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Interpersonal discrimination and health-related quality of life among black and white men and women in the United States

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Abstract

Objective—We assessed associations between discrimination and health-related quality of life among black and white men and women in the United States.

Methods—We examined data from the National Health Measurement Study, a nationally representative sample of 3,648 adults aged 35–89 in the non-institutionalized US population. These data include self-reported lifetime and everyday discrimination as well as several health utility indexes (EQ-5D, HUI3, and SF-6D). Multiple regression was used to compute mean health utility scores adjusted for age, income, education, and chronic diseases for each race-by-gender subgroup.

Results—Black men and women reported more discrimination than white men and women. Health utility tended to be worse as reported discrimination increased. With a few exceptions, differences between mean health utility scores in the lowest and highest discrimination groups exceeded the 0.03 difference generally considered to be a clinically significant difference.

Conclusions—Persons who experienced discrimination tended to score lower on health utility measures. The study also revealed a complex relationship between experiences of discrimination and race and gender. Because of these differential social and demographic relationships caution is urged when interpreting self-rated health measures in research, clinical, and policy settings.

Keywords

Health-related quality of life; Interpersonal; discrimination; Race and gender differences

INTRODUCTION

Health related quality of life (HRQL) measures, which include disease specific measures, generic health status measures (e.g., SF-36), and preference-based utility measures (e.g., EQ-5D), are used to evaluate clinical outcomes, determine the burden of disease in a population, and quantify health for economic analysis.[1] Studies suggest disparities in HRQL

with low scores for those of lower income and education compared to those of higher socioeconomic status, for blacks compared to whites, and for women compared to men.[2–5]

Little is known about the mechanisms that underlie these race and gender differences.[6,7] One factor found to be associated with disparities in health is experience of discrimination. Conceptualized as a social stress, discrimination has been associated with poorer physical and mental health.[8,9] Yet the prevalence of discrimination across demographic characteristics in the United States (U.S.) is poorly described.[10] In studies using the everyday and lifetime discrimination scales, the most consistent finding is that whites report experiencing less discrimination than non-whites.[9,10] Although less consistently found, it appears that prevalence of discrimination may vary by gender.[11,12,13] Although black men and women were equally likely to perceive general workplace discrimination or mistreatment when shopping in public,[14] black men appear more likely to perceive themselves to face racial discrimination in hiring and in encounters with the police.[15]

Few discrimination studies have sufficient sample sizes to simultaneously consider subgroups by race and gender and none have evaluated HRQL. Race and gender are both associated with a range of constrained opportunities and resources, such as differential social capital and exposure to social risks such as discrimination that influence daily life, perceptions, attitudes, health, and well being.[16,17,18] A more complete understanding of disparities in HRQL requires attention to the intersection of race and gender and experiences of discrimination. We examine our hypothesis that perceived discrimination is associated with lower HRQL scores among black and white men and women from a US sample of adults.

METHODS

Data

We used cross-sectional data from the U.S. National Health Measurement Study (NHMS)[19] on respondents self-identifying as either African American/black or white. The NHMS was a random-digit dialed telephone survey, conducted in 2005–2006, of 3844 community-living US adults aged 35–89 years. The NHMS collected self-reported data on interpersonal discrimination, socioeconomic status, presence of health conditions, and several widely-used generic HRQL instruments. NHMS data are publicly available (http://www.icpsr.umich.edu/cocoon/NACDA/STUDY/23263.xml).

Health Utility Measures

This study examined three commonly used utility measures of HRQL: the EuroQol EQ-5D (EQ-5D)[20,21], the Health Utilities Index Mark 3 (HUI3)[22], and the SF-6D, computed from the SF-36v2™ [23,24]. The EQ-5D, HUI3, and SF-6D are all generic measures, *i.e.*, not specific to any one organ system or disease, and preference-based, *i.e.*, their scoring is based on systematically elicited utility evaluations by people sampled from a community or the general population. All three produce summary utility scores anchoring “dead” at 0 and “full health” at 1.0.

The EQ-5D (http://www.euroqol.org) has 5 questions, each with 3 response categories: no problem, some problem, or severe problem. The questions refer to “your health today” and ask about mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. We use the scoring algorithm that was derived in a population sample of 4000 US adults.[21]

The HUI3 (http://www.healthutilities.com/) questions refer to “your level of ability or disability during the past week” and access health status on eight attributes: vision, hearing, speech, ambulation, dexterity, emotion, cognition, and pain with 5 or 6 levels per attribute,

varying from highly impaired to normal.[22] The scoring algorithm for the HUI3 was derived in a community sample from Hamilton, Ontario, Canada.

The SF-36v2™ health status questionnaire (http://www.sf-36.org/), consisting of 36 questions generally referring to health in the past 4 weeks, is usually scored as either 8 individual scales or 2 summary scores. Brazier et al. developed the SF-6D, a preference-based scoring algorithm that yields a single summary score using 11 of the items from the SF-36 that define health status on 6 attributes: physical function, role limitation, social function, pain, mental health, and vitality.[23,24] Scoring of the SF-6D is based on a population sample from the United Kingdom.[23,24]

Discrimination Scales

Two scales of interpersonal discrimination were administered to all respondents, the everyday discrimination scale and the lifetime discrimination scale (Table 1).[25] Scores were computed by summing the numerical equivalents for the categorical responses; everyday discrimination scores range from 0 to 25 and lifetime discrimination scores range from 0 to 4, with higher scores representing more discrimination.

Covariates

The NHMS also surveyed years of education (<12 years, 12 years, >12 years), household income (<$25,000, $25,000–$50,000, $50,000–$75,000, and >$75,000), and past diagnoses of health conditions. We included the 5 conditions with highest prevalence and impact on HRQL scores: coronary heart disease, arthritis, chronic respiratory disease (asthma, emphysema, and chronic bronchitis), diabetes, and stroke.[26]

Analyses

Means and percentages of discrimination and health utility scores were computed for four race and gender groups. Each race-by-gender group was further stratified by discrimination scores and mean health utility scores were estimated within each stratum using weighted least-squares multivariable regression to adjust for age, income, education, and conditions. All adjustment variables were centered to the NHMS weighted means for blacks and whites combined. All analyses were performed in SAS, incorporating survey weights to account for the NHMS sampling design (Copyright 2002–2003 SAS Institute Inc., Cary, NC, USA).

RESULTS

There were 3648 respondents: 2562 white and 1086 black (Table 2). The sample was predominantly women (57.5%) with a mean age of 54.5 years. Black men reported the highest lifetime discrimination scores, followed by black women; white women tended to report the least lifetime discrimination. The distribution of everyday discrimination scores was very similar for black men and women and higher than whites' scores. Blacks also had lower income levels than whites. Black men and women reported significantly higher percentages of diabetes than their white counterparts. Black women reported significantly more chronic respiratory disease than other groups.

Health utility scores were worse at higher levels of everyday discrimination in all race-by-gender strata for all HRQL measures except for EQ-5D among black men and white men (Table 3). For SF-6D and HUI3, differences between mean utilities in the lowest and highest discrimination groups exceeded 0.03, a difference considered clinically significant [27,28]

Higher lifetime discrimination scores were associated with worse health utility scores (Table 4). This difference reached statistical significance ($p<.05$) for SF-6D and HUI3 in all groups,

but not for EQ-5D in black men. All differences were deemed clinically significant, except for EQ-5D and SF-6D in white women.

DISCUSSION

We explored differences in HRQL by discrimination, within race and gender groups. We found higher discrimination was associated with lower health utility scores for blacks and whites, men and women. With a few exceptions, mean health utility score differences between lowest and highest everyday discrimination or lifetime discrimination levels in any race-gender strata exceeded 0.03, a clinically significant difference for utility measures. This suggests that the stress of discrimination is pervasive by race and gender.[29]

Our study provides nationally-representative estimates of both everyday and lifetime discrimination for community-dwelling adults aged 35–89 years. Consistent with other studies, blacks report more discrimination than whites.[10] Black men and women report similar levels of everyday discrimination, yet black men report more lifetime discrimination than black women. White women report the least lifetime discrimination. The high prevalence of discrimination among black men supports a recent theory on racial hierarchy which suggests that subordinate males are primary targets of discrimination and that discrimination is practiced to reduce competition for power.[30]

We were unable to assess causation. Poor health may heighten perceptions of unfair treatment,[31] although evidence from longitudinal studies indicates that discrimination precedes poor health.[32,33] Additionally, it is possible that the self-reported survey items in this study were perceived and used differently by race and gender.[34, 35, 36] The small sample size for black men is another limitation. Longitudinal studies with diverse population groups are needed to assess causation and generalizability of the study findings.

Race and gender are important and intertwined social constructs that contribute to differences in health, possibly moderated by discrimination.[37] Our study emphasizes the necessity for further studies and development of theory to explain the simultaneous impact of race, gender, and discrimination on health. We urge that extrapolation of health utility differences across these groups in research, clinical, and policy settings should be done with caution.

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Table 1

Everyday and Lifetime Discrimination Scales.

Everyday Discrimination Questions (responses: almost every day=5, at least once a week=4, a few times a month=3, a few times a year=2, less than once a year=1, never=0) In your day-to-day life, how often have any of the following things happened to you?	
1	You are treated with less courtesy or respect than other people.
2	You received poorer service than other people at restaurants or stores.
3	People act as if they think you are not smart.
4	People act as if they are afraid of you.
5	You are threatened or harassed.
Lifetime Discrimination Questions (responses: yes=1, no=0)	
1	At any time in your life have you ever been unfairly fired or denied promotion?
2	for unfair reasons, have you ever not been hired for a job?
3	Have you ever been unfairly stopped, searched, questioned, physically threatened or abused by the police?
4	Have you ever been unfairly discouraged by a teacher or advisor from continuing your education?

Table 2

Weighted statistics by race and gender*.

Item	Black Women	White Women	Black Men	White Men	All
Number	705	1394	381	1168	3648
Mean Age (yr)	50.7	54.2	51.3	55.8	54.5
Lifetime Discrimination Score:					
0	41 %	66 %	25 %	55 %	58 %
1	31 %	22 %	29 %	28 %	25 %
2	18 %	9 %	17 %	12 %	11 %
3–4	10 %	4 %	29 %	5 %	6 %
Everyday Discrimination Score:					
0–4	45 %	66%	43 %	62 %	62 %
5–9	36 %	28 %	36 %	30 %	30 %
10–14	14 %	6 %	14 %	7 %	7 %
15–25	5 %	1 %	7 %	1 %	1 %
Household Income Level:					
< $25,000	40 %	15 %	29 %	12 %	16 %
$25,000 – $50,000	25 %	25 %	26 %	25 %	25 %
$50,000 – $75,000	13 %	21 %	20 %	24 %	22 %
> $75,000	22 %	39 %	26 %	39 %	37 %
Education Level:					
< 12 yr	18 %	8 %	11 %	6 %	8 %
= 12 yr	25 %	29 %	30 %	29 %	29 %
> 12 yr	57 %	63 %	60 %	65 %	63 %
Major Chronic Conditions (not mutually exclusive):					
Diabetes	20 %	9 %	23 %	13 %	12 %
Coronary Heart Disease	8 %	6 %	11 %	13 %	9 %
Arthritis	33 %	34 %	26 %	30 %	32 %
Chronic Respiratory Disease	20 %	12 %	12 %	13 %	13 %
Stroke	6 %	4 %	3 %	3 %	4 %

*Percentages may not add to 100% due to rounding.

Table 3

Mean Health Utility Score by Race and Gender on Three Health Utility Indexes as a Function of Everyday Discrimination Score.[a,b]

Everyday Discrimination Score	Blacks & Whites mean (95% CI)	Black Men mean (95% CI)	Black Women mean (95% CI)	White Men mean (95% CI)	White Women mean (95% CI)
Health utility measured by EQ-5D					
0–4	0.88 (0.87, 0.89)	0.89 (0.86, 0.92)	0.85 (0.80, 0.90)	0.88 (0.87, 0.90)	0.88 (0.87, 0.89)
5–9	0.87 (0.86, 0.88)	0.88 (0.85, 0.91)	0.85 (0.82, 0.88)	0.88 (0.87, 0.90)	0.87 (0.85, 0.88)
10–25	0.83 (0.80, 0.86)	0.89 (0.83, 0.94)	0.74 (0.69, 0.79)	0.83 (0.79, 0.87)	0.84 (0.80, 0.89)
Test for trend	p<0.001	p=0.23	p=0.01	p=0.09	p<0.001
Health utility measured by HUI3					
0–4	0.83 (0.81, 0.84)	0.88 (0.85, 0.92)	0.76 (0.68, 0.84)	0.83 (0.80, 0.85)	0.83 (0.81, 0.84)
5–9	0.79 (0.77, 0.81)	0.82 (0.77, 0.87)	0.78 (0.72, 0.84)	0.81 (0.78, 0.84)	0.78 (0.75, 0.81)
10–25	0.72 (0.67, 0.77)	0.84 (0.73, 0.96)	0.58 (0.49, 0.66)	0.72 (0.65, 0.79)	0.71 (0.62, 0.80)
Test for trend	p<0.001	p=0.25	p=0.02	p=0.02	p<0.001
Health utility measured by SF-6D					
0–4	0.80 (0.80, 0.81)	0.83 (0.81, 0.86)	0.79 (0.74, 0.83)	0.81 (0.80, 0.82)	0.80 (0.78, 0.81)
5–9	0.78 (0.76, 0.79)	0.83 (0.80, 0.85)	0.78 (0.75, 0.81)	0.79 (0.77, 0.80)	0.76 (0.75, 0.78)
10–25	0.74 (0.72, 0.77)	0.79 (0.73, 0.84)	0.68 (0.63, 0.72)	0.74 (0.71, 0.77)	0.75 (0.71, 0.79)
Test for trend	p<0.001	p=0.17	p=0.002	p<0.001	p<0.001

[a] Weighted least-squares (WLS) multivariable regression was used to compute mean health utility scores adjusted for age, income, education, and chronic diseases within race-by gender groups stratified by discrimination scale scores;

[b] Tests for trend were computed using aforementioned WLS regression models refitted within the four gender-by-race groups (not stratified by discrimination scores); CI = confidence interval

Table 4

Mean Health Utility Score by Race and Gender on Three Health Utility Indexes as a Function of Lifetime Discrimination Score.[a,b]

Lifetime Discrimination Score	Blacks & Whites mean (95% CI)	Black Men mean (95% CI)	Black Women mean (95% CI)	White Men mean (95% CI)	White Women mean (95% CI)
			Health utility measured by EQ-5D		
0	0.89 (0.88, 0.89)	0.92 (0.88, 0.96)	0.86 (0.83, 0.89)	0.90 (0.89, 0.91)	0.88 (0.87, 0.89)
1	0.87 (0.86, 0.88)	0.89 (0.86, 0.93)	0.82 (0.73, 0.91)	0.88 (0.85, 0.90)	0.86 (0.84, 0.88)
2	0.84 (0.82, 0.86)	0.90 (0.87, 0.93)	0.82 (0.76, 0.88)	0.84 (0.81, 0.87)	0.85 (0.81, 0.89)
3–4	0.84 (0.80, 0.88)	0.82 (0.78, 0.86)	0.81 (0.75, 0.87)	0.85 (0.77, 0.93)	0.87 (0.79, 0.94)
Test for trend	p<0.001	p=0.08	p=0.01	p<0.001	p=0.001
			Health utility measured by HUI3		
0	0.83 (0.82, 0.85)	0.91 (0.87, 0.94)	0.80 (0.76, 0.84)	0.85 (0.83, 0.87)	0.83 (0.81, 0.85)
1	0.79 (0.77, 0.81)	0.86 (0.81, 0.91)	0.70 (0.57, 0.84)	0.80 (0.77, 0.83)	0.78 (0.74, 0.81)
2	0.75 (0.72, 0.79)	0.80 (0.72, 0.89)	0.77 (0.69, 0.85)	0.77 (0.73, 0.82)	0.74 (0.68, 0.81)
3–4	0.74 (0.66, 0.82)	0.76 (0.69, 0.83)	0.70 (0.59, 0.82)	0.75 (0.64, 0.86)	0.76 (0.62, 0.90)
Test for trend	p<0.001	p=0.01	p=0.02	p<0.001	p<0.001
			Health utility measured by SF-6D		
0	0.80 (0.80, 0.81)	0.87 (0.85, 0.89)	0.80 (0.77, 0.83)	0.82 (0.80, 0.83)	0.79 (0.78, 0.80)
1	0.78 (0.77, 0.80)	0.85 (0.82, 0.87)	0.75 (0.69, 0.82)	0.79 (0.77, 0.81)	0.77 (0.75, 0.79)
2	0.76 (0.75, 0.78)	0.83 (0.80, 0.85)	0.76 (0.73, 0.80)	0.77 (0.74, 0.79)	0.76 (0.74, 0.79)
3–4	0.75 (0.71, 0.78)	0.76 (0.73, 0.80)	0.67 (0.61, 0.74)	0.75 (0.69, 0.80)	0.78 (0.71, 0.86)
Test for trend	p<0.001	p<0.001	p<0.001	p<0.001	p=0.002

[a] Weighted least-squares (WLS) multivariable regression was used to compute mean health utility scores adjusted for age, income, education, and chronic diseases within race-by gender groups stratified by discrimination scale scores;

[b] Tests for trend were computed using aforementioned WLS regression models refitted within the four gender-by-race groups (not stratified by discrimination scores); CI = confidence interval