of workplace discrimination on the mental health of our study population. Since our data are cross-sectional, depressive symptomatology could have led some individuals to report more discrimination. Studies documenting increased depressive symptoms over time as a consequence of general and workplace discrimination exposure (Pavalko et al. 2003; Schulz et al. 2006) suggest that this reporting bias is less probable. Nonetheless, it will be important to employ longitudinal designs in future investigations into workplace discrimination to rule out this possibility.

We assessed workplace discrimination as a major event. Research suggests that assessment of ‘microaggressions” in the workplace may provide a better estimate of discrimination exposure (Deitch et al. 2003). Indeed, African Americans in our sample were more likely to report frequent exposure to workplace discrimination in their day-to-day interactions than employees from other groups. Future studies will want to include more robust measures of “microaggressions” in the workplace, as well as those that assess discrimination in more general life domains. Although it is possible that we underestimated the mental health impacts of workplace discrimination, using only a single aspect of mental health status, depression has been shown to be the most frequently described psychological consequence of workplace discrimination (Rospenda et al. 2008).

It is also useful to note that discrimination does not produce uniformly pathogenic mental health effects since some individuals may be buffered by identity factors, self-esteem, and coping resources (Fischer and Shaw 1999; Sellers and Shelton 2003). Future studies should determine whether these individual differences alter the association between exposure to workplace discrimination and depressive symptoms.

Notable strengths of our study include our use of a multi-ethnic sample, focus on hospital employees, and assessment of multiple psychosocial and occupational stressors. We were able to demonstrate that experiencing discrimination based on multiple personal characteristics is associated with more depressive symptoms. To our knowledge, this finding has not been previously reported.

The documented increase in official reports of workplace discrimination to the EEOC (2009) suggests that gaining an understanding of its ensuing mental health consequences for racial and ethnic minority employees is both timely and critical. The psychological costs of exposure to workplace discrimination are especially important in hospital employees since increases in mental health issues correlate highly with absenteeism, reduced productivity, and occupational errors, (Kessler and Frank 1997; Kessler et al. 2008; Kouzis and Eaton 1994) factors that can all compromise patient safety. When such declines in occupational functioning occur among hospital employees, the healthcare delivery system may be disrupted in ways that diminish its capacity to respond to patient needs. Since longitudinal data suggest that the negative psychological effects of workplace discrimination persist and reduce the quality of labor force participation over time (Pavalko et al. 2003), increasing research and structural intervention efforts aimed at eliminating risks of this occupational exposure is a public health priority. Nowhere else is this need more pressing than among racial and ethnic minority employees who face compounded exposure to discrimination in the social and workplace environment.

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Table 1

Characteristics of GROW study participants (N = 664) by race/ethnicity

	Total sample (N = 664, %)	**Whites (n = 260, %)**	**Asian Pacific Islanders (n = 185, %)**	**African Americans (n = 66, %)**	**Latino (n = 105, %)**	**Mixed and other (n = 48, %)**	***p***
Depressive symptoms (CES-D score), mean ± SD	9.09 ± 8.61	8.38 ± 8.09	9.03 ± 8.39	10.70 ± 9.19	9.64 ± 8.96	9.85 ± 10.41	.30
General social stress, mean ± SD	8.40 ± 3.00	8.24 ± 3.05	8.75 ± 2.94	8.62 ± 3.09	7.93 ± 2.68	8.67 ± 3.36	.16
Case	25.0	23.5	24.3	30.3	25.7	27.1	.83
Control	75.0	76.5	75.7	69.7	76.5	72.9	
Sex							
Men	29.1	27.3	27.6	30.3	34.3	31.2	.71
Women	70.9	72.7	72.4	69.7	65.7	68.8	
Age in years							
22–35	19.9	17.7	22.7	19.7	18.0	25.0	.20
36–45	24.2	23.8	21.1	31.8	24.8	27.1	
45–55	39.8	39.6	44.3	25.8	41.0	39.6	
≥56	16.1	18.8	11.9	22.7	16.2	8.3	
Annual household income							
≤$39,999	13.2	7.8	13.1	27.0	16.7	17.0	**<.001**
$40–59,999	22.5	19.8	16.4	33.3	31.4	27.7	
$60–79,999	21.1	19.0	24.0	27.0	17.6	21.3	
$80–119,999	28.2	32.9	27.9	9.5	28.4	27.7	
≥$120,000	15.0	20.5	18.6	3.2	5.9	6.4	
Education							
≤High school graduate	5.5	0.4	5.5	20.0	9.5	4.3	**<.001**
Some college	16.7	8.0	15.3	30.8	23.8	34.0	
Associate degree	20.0	16.2	16.4	26.2	33.3	17.0	
College graduate	38.8	45.4	45.9	18.5	24.8	34.1	
Graduate degree	19.1	30.0	16.9	4.6	8.6	10.6	
Occupational category							
Administrators	11.1	17.3	9.7	4.5	5.7	4.2	**<.001**
Nurses	37.0	51.2	35.7	24.2	19.0	22.9	

	Total sample (*N* = 664, %)	Whites (*n* = 260, %)	Asian Pacific Islanders (*n* = 185, %)	African Americans (*n* = 66, %)	Latino (*n* = 105, %)	Mixed and other (*n* = 48, %)	*p*
Other clinical	14.0	10.8	15.1	13.6	19.0	16.7	
Technical	8.7	8.1	11.4	1.5	10.5	6.2	
Clerical	20.9	9.6	20.5	37.9	28.6	43.8	
Support	8.3	3.0	7.6	18.2	17.2	6.2	
Country of birth							
US-born	63.1	87.7	24.3	92.4	66.3	81.2	**<.001**
Foreign-born	36.9	12.3	75.7	7.6	38.7	18.8	
Job strain							
High	25.0	25.8	27.7	33.3	16.6	29.2	
Low	75.0	74.2	72.3	66.7	83.4	70.8	**<.05**
Reported workplace discrimination							
Yes	13.7	10.4	15.7	25.8	11.4	12.5	
No	86.3	89.6	84.3	74.2	88.6	87.5	**<.05**
Type of workplace discrimination							
None	86.9	89.6	86.5	74.2	88.6	87.5	
One type	5.1	6.2	3.8	10.6	2.9	2.1	**<.05**
Multiple types	8.0	4.2	9.7	15.2	8.6	10.4	
Frequency of workplace discrimination							
Never	86.3	89.6	84.3	74.2	88.6	87.5	
Sometimes	6.5	4.6	6.5	18.2	3.8	6.2	**<.01**
Often	7.2	5.8	9.2	7.6	7.6	6.2	

GROW Gradients in Occupational Health in Hospital Workers Study, *CES-D* Center for Epidemiological Studies Depression Scale

Comparisons for between-group differences, based on χ^2 tests for categorical variables and *F*-tests for continuous variables (CES-D and General Social Stress)

Bold value indicates that significant at the $p < .05$ level

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Table 2

Distribution of workplace discrimination types and percent frequency, by race/ethnicity

	Total sample (*N* = 664, %)	Whites (*n* = 260, %)	Asian Pacific Islanders (*n* = 185, %)	African Americans (*n* = 66, %)	Latino (*n* = 105, %)	Mixed and other (*n* = 48, %)	*p*
Types of workplace discrimination							
Race/ethnicity							
No	91.4	96.9	88.6	80.3	90.5	89.6	**<.001**
Yes	8.6	3.1	11.4	19.7	9.5	10.4	
Nationality							
No	93.7	98.5	89.2	86.4	95.2	91.7	**<.001**
Yes	6.3	1.5	10.8	13.6	4.8	8.3	
Gender							
No	95.0	95.0	95.1	97.0	94.3	93.8	.94
Yes	5.0	5.0	4.9	3.0	5.7	6.2	
Sexual orientation							
No	98.5	98.8	98.9	97.0	100.0	93.8	**<.05**
Yes	1.5	1.2	1.1	3.0	0.0	6.2	
Age							
No	94.0	94.2	93.5	89.4	96.2	95.8	.44
Yes	6.0	5.8	6.5	10.6	3.8	4.2	
Percent frequency of workplace discrimination							
Hiring							
Never	91.3	95.0	88.1	84.8	90.5	93.8	
Sometimes	3.6	1.9	5.9	6.1	3.8	0.0	.11
Often	5.1	3.1	5.9	9.1	5.4	6.2	
Evaluation							
Never	92.6	95.0	89.7	89.4	93.3	93.8	
Sometimes	3.3	2.7	4.9	4.5	1.0	4.2	.36
Often	4.1	2.3	5.4	6.1	5.7	2.1	
Work assignments							
Never	89.9	92.3	87.6	86.4	90.5	89.6	
Sometimes	2.9	2.3	4.3	3.0	1.9	2.1	.75

	Total sample (*N* = 664, %)	Whites (*n* = 260, %)	Asian Pacific Islanders (*n* = 185, %)	African Americans (*n* = 66, %)	Latino (*n* = 105, %)	Mixed and other (*n* = 48, %)	*p*
Often	7.2	5.4	8.1	10.6	7.6	8.3	
Promotion							
Never	94.0	94.6	91.9	97.0	93.3	95.8	
Sometimes	1.8	1.5	3.2	0.0	1.0	2.1	.69
Often	4.2	3.8	4.9	3.0	5.7	2.1	
Day-to-day interactions							
Never	87.3	90.4	85.9	75.8	89.5	87.5	
Sometimes	4.2	1.9	6.5	9.1	3.8	12.1	**<.05**
Often	8.4	7.7	7.6	15.2	6.7	10.4	

Comparisons for between-group differences, based on χ^2 tests

Bold value indicates that significant at the $p < .05$ level

Table 3

Mean CES-D score (±SD) and workplace discrimination by race/ethnicity (unadjusted)

	Total sample	*F*-test[a]	Whites	Asian Pacific Islanders	African Americans	Latinos	Mixed and other	*F*-test[b]
Reported discrimination								
Yes	12.53 ± 9.99	11.61**	11.26 ± 9.10	11.62 ± 10.84	15.88 ± 10.67	13.25 ± 9.61	11.67 ± 8.73	0.57
No	8.55 ± 8.26		8.05 ± 7.92	8.54 ± 7.80	8.90 ± 7.93	9.17 ± 8.82	9.59 ± 10.70	
Types of workplace discrimination								
None	8.61 ± 8.32	5.10**	8.05 ± 7.92	8.78 ± 8.03	8.90 ± 7.93	9.17 ± 8.82	8.62 ± 8.32	1.20
One type	11.47 ± 9.29		8.94 ± 7.77	8.86 ± 6.64	20.29 ± 12.71	11.67 ± 1.15	11.47 ± 9.29	
Multiple types	12.81 ± 10.31		14.63 ± 10.31	11.33 ± 11.73	12.80 ± 8.55	13.78 ± 11.20	12.81 ± 10.30	
Frequency of workplace discrimination								
Never	8.55 ± 8.25	8.47***	8.04 ± 7.90	8.54 ± 7.81	8.90 ± 7.93	9.17 ± 8.82	9.60 ± 10.70	0.87
Sometimes	11.23 ± 10.18		11.33 ± 9.58	9.83 ± 10.86	14.83 ± 11.71	9.25 ± 7.72	4.67 ± 4.16	
Often	13.69 ± 9.77		11.20 ± 9.13	12.88 ± 10.97	18.40 ± 8.73	15.25 ± 10.29	18.67 ± 5.13	

CES-D Center for Epidemiological Studies Depression Scale

** $P < .01$,

*** $P < .001$

[a] *F*-test for mean differences in association between mean CES-D scores and workplace discrimination for the overall sample

[b] *F*-test for race/ethnic differences in the association between mean differences in CES-D scores and workplace discrimination

Table 4

Relationship between workplace discrimination reports, types, frequency, and depressive symptoms (CES-D score), $N = 664$

	Reported workplace discrimination, β (SE)					Workplace discrimination types & frequency, β (SE)			
	Model 1 Basic (race/ethnicity only)	**Model 2 Basic + workplace discrim**	**Model 3 (Model 2 + general social stress)**	**Model 4 (Model 3 + job strain)**	**Model 5 (all)**	**Model 6 Basic + workplace discrim**	**Model 7 (Model 6 + general social stress)**	**Model 8 (Model 7 + job strain)**	**Model 9 (all)**
Whites	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Asian Pacific Islander	−.01(.83)	−.02(.83)	−.05(.67)	−.00(.84)	−.05(.68)	−.03(.84)	−.05(.68)	−.01(.84)	−.05(.69)
African American	−.03(1.28)	−.04(1.29)	−.01(1.05)	−.04(1.28)	−.01(1.04)	−.04(1.29)	.00(1.05)	−.04(1.28)	.00(1.05)
Latino	−.03(1.05)	−.03(1.05)	.03(.86)	−.03(1.04)	.03(.85)	−.03(1.05)	.03(.86)	−.02(1.04)	.03(.85)
Mixed and other	−.00(1.38)	−.01(1.37)	−.01(1.12)	−.00(1.36)	−.01(1.11)	−.00(1.38)	−.01(1.12)	−.00(1.37)	−.01(1.12)
Perceived stress	–	–	.58(.09)***	–	.58(.09)***	–	.58(.09)***	–	.58(.09)***
Job strain (low, ref)	–	–	–	.13(.79)**	.07(.64)*	–	–	.13(.79)**	.07(.64)*
Workplace discrimination (no, ref.)		.12(.97)**	.09(.79)**	.10(.98)*	.08(.80)*	–	–	–	–
Type of workplace discrimination									
None (ref)	–	–	–	–	–	1.00	1.00	1.00	1.00
One type	–	–	–	–	–	−.19(4.46)	−.11(3.60)	−.19(4.43)	−.12(3.59)
Multiple types	–	–	–	–	–	−.26(4.38)	−.16(3.54)	−.27(4.35)	−.17(3.53)
Frequency of workplace discrimination									
Never (ref)	–	–	–	–	–	1.00	1.00	1.00	1.00
Sometimes	–	–	–	–	–	.27(4.33)*	.16(3.50)	.27(4.30)*	.17(3.49)
Often						.34(4.33)**	.23(3.50)*	.33(4.30)*	.22(3.48)*
Adjusted R^2	.07***	.08***	.40***	.09***	.40***	.08***	.40***	.09***	.40***

CES-D Center for Epidemiological Studies Depression Scale

Basic model adjusted for case status, age, gender, education, income, and occupational category. Numbers are standardized regression coefficients. The coefficient for categorical variables is the difference between the reference group and the comparison group, and the coefficient for continuous variables (e.g., perceived stress) is the slope, the magnitude of change of the outcome per 1 unit change in predictor. Values in parentheses represent standard errors

* $p < .05$,

** $p < .01$,

*** $p < .001$