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Article

Prevalence of workplace discrimination and mistreatment in a national sample of older U.S. workers: The REGARDS cohort study

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ABSTRACT

Although workplace discrimination and mistreatment (WDM) has recently drawn widespread media attention, our understanding of the prevalence of these phenomena remains limited. In the current study, we generated national prevalence estimates of WDM from a community-based cohort of employed black and white men and women aged ≥48 years. Measures of WDM in the current job were obtained by computer-assisted telephone interview (2011–2013) involving dichotomous responses (yes or no) to five questions and deriving a composite measure of discrimination (yes to at least one). Prevalence estimates and age- and region-adjusted prevalence ratios were derived with use of SUDAAN software to account for the complex sample design. Analyses were stratified by race and sex subgroups. This sample represents over 40 million U.S. workers aged ≥48 years. The prevalence of workplace discrimination ranged from a high of 25% for black women to a low of 11% for white men. Blacks reported a 60% higher rate of discrimination compared to whites; women reported a 53% higher prevalence of discrimination, compared with men. The prevalence of workplace mistreatment ranged from 13% for black women to 8% for white men. Women reported a 52% higher prevalence of mistreatment compared to men, while differences by race were not significant. Mistreatment was 4–8 times more prevalent among those reporting discrimination than among those reporting none. Subgroup differences in mistreatment were confined to the wage-employed. Findings suggest that middle age and older wage-employed blacks and women experience the highest prevalence of WDM; moreover, discrimination is strongly associated with mistreatment. This study contributes to our understanding of at-risk segments of the U.S. labor market and the need for targeted interventions to reduce WDM.

1. Introduction

Despite more than five decades of federal legislation in the United States designed to protect workers against discrimination based on sex, race, color, national origin, religion (Title VII of the Civil Rights Act of 1964), age (Age Discrimination in Employment Act of 1967), and disability (Title I and Title V of the Americans with Disabilities Act of 1990), workplace discrimination remains a pervasive problem. A recent report by the U.S. Equal Employment Opportunity Commission (EEOC) indicates that over 80,000 workplace discrimination charges were filed in 2017 (30% sex-based, 34% race-based, and 22% age-related), resulting in nearly $400 million in compensation for victims across the private sector and state and local governments (EEOC, 2018). Moreover, age discrimination is a costly problem representing $810 million in monetary benefits between 2010 and 2018 (EEOC, 2019), and the proportion of the older U.S. workforce (≥55 years) has been on the rise

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for more than a decade and represents the fastest growing segment of the U.S. workforce (Fisher, Matthews, & Gibbons, 2016; Toossi, 2013).

Definitions of workplace discrimination vary by discipline (Okechukwu, Souza, Davis, & de Castro, 2014), generally characterized as unfair terms or conditions (e.g., reduced opportunity) or negative treatment based on personal characteristics or membership in a particular social group such as race, sex or age (Chou & Choi, 2011; Dhanani, Beus, & Joseph, 2017; Rospenda, Richman, & Shannon, 2009). Age-based discrimination, for example, may stem from stereotypes about the willingness of older workers to accept change and their level of competence, which may manifest as a reluctance to hire, promote, train or otherwise extend opportunities due to age. (Rippon, 2018). Workplace discrimination can occur at the organizational or the interpersonal level, and may vary in severity, source, and motive (McCord, Joseph, Dhanani, & Beus, 2018).

A separate but related subject, not currently prohibited by law, is workplace mistreatment (WBI, 2017a,WBI, 2017b). Workplace mistreatment is defined as interpersonal behaviors that inflict physical or psychological harm to a worker, and can originate from sources within the workplace (e.g., supervisors or coworkers) or from outside the organization (e.g., clients, customers, or patients) (Schat & Kelloway, 2005). Workplace mistreatment is often broadly characterized as threats, harassment, or bullying – interpersonal behaviors that can manifest more specifically as incivility, ostracism, conflict, aggression, unwanted sexual attention, and abusive supervision.

While the national prevalence of workplace discrimination and mistreatment (WDM) in the U.S. workforce has been previously reported (Alterman, Luckhaupt, Dahlhamer, Ward, & Calvert, 2013; Avery, McKay, & Wilson, 2008; Chavez, Ornelas, Lyles, & Williams, 2015; Chou & Choi, 2011; Lutgen-Sandvik & Namie, 2009; Rospenda et al., 2009; Schat, Frone, & Kelloway, 2006), existing research suffers from a number of limitations. First, most studies have relied on small or moderately sized samples (Chou & Choi, 2011 (n = 420); Avery et al., 2008 (n = 763); Rospenda et al., 2009 (n = 2151); Schat et al., 2006 (n = 2500)). A number of studies have used the Health and Retirement Survey (Giasson, Queen, Larkina, & Smith, 2017; Han and Richardson, 2015; Rippon, Zaninotto, & Steptoe, 2015) and another used data from the Midlife in United States II (MIDUS II) study (Chou & Choi, 2011) to look at the prevalence of age discrimination in the workplace within the older segment of the workforce (e.g., those aged ≥ 50 years who represent over two-fifths of the U.S. workforce and growing) (BLS, 2017; Toossi, 2013). Although the Health and Retirement Survey (Giasson et al., 2017; Han and Richardson 2015;; Rippon et al., 2015), MIDUS II (Chou & Choi, 2011), the National Health Interview Survey (Alterman et al., 2013), and the Equal Employment Opportunity Commission 40th Anniversary Civil Rights in the Workplace Survey, (conducted by Gallup) (Avery et al., 2008) oversampled minorities for more reliable prevalence estimates, other studies have not. Findings from the most recent national studies on discrimination were based on data collected nearly a decade ago. Only one prior study examined both workplace discrimination and mistreatment (Rospenda et al., 2009). Despite growing research on the effects of WDM, little is known about the magnitude of differences in the prevalence of WDM by race-sex subgroups (McCord et al., 2018). Prior studies able to explore race- or sex-specific differences were confined to convenience samples or population-based surveys with limited geographical representation, narrow labor market representation and/or demographic composition, and were often limited by small sample sizes (Hammond, Gillen, & Yen, 2010; Lutgen-Sandvik, Tracy, & Alberts, 2007; Nunez-Smith et al., 2009; Simons, 2008; Triana, Jayasinghe, & Pieper, 2015).

The purpose of this study was to generate national prevalence estimates of WDM in middle-age and older U.S. workers by race-sex subgroups, to examine the magnitude of subgroup differences, and to investigate whether individuals who experienced discrimination reported more frequent mistreatment than those who did not. Using data from a national population-based sample of middle aged and older black and white men and women employed across a range of sectors within the U.S. labor market, we generate national prevalence estimates of perceived WDM by race-sex subgroups and examine the magnitude of subgroup differences. This study also examined the cross-sectional association between workplace discrimination and mistreatment.

This study contributes to our understanding of WDM in four specific ways: (1) provides national prevalence estimates of WDM; discrimination and mistreatment originating from a work context is considered more damaging than in other life domains, both for those who experience and for those who witness it (Dhanani et al., 2017); (2) strengthens the literature on age discrimination at the workplace; (3) includes a large sample of black and white men and women aged ≥48 years, representing 44% of the employed U.S. workforce (BLS, 2017); and (4) identifies subgroups within the U.S. workforce disproportionately affected by WDM. Relative to existing national studies, the current study improves estimates of the prevalence of WDM through (a) use of a larger sample size; (b) the assessment of age discrimination, which is a neglected area of research; (c) the assessment of both discrimination and mistreatment; (d) sampling among older workers who comprise the fastest growing segment of the U.S. labor force; (e) oversampling of blacks to obtain more reliable prevalence estimates; and (g) more recent data that would serve as important benchmark for prevalence of WDM prior to the widespread and continuing national news reports of workplace sexual harassment and mistreatment in the media.

2. Methods

2.1. Study sample

The REasons for Geographic and Racial Differences in Stroke (REGARDS) study involves a national, population-based, longitudinal cohort of 30,239 non-Hispanic black and non-Hispanic white participants aged ≥45 years enrolled between 2003 and 2007. Enrollment consisted of a Computer Assisted Telephone Interview (CATI), followed by completion of an in-home clinical exam and self-administered questionnaires (Howard et al., 2005). The study sought to elucidate reasons for regional and racial differences in stroke incidence in the United States, specifically, the excess stroke-related mortality among blacks and residents of the southeast.

The study design provided for approximately equal representation by race and sex, through recruitment of participants via stratified random sampling with strata defined by region, race, and sex. The design involved intentional oversampling of blacks and residents of the geographic regions referred to as the “stroke buckle” (coastal North Carolina, South Carolina, and Georgia) and “stroke belt” (remainder of North Carolina, South Carolina, and Georgia, as well as Alabama, Mississippi, Tennessee, Arkansas, and Louisiana). Nearly one-half of the study participants were from the “stroke belt/buckle” region, while the remaining half were from the remaining 40 contiguous U.S. states and the District of Columbia. Participants gave consent verbally by phone and later in writing during a clinical exam. The Institutional Review Board at the University of Alabama at Birmingham (UAB) approved the study methods.

The sample for the current analyses was drawn from the REGARDS occupational ancillary study (MacDonald, Pulley, Hein, & Howard, 2014). All active REGARDS study participants were asked to complete an occupational survey during routine bi-annual follow-up by CATI, a median 6.5 years after enrollment. Over a 2-year period (2011–2013), 17,648 participants consented to the occupational survey (87% response). Further details on data collection methods and measures are available elsewhere (MacDonald et al., 2014). Institutional review boards at the UAB and the National Institute for Occupational Safety and Health (NIOSH) approved the ancillary study. Participants were eligible for inclusion in the current analyses if they were employed at the time of the occupational survey (n = 4949). Individuals who did

not answer all the questions related to workplace discrimination and mistreatment (n = 130), whose occupational status (n = 3) or educational status (n = 2) was missing, or who were employed in farming, fishing, and forestry (n = 16, due to small sample size) were excluded. After these exclusions, data from 4798 participants were analyzed, from which the weighted proportions were 11% black (n = 1616) and 47.4% women (2,581).

2.2. Measures

Measures of workplace discrimination and mistreatment were selected from the NIOSH Quality of Work Life Questionnaire (NIOSH QWL) (NIOSH, 2010). We assessed workplace discrimination at the current job by asking the following four single-item binary (yes, no) questions:

(1) "On your job, do you feel in any way discriminated against because of your race or ethnic origin?"
(2) "On your job, do you feel in any way discriminated against because of your sex?"
(3) "On your job, do you feel in any way discriminated against because of your age?"
(4) "On your job, do you feel in any way discriminated against for any other reason?"

In addition, a composite measure of discrimination was derived to represent the occurrence of any type of discrimination (i.e., yes to at least one of the 4 discrimination measures). We assessed workplace mistreatment by the following single-item binary (yes, no) question: "In the last 12 months, were you threatened, bullied, or harassed by anyone while you were on the job?"

2.3. Statistical analysis

Survey procedures in the SAS-callable SUDAAN software (version 11.0.1, Research Triangle Institute, Research Triangle Park, North Carolina) were used to estimate population-level summary measures, accounting for sample weights, stratification, and other complex design features similar to those described for other national surveys (Korn & Graubard, 2011; Mirel et al., 2013). The REGARDS sampling weights derived for the full cohort were revised to reflect the race/sex/age/region composition of the occupational ancillary study sample. Descriptive analyses to characterize the sociodemographic characteristics of the sample were performed with a PROC CROSSTAB procedure. Adjusted prevalence and prevalence ratios (PRs) of discrimination and mistreatment and their associated 95% confidence intervals (CIs) were estimated with weighted logistic regression (PROC RLOGIST) (Bieler, Brown, Williams, & Brogan, 2010). All estimates (prevalence and PRs) were adjusted for race, sex, age, and region (stroke belt, stroke buckle, and other). A PR was considered statistically significant if the 95% CI did not contain the null value (PR = 1.00). All proportions and prevalence results reported have been weighted.

Adjusted prevalence and PRs by race-sex subgroups, race, and sex were estimated from logistic regression models for each discrimination and mistreatment measure as a function of race (2 levels), sex (2 levels), interaction between race and sex (4 levels), age (continuous), and region (3 levels). Sensitivity analyses were performed to examine the influence of age strata when the discrimination data were collected (aged 48–64 versus ≥65 years). Additional sensitivity analyses were performed to evaluate the influence of employment type (wage vs. self-employed).

Logistic regression analyses were used to examine the association between discrimination and mistreatment. Estimates of adjusted prevalence and PRs of mistreatment were derived from models with the following predictors: discrimination type (2 level), race (2 levels), sex (2 levels), three-way interaction between discrimination type, race, and sex (8 levels), age (continuous), and region (3 levels). Separate models were fitted for four forms of discrimination and the composite discrimination measure (five models total).

3. Results

3.1. Sociodemographic characteristics

The study sample comprised employed 4798 participants, representing a population of > 40 million U.S. workers aged 48 years or older. Sociodemographic characteristics of the sample are shown overall and by race-sex subgroups in Table 1. The study population was half male (53%), and the majority were white (89%); the race-sex composition was 6% black women (BW), 5% black men (BM), 42% white women (WW), and 47% white men (WM). At the time of the occupational survey, 27% were aged 48–54 years, 50% were aged 55–64 years, and 23% were aged ≥65 years. Nearly 60% were college graduates. The majority were wage-employed (76%), with nearly 60% employed in management and professional occupations, 20% employed in sales and office, 10% in service, and < 10% in skilled and general manual labor occupations. Seventeen percent lived in the stroke belt/buckle region and 44% had a household income of ≥$75,000. Median tenure in the current job was nearly 13 years. There were significant differences in education, occupation, household income, and type of employment across the four race-sex subgroups ($p < 0.01$).

3.2. Prevalence of workplace discrimination and mistreatment

There were no statistically significant differences in the prevalence of age discrimination by race-sex subgroups, race, or sex (Table 2), which ranged from a high of 10% for BW to a low of 6% for WM (Fig. 1). The prevalence of racial discrimination was seven times higher for blacks than whites (PR = 7.01, 95% CI: 4.27–11.5) (Table 2) and ranged from a high of 17% for BW and 12% for BM to a low of 2% for WW and WM (Fig. 1). Moreover, racial discrimination was 10 times higher among BW than WW (PR = 10.1, 95% CI: 5.01–20.4), whereas racial discrimination was 5 times higher among BM than WM (PR = 5.03, 95% CI: 2.48–10.2) (Table 2). The prevalence of sex discrimination was 5 times higher among women than among men (PR = 5.36, 95% CI: 2.89–9.92) (Table 2), ranging from a high of 11% for BW and 8% for WW to a low of 2% for BM and WM (Fig. 1). The comparison of sex discrimination between men and women was similar between blacks and whites (BW vs BM: PR = 5.45, 95% CI: 2.41–12.3; and WW vs. WM: PR = 5.34, 95% CI: 2.63–10.8). The prevalence of sex discrimination did not differ significantly by race (Table 2).

The prevalence of "any other" form of workplace discrimination was 82% higher among blacks than among whites (PR = 1.82, 95% CI: 1.19–2.77) (Table 2), ranging from a high of 9% for BM and 8% for BW to lows of 5% for WW and 4% for WM (Fig. 1). Reports from BM of other forms of workplace discrimination were more than twofold higher than those from WM (PR = 2.37, 95% CI: 1.21–4.65).

The prevalence of experiencing at least one form of workplace discrimination ranged from a high of 25% for BW (18% for BM and 16% for WW) to a low of 11% for WM (Fig. 1), with significant differences by race-sex subgroups, race, and sex. Overall, blacks experienced a 60% higher prevalence of discrimination compared to whites (PR = 1.60, 95% CI: 1.27–2.00) (Table 2). Specifically, BW experienced a 51% higher prevalence of discrimination than WW (PR = 1.51, 95% CI: 1.17–1.95), and BM experienced a 71% higher prevalence of discrimination than WM (PR = 1.71, 95% CI: 1.15–2.56). Overall, the reported prevalence of discrimination was 53% higher for women than for men (PR = 1.53, 95% CI: 1.16–2.02), whereas WW experienced 56% higher prevalence of discrimination than WM (PR = 1.56, 95% CI: 1.13–2.16).

The prevalence of workplace mistreatment was 52% higher among women than men (PR = 1.52, 95% CI: 1.07–2.17), ranging from a high

Table 1
Sociodemographic characteristics of U.S. workers aged ≥48 years, by race-sex subgroups.

Characteristic	Overall (n = 4798)%	Blacks (n = 1, 616)[a]		Whites (n = 3182)	
		Women (n = 1014)[a]%	Men (n = 602)%	Women (n = 1567)%	Men (n = 1615)%
Age (years) at occupational survey					
48–54	27.0	26.2[b]	30.3	25.9	27.8
55–64	49.7	56.4	49.8	51.4	47.4
65–74	17.9	13.5	16.0	17.3	19.2
≥75	5.4	3.9	4.0	5.4	5.6
Educational status at enrollment					
College graduate or higher	56.4	38.5	41.7	54.9	61.5
Some college	26.0	35.3	32.4	27.1	23.1
High school graduate	15.6	21.2	22.1	16.8	13.2
Less than high school	2.1	5.1	3.8	1.2	2.2
Occupation (at occupational survey)					
Management/professional	58.5	46.0	34.7	59.1	62.1
Service	9.5	22.0	18.6	10.9	5.8
Sales and office	20.6	25.1	16.6	26.4	15.4
Construction, extraction, maintenance	4.2	< 1	13.2	0.3	7.1
Production, transportation, material moving	7.2	6.8	16.9	3.3	9.6
U.S. region at enrollment					
Stroke belt[c]	14.4	27.7	26.0	13.1	12.7
Stroke buckle[d]	2.5	6.1	6.6	2.2	1.9
Other 40 contiguous states	83.0	66.2	67.3	84.7	85.4
Household income at enrollment					
Less than $20K	3.3	9.3	7.5	3.2	2.2
$20K–$34K	12.0	20.3	12.4	13.8	9.3
$35K–$74K	34.5	40.8	38.2	36.6	31.6
$75K or more	44.1	24.9	32.7	38.2	52.9
Refused	6.1	4.8	9.1	8.2	4.0
Number of jobs held in the past 10 years					
≤1	53.4	49.8	51.8	48.9	58.0
2	27.9	30.6	23.8	30.5	25.9
≥3	18.7	19.6	24.4	20.7	16.2
Tenure at current job, in years (median ± SE)	12.5 ± 0.39	11.4 ± 0.74	13.7 ± 1.02	11.1 ± 0.64	15.0 ± 1.08
Type of employment					
Self	24.2	15.1	20.4	20.8	28.7
Wage	75.8	84.9	79.6	79.2	71.3
Among wage employed					
Supervisory responsibilities	41.5	30.9	40.7	34.6	49.9
Represented by union	19.2	30.8	28.1	16.1	19.4
Work arrangement					
On-call employee	3.1	3.7	5.0	4.7	1.2
Subcontractor/temporary	2.4	2.5	3.2	2.7	2.0
Regular	94.5	93.8	91.9	92.7	96.8
Among self-employed					
Type of work					
Business owner	76.0	68.3	80.4	67.3	81.7
Independent	21.5	28.6	18.0	28.7	16.7
Other/unknown	2.5	3.0	1.5	4.0	1.6
Wages represent ≥20% of household income	75.7	77.4	78.1	62.3	83.7
Work hours per week: preference					
Fewer	33.1	31.1	31.0	32.9	33.8
Same	57.8	60.3	49.2	57.2	59.0
More	9.1	8.6	19.8	9.9	7.3
Work hours categories					
Part-time	32.5	31.1	24.8	45.5	22.1
Full-time	41.4	54.0	50.0	40.8	38.8
Overtime	26.4	15.0	25.2	13.7	39.1
Shiftwork status					
Ever on shift work	58.2	59.7	71.9	54.5	59.9
Currently on shift work	20.7	24.4	30.5	16.4	22.9

Percentages (that is, prevalences) might not sum to 100 because of rounding.
Type of employment, supervisory status, self-employed type of work, representation by union, and work hours preference were all defined for the current job the participants held at the time of the occupational survey. "Ever on shift work" reflects lifetime shift work status, whereas "currently on shift work" reflects shift work status at the time of the occupational survey.
Note: after application of sampling weights, the 4798 participants in the sample represent 40,352,947 workers in the U.S. population (5.9% black women, 5.1% black men, 41.5% white women, and 47.4% white men).

[a] Values (n) in the table header are the unweighted sample size.

[b] Values (%) in the table represent the weighted prevalence except for "tenure at current job, in years," where the weighted median and the standard error (SE) are presented.

[c] Stroke belt is defined as the eight southern states of North Carolina, South Carolina, Georgia, Tennessee, Mississippi, Alabama, Louisiana, and Arkansas.

[d] Stroke buckle is a segment of the stroke belt region of the United States, defined as the south Atlantic coastal plains states of North Carolina, South Carolina, and Georgia.

Table 2
Prevalence ratio (PR) of workplace discrimination and mistreatment among U.S. workers aged ≥48 years, by race-sex subgroups, race, and sex.

	Black women Vs. Black men	White women vs White men	Black women vs White women	Black men vs White men	Blacks vs Whites	Women vs Men
Discrimination type						
Age	1.36 (0.74–2.51)[a]	1.16 (0.75–1.79)	1.31 (0.85–2.01)	1.11 (0.60–2.06)	1.21 (0.84–1.75)	1.18 (0.80–1.75)
Racial	1.42 (0.92–2.19)	0.71 (0.29–1.73)	**10.1 (5.01–20.4)**	**5.03 (2.48–10.2)**	**7.01 (4.27–11.5)**	0.99 (0.60–1.63)
Sex	**5.45 (2.41–12.3)**	**5.34 (2.63–10.8)**	1.32 (0.87–1.99)	1.28 (0.47–3.50)	1.31 (0.89–1.92)	**5.36 (2.89–9.92)**
Any other discrimination	0.90 (0.50–1.63)	1.51 (0.83–2.74)	1.41 (0.85–2.34)	**2.37 (1.21–4.65)**	**1.82 (1.19–2.77)**	1.37 (0.84–2.24)
At least one [b]	1.38 (0.97–1.95)	**1.56 (1.13–2.16)**	**1.51 (1.17–1.95)**	**1.71 (1.15–2.56)**	**1.60 (1.27–2.00)**	**1.53 (1.16–2.02)**
Mistreatment	1.23 (0.75–2.01)	**1.57 (1.05–2.35)**	1.09 (0.76–1.57)	1.40 (0.83–2.36)	1.22 (0.90–1.66)	**1.52 (1.07–2.17)**

[a] Values in the table represent the weighted prevalence ratio (PR) and the associated 95% confidence intervals (CIs) comparing prevalence of discrimination/mistreatment between race-sex subgroups, race, or sex. The PR estimates were obtained by using the RLOGIST procedure in SUDAAN, where each outcome was modeled as a function of the following variables: race, sex, interaction between race and sex, age at time of enrollment, and region of residence at time of enrollment. Therefore, all estimates are adjusted for stratification variables.
[b] Experiencing at least one of the four discrimination types (age, racial, sex, or other).

of 13% for BW to a low of 8% for WM (Fig. 1). Race-sex subgroups were not significantly different except for WW, who had a 57% higher prevalence of mistreatment than WM (PR = 1.57, 95% CI: 1.05–2.35) (Table 2).

3.3. Sensitivity analysis

The pattern of results reported previously for the full sample were replicated by age strata (48–64 and ≥ 65 years) (Table S1 and Fig. S1). Prevalence ratios for exposure to at least one form of discrimination did not change among younger workers (aged 48–64 years). However, among workers aged ≥65 years, there were no significant subgroup differences in the prevalence of mistreatment. Differences in the prevalence of "any discrimination" (i.e., at least one) were confined to black and white men and race overall. The prior pattern of subgroup results for the prevalence ratios for racial discrimination and any discrimination were mostly consistent when analyses were run by employment type (wage- and self-employed) (Table S2 and Fig. S2). Mistreatment did not vary by race or sex among the self-employed. However, wage-employed blacks experienced a higher prevalence of age and sex discrimination than did wage-employed whites (Table S2), while self-employed blacks experienced a lower prevalence of age discrimination than did self-employed whites.

3.4. Association of discrimination with mistreatment

The prevalence of mistreatment, stratified by discrimination type, is presented in Fig. 2. Among workers who experienced any discrimination, the prevalence of mistreatment ranged from a high of 34% for WM, 34% for WW, and 31% for BW, to a low of 26% for BM (Fig. 2). Among those who did not report any discrimination, the prevalence of mistreatment was low, ranging from 5% for WM to 7% for BW. The data in Fig. 2 show that those reporting discrimination experienced a substantially higher prevalence of mistreatment compared with those who did not report discrimination. Mistreatment was 4–8 times more prevalent among those reporting at least one form of discrimination compared with those reporting none (Table 3). For example, the prevalence of mistreatment among black women who reported at least one form of discrimination was nearly 5 times higher than those reporting no discrimination (PR = 4.71, 95% CI: 2.71–8.19; BM: PR = 3.65, 1.65–8.10; WW: PR = 4.40, 2.84–6.84; and WM: PR = 7.54, 4.13–13.8) (Table 3).

4. Discussion

We generated national estimates of the prevalence of workplace discrimination and mistreatment by race, sex, and race-sex subgroups for a sample of black and white men and women aged ≥48 years. By including measures of both discrimination (race, sex, age, any other reason) and mistreatment, we provide a more complete understanding of WDM in the U.S. workforce than many prior studies. The prevalence of workplace discrimination varied significantly by race, sex, and race-sex subgroups, with a higher prevalence among blacks compared with whites and a higher prevalence among women compared with men. The prevalence of workplace mistreatment varied by sex, with a higher prevalence among women compared with men (overall) and a higher prevalence among white women compared with white men.

Our findings corroborate prior research indicating that racial minorities experience race-based workplace discrimination at higher rates compared to whites (Avery et al., 2008; (Rospenda et al., 2009). In

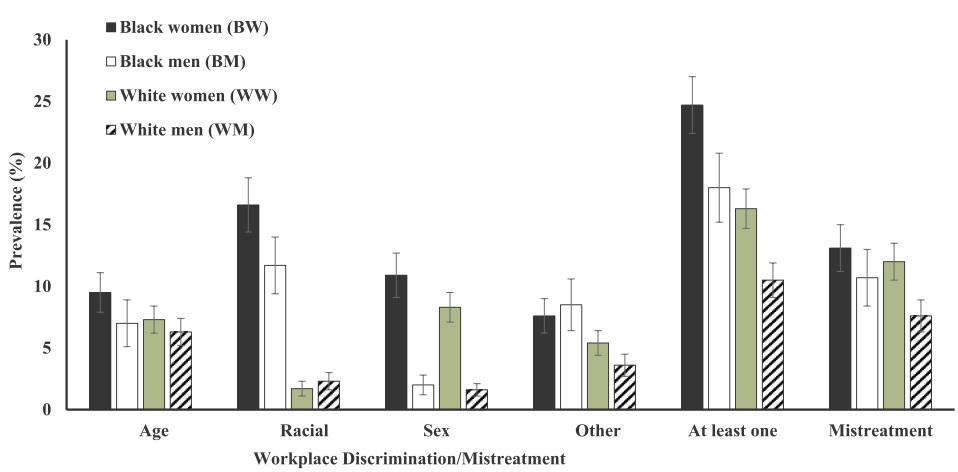

Fig. 1. Prevalence of workplace discrimination and mistreatment among U.S. workers aged ≥48 years, by race-sex subgroups.

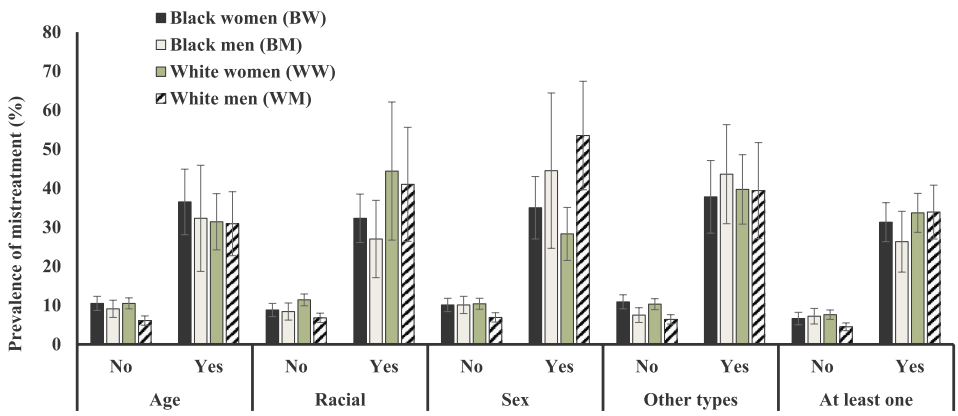

Fig. 2. Prevalence of workplace mistreatment among U.S. workers aged ≥48 years, by discrimination in race-sex subgroups.

our study, the prevalence of race-based workplace discrimination was 7 times higher among blacks compared to whites but there was no significant difference in race-based discrimination by sex. Similarly, findings from the Behavioral Risk Factor Surveillance System (BRFSS, 2004–2010, n = 70,080) showed that the prevalence of racial discrimination was significantly higher among blacks compared to whites (21.2% vs 4.2%), whereas differences in the prevalence of racial discrimination by sex were not significant (Chavez at al., 2015).

In addition, our finding that blacks and women have a higher prevalence of exposure to at least one form of workplace discrimination compared with whites and men is also consistent with prior findings in occupation-specific studies (Hammond et al., 2010; Nunez-Smith et al., 2009; Sellers, Cherepanov, Hanmer, Fryback, & Palta, 2013). Following a survey of U.S. physicians conducted in 2006–2007 (n = 529), Nunez-Smith et al. (2009) reported substantial differences in prevalence of perceived racial/ethnic workplace discrimination at the current job, by race: 59% of black, 39% of Asian, 35% of "other" race, 24% of Hispanic/Latino, and 21% of white physicians reported experiencing discrimination "sometimes, often, or very often." In a study of hospital workers in northern California, Hammond et al. (2010) reported that the prevalence of race-based workplace discrimination (in the past year) was significantly higher among blacks than among whites (19.7% vs. 3.1%), whereas racial differences in the prevalence of sex and age discrimination were not significant. In the current study, the prevalence of age discrimination was similar across subgroups, ranging from a high of 9.5% among BM to a low of 6.3% among WM; the overall prevalence of age discrimination among older workers was 6.9% but did not manifest differentially across subgroups.

A study of employees from five organizations reported that minority women were subject to double jeopardy at work, experiencing the most sexual harassment because they were both women and members of a minority group (Berdahl & Moore, 2006). Although black women in the current study experienced a 32% higher prevalence of sex discrimination compared to white women, the difference was not statistically significant. The difference between the two studies may be due to differences in the sex discrimination measure used (Berdahl and Moore used a 19-item questionnaire to assess sexual harassment, while the current study used a single question) or sample size.

Our findings are consistent with prior research suggesting that women experience elevated levels of workplace discrimination (Avery et al., 2008; Rospenda et al., 2009) and mistreatment compared to men (Berdahl & Moore, 2006; Magley, Gallus, & Bunk, 2010; McCord et al., 2018; Okechukwu et al., 2014; Saad, 2015). Results of a recent Gallup poll indicate that 12% of working women, versus 5% of working men, reported feeling they had been passed over for a promotion or other opportunity because of their sex (Saad, 2015). A recent meta-analysis indicated that women report significantly more sex-based workplace mistreatment than men (McCord et al., 2018). While our global measure of mistreatment (threatened, bullied or harassed) did not illicit whether the mistreatment was sex-based, women in our study were 50 percent more likely to experience mistreatment than men. Because our findings were gathered in 2011–2013, they serve as important benchmarks for WDM prevalence prior to the widespread and continuing national news reports of sexual workplace harassment and mistreatment reported among high-profile individuals in the entertainment and media industries (Cobb & Horeck, 2018).

The prevalence of workplace mistreatment was significantly higher for women than for men (12.1% vs. 8.0%), but racial differences (11.8% for blacks vs. 9.7% for whites) were not statistically significant. Comparing our results to the 2010 National Health Interview Survey, which has a nearly identical measure of mistreatment, we report a marginally higher prevalence of mistreatment overall (9.9% vs. 7.8%) and for women (12.1% vs. 9.3%), blacks (11.8% vs. 8.2%), and whites (9.7% vs. 7.9%) (Alterman et al., 2013). Our findings are also consistent with results from the 2017 national survey by the Workplace Bullying Institute (WBI), which reported that 9% of workers were bullied in the past year, and that women were most often the targets of workplace bullying (WBI, 2017c).

In sensitivity analyses, results for exposure to at least one form of discrimination and for mistreatment in the overall sample were

Table 3
Association between workplace discrimination and mistreatment among U.S. workers aged ≥48 years, by race-sex subgroups.

Discrimination type	Black women (n = 1014)[a]	Black men (n = 602)	White women (n = 1567)	White men (n = 1615)
Age	3.48 (1.98–6.10)	3.55 (1.38–9.14)	2.99 (1.78–5.03)	5.05 (2.65–9.65)
Racial	3.68 (2.17–6.23)	3.20 (1.38–7.43)	3.88 (1.71–8.84)	6.04 (2.76–13.2)
Sex	3.44 (1.97–6.01)	4.40 (1.66–11.7)	2.71 (1.58–4.66)	7.75 (4.21–14.3)
Any other discrimination	3.45 (1.93–6.19)	5.84 (2.76–12.4)	3.84 (2.29–6.44)	6.15 (2.99–12.6)
At least one [b]	4.71 (2.71–8.19)	3.65 (1.65–8.10)	4.40 (2.84–6.84)	7.54 (4.13–13.8)

Values (%) in the table represent the prevalence ratios (PRs) comparing prevalence of mistreatment in those who experienced discrimination relative to those who did not experience discrimination in each race-sex subgroup.

[a] Values (n) in the table header are the unweighted sample size.

[b] Experiencing at least one of the four discrimination types (age, racial, sex, or other).

consistent for all sub-group comparisons in the lower age strata (48–64 years). In the higher age strata (≥65 years), results were consistent only for discrimination involving comparisons between black men vs. white men and blacks vs. whites; the non-significant findings for the other subgroup comparisons may be due to true smaller subgroup differences among older workers combined with reduced statistical power. Discordant findings for exposure to mistreatment among older workers (aged ≥ 65 years) involving comparisons between white women and white men and women vs men are similarly impacted by reduced statistical power; however, a change in the direction of the effect estimates from positive to negative for subgroup comparisons by sex suggests possible effect modification that will need to be confirmed in future research with a larger sample.

Results for exposure to at least one form of discrimination and for mistreatment in the overall sample were consistent with the results for all sub-group comparisons involving wage, but not self-employed, individuals. The non-significant sub-group differences in exposure to discrimination among the self-employed may be due to true smaller differences in combination with reduced statistical power. Discordant findings for exposure to mistreatment among the self-employed may also be influenced by reduced statistical power but, more importantly, changes in the direction of the effect estimates from positive to negative for most subgroup comparisons suggests possible effect modification by employment type that will need to be confirmed in future research with a larger sample.

Differential exposure to WDM by race, sex, and race-sex subgroups has important public health implications. Previous research has shown that exposure to WDM can be physically and psychologically harmful to the targeted individuals (Dhanani et al., 2017; Høgh, Mikkelsen, & Hansen, 2011; Lewis, Cogburn, & Williams, 2015; Nielsen & Einarsen, 2012; Okechukwu et al., 2014; Pascoe & Smart Richman, 2009; Rospenda et al., 2009). It has been theorized by Dhanani et al. (2017) that workplace discrimination threatens a person's sense of self and increases feelings of marginalization, which induces a stress response manifesting in adverse mental and physical health as well as poor employee performance outcomes (negative job attitudes, decreased positive and increased negative workplace behaviors, sickness-related absenteeism, turnover, grievance, compensation and litigation, and reduced productivity) (Dhanani et al., 2017; Hoel, Sheehan, Cooper, & Einarsen, 2011; Triana et al., 2015). The negative impacts of discrimination on physical health outcomes (Lewis et al., 2015) includes objective clinical disease outcomes (all-cause mortality, hypertension, incident breast cancer, and incident asthma) and preclinical outcomes with established linkages to later disease (carotid intima media thickness, coronary artery calcification, nighttime blood pressure elevation, increase in visceral fat, and inflammation). WDM also can influence the adoption or exacerbation of unhealthy behaviors such as smoking and drinking (Chavez et al., 2015; Pascoe & Smart Richman, 2009; Rospenda et al., 2009). Even subtle and interpersonal forms of discrimination, which are often overlooked, are as detrimental to those targeted as are the more typical, overt forms of discrimination (Jones, Peddie, Gilrane, King, & Gray, 2016). These reports of adverse effects, combined with our findings of differential exposure, suggest that WDM may be an important under-recognized determinant of health disparities by race and sex.

This study has several limitations. Due to constraints on survey administration time, we used single-item measures to characterize WDM. Single-item measures of complex psychological constructs have shortcomings (Fisher et al., 2016; Hoeppner, Kelly, Urbanoski, & Slaymaker, 2011; Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005): they are more vulnerable than multiple-item measures to random measurement errors and internal-consistency reliability statistics cannot be computed. The global single-item measure of mistreatment used in our study (i.e., threatened, bullied, or harassed on the job in the past 12 months) makes it infeasible to learn the prevalence of different forms of mistreatment and how exposure to specific types of mistreatment (e.g., sexual harassment, bullying) vary by race-sex subgroups. Worker populations whose jobs involve greater social or interpersonal interactions (e.g., healthcare or service workers) may have more opportunities for being subject to mistreatment or discrimination. As is true for much of the WDM research conducted to date, the source of discrimination or mistreatment (such as a customer or client, a superior, peer, or subordinate) was not identified in our study.

Data collection for exposure to WDM was restricted to the current job; a participant who held multiple jobs concurrently reported their experiences at the job where they spent the majority of their working hours. Sensitivity analyses were likely underpowered; therefore, we cannot rule out that differences reported by age strata and employment type are due to chance. Because data on sex-race composition of the participant's workplace were not collected, we cannot examine whether race-sex differences in the prevalence of WDM varies by minority/majority status. This study collected self-reported sex as a binary variable when other identifications of sex and gender relevant to the study of WDM are possible (e.g., transsexual, transgender). It is not possible to know if those exposed to “any other form of discrimination” included individuals with non-binary identities.

While the racial diversity of the sample was limited to non-Hispanic whites and blacks, we expect our findings to be generalizable to the majority of the U.S. workforce aged ≥48 years because the racial composition of the older segment of the U.S. workforce is majority white and black (US Senate Special Committee on Aging Report (ADD, 2017). However, our results are not generalizable to other racial and ethnic minority groups. Despite the aforementioned limitations, this study represents an important contribution to our understanding of the prevalence of discrimination and mistreatment among workers in the United States. Strengths of this study include the large national population-based sample of middle-aged and older (aged ≥ 48 years) black and white men and women employed across 77% of all detailed U.S. Census occupation codes. This is one of the first national studies to examine associations between discrimination and mistreatment in an employed sample.

In conclusion, our results suggest that women and blacks employed across a broad range of the US labor market perceived more workplace discrimination than men and whites, respectively. Race differences were more pronounced for race-based discrimination, whereas sex differences were more pronounced for sex-based discrimination, relative to other forms of discrimination. Although women experienced more workplace mistreatment than men, there were no significant differences in mistreatment by race. Overall, our findings regarding race and sex differences are consistent with other research with younger employed samples. Our results also suggest that discrimination may be a determinant of mistreatment, with those experiencing discrimination reporting a higher prevalence of mistreatment compared with their counterparts. However, due to the cross-sectional design, we cannot establish that discrimination precedes mistreatment; it is possible that mistreatment precedes discrimination. It is also worth noting that mistreatment may be a way to circumvent illegal forms of harassment and discrimination (e.g., to sexually harass without the risk of being accused of sexual harassment). Investigation using a longitudinal rather than cross-sectional design would be appropriate to establish casual direction. The imbalance in prevalence of WDM among women and racial minorities represents an important focus for both prevention and intervention.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssmph.2019.100444.

Disclaimer

The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of the NINDS, NIA, CDC, or NIOSH. Representatives of NINDS and NIOSH were involved in the review of the manuscript but not directly involved in the collection, management, analysis, or interpretation of the data.

Ethical approval

The Institutional Review Boards at the University of Alabama at Birmingham (UAB) and the National Institute for Occupational Safety and Health (NIOSH) approved the study.

The prevalences represent weighted population estimates and were adjusted for stratification variables (race, sex, age at time of enrollment, and region of residence at time of enrollment). “At least one” refers to experiencing at least one of the four discrimination types (age, racial, sex, or other).

The error bars represent the estimate plus/minus the standard error (SE), not the confidence interval (CI) and hence conclusions about the statistical significance of differences between groups cannot be made by looking at whether the error bars overlap or not.

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