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Relationships between Health and Perceived Unequal Treatment Based on Race: Results from the 2002 North Carolina BRFSS Survey

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ABSTRACT

Objectives: Previous studies suggest that racism – prejudice or discrimination based on race – is an important underlying determinant of health disparities and quality of life in the United States. However, few studies have quantitatively measured the effect of racism on health. This study examines the relationship between health status and perceived treatment based on race among North Carolina adults. By “treatment” we mean how people are treated by others, not medical treatment.

Methods: The North Carolina Behavioral Risk Factor Surveillance System (BRFSS) is a multistage, random-digit dialing, statewide telephone survey of non-institutionalized adult residents age 18 and older. In 2002 the North Carolina BRFSS included a six-question “Reactions to Race” module and conducted 6,748 interviews. This study used data from this BRFSS module.

Results: Approximately 6.5 percent of North Carolina adults reported having emotional upset and/or physical symptoms due to treatment based on race in the past 30 days and 10 percent reported unequal experiences when seeking health care compared to people of other races. After adjusting for the other demographic characteristics, the odds of African Americans reporting emotional upset and/or physical symptoms due to treatment based on race (Odds Ratio=5.30, $p < 0.001$) and reporting worse experiences than other races when seeking health care (Odds Ratio=4.92, $p < 0.001$) were much greater than those for whites. Respondents who reported having emotional upset and/or physical symptoms due to treatment based on race, or those respondents who reported experiences worse than other races when seeking health care, had significantly lower quality of life and higher rates of chronic conditions and health risks. These results persisted after controlling for demographic characteristics.

Conclusions: Perceived unequal treatment based on race is associated with lower quality of life and with higher rates of chronic diseases and risk behaviors and conditions. African Americans are far more likely than whites to report being treated worse than other races when seeking health care and to report having emotional upset and/or physical symptoms due to treatment based on race.

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Introduction

The two overarching goals of the Healthy People 2010 public health agenda are to eliminate health disparities and to improve the quality of life for all Americans. While these two goals have increased awareness of, research on, and programs to address health disparities, realization of these goals will depend largely on addressing the fundamental causes of health inequalities and poor quality of life. Previous studies suggest that racism – prejudice or discrimination based on race – is an important underlying determinant of health disparities and quality of life in the United States. However, few studies have quantitatively measured the effect of racism on health. This study examines the relationship between health status and perceived treatment based on race among North Carolina adults. By “treatment” we mean how people are treated by others, not medical treatment.

Prior research has extensively documented racial and ethnic inequalities, particularly in access to care,¹⁻³ quality of care,^{4,5} and outcomes of care.⁶ Compared to whites, racial and ethnic minorities in the United States have higher overall mortality from most of the leading causes of death, poorer health status and quality of life, and shorter life expectancy. In addition, racial and ethnic minority groups are less likely to be insured, less likely to have access to life-saving technologies, and more likely to lack a usual source of health care.⁷⁻¹⁰ Even among those with financial access to care, disparities persist in the quality of care they receive and in the outcomes of such care.^{4,5,11-13} Disparities in quality of care have been documented for cardiac disease,^{4,5,11-13} cancer,¹⁴ and renal diseases.¹⁵ One study found African Americans and Hispanics in New York with confirmed coronary artery disease to be 35 percent and 40 percent less likely to undergo bypass surgery than whites, even when the procedure was judged to be beneficial.¹⁶

Although these inequalities in health have been attributed in part to historical and current socioeconomic differences,¹⁷ their persistence among people with similar insurance coverage or socioeconomic status is puzzling and of concern. Some studies

have suggested that the persisting disparities are indicative of other factors such as provider bias, discrimination, or racism.¹⁸⁻²¹ Racism has been defined as “a system of structuring opportunity and assigning value based on the social interpretation of phenotype (“race”) that unfairly disadvantages some individuals and communities, unfairly advantages other individuals and communities, and undermines realization of the full potential of the whole society through the waste of human resources”.²² According to Williams,¹⁷ racism has, over the years, shaped many of the determinants of health, such as economic resources and availability of health care services. Despite the frequent mention of racism in the health and social science literature, there is a paucity of quantitative research examining its effects on the health of racial and ethnic minorities.¹⁹⁻²¹ However, a small but growing body of literature has associated racism or experiences of discrimination with adverse pregnancy outcomes,^{23,24} increased cardiovascular disease including hypertension and diabetes,^{25,26} and adverse mental health outcomes.²⁷

A major limitation of research in this area has been the lack of population-based measures of treatment based on race. This study extends the current research by using a statewide representative survey for North Carolina to examine the relationship of two measures of perceived treatment based on race (having emotional upset and/or physical symptoms as a result of treatment based on race, and differential treatment when seeking health care compared to people of other races) and three health outcome dimensions (quality of life, chronic conditions, and risk conditions). We hypothesized that the two measures of perceived treatment based on race are associated with decreased quality of life, higher levels of chronic conditions, and higher levels of risk conditions.

Methods

The data used for this study were from the 2002 North Carolina Behavioral Risk Factor Surveillance System (BRFSS), a multistage, random-digit dialing, statewide telephone survey of non-institutionalized adult residents age 18 and older. The North

Carolina BRFSS conducted 6,748 interviews in 2002, including a module with six questions related to race and perceived treatment based on race. In this study, data were used from the following four questions:

1. *How do OTHER PEOPLE usually classify you in this country? Would you say White, Black or African American, Hispanic or Latino, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, multiracial, or some other group?*
2. *Within the past 12 months when seeking health care, do you feel your experiences were worse than, the same as, or better than those for people of other races? (Response Categories: 1. Worse than other races; 2. The same as other races; 3. Better than other races; 4. Worse than some races, better than others; 5. Only encountered people of the same race; and 6. Did not seek health care in past 12 months)*
3. *Within the past 30 days, have you felt emotionally upset, for example angry, sad, or frustrated, as a result of how you were treated based on your race?*
4. *Within the past 30 days, have you experienced any physical symptoms, for example headache, an upset stomach, tensing of your muscles, or a pounding heart, as a result of how you were treated based on your race?*

Instead of using self-identified racial identity, this study used race that was based on how respondents reported being racially classified by other people. We used racial classification based on how people are classified by others because most unfair treatment or discrimination is based largely on how people perceive or classify individuals and the stereotypes or prejudices they hold or associate with the racial classifications. All analyses were restricted to respondents who reported being classified by other people as white, or as black or African American. This reduced the sample size to 5,850. The two measures of perceived treatment based on

race examined in this study were: 1) reporting emotional upset and/or physical symptoms due to treatment based on race within the past 30 days, and 2) reporting being treated worse than other races when seeking health care. The first measure was derived from the third and fourth questions shown above. The second measure was derived from the second question shown above; only the respondents who chose the first three categories (*worse than other races, the same as other races, and better than other races*) were included in the analyses involving this measure, reducing the sample size to 5,009 for this measure.

Data were also used from questions on age, education, household income, and health insurance coverage. Dependent variables included quality of life measures, chronic conditions, and risk conditions. The quality of life measures included perceived disability; self-rated fair or poor health status; and seven or more days of poor physical health, poor mental health, or activity limitation in the past month. The chronic conditions were self-reports of physician-diagnosed diabetes, physician-diagnosed arthritis, and current asthma. The risk behaviors and conditions were obesity (body mass index 30 or greater, derived from height and weight variables), and current smoking (smoking every day or some days).

All analyses were performed with the SUDAAN software, designed for the analysis of complex sample designs such as the BRFSS survey. Because the measures of quality of life, chronic conditions, and perceived treatment based on race were associated with age, all rates except those for demographics were adjusted for age using the United States 2000 standard population with five adult age groups (18-34, 35-44, 45-54, 55-64, and 65+ years).

We used logistic regression to assess the association between each measure of perceived treatment based on race (in this case, the dependent variables) and demographic characteristics (sex, age, race, education, and income level). The second measure of perceived treatment based on race – differential experiences when seeking health care – had three levels: worse than other races, same as other races,

and better than other races. Thus, we used a polytomous logistic regression model to assess the association between this measure of perceived treatment based on race (as the dependent variable) and demographic characteristics, with the “same as other races” category as the reference group. The health insurance coverage measure was also included in the polytomous model as a covariate.

Each of the quality of life, chronic condition, and risk condition measures was used as a dependent variable in a logistic regression model to separately assess its association with each measure of perceived treatment based on race, controlling for the socio-demographic variables (age, gender, race, household income, and education level). Logistic regression models involving the quality of life measures as dependent variables included the chronic condition measures as covariates, because chronic conditions are highly correlated with quality of life.^{28,29}

Results

Demographic Correlates of Measures of Perceived Treatment Based on Race

Approximately 6.5 percent of North Carolina adults reported having emotional upset and/or physical symptoms due to treatment based on race in the past 30 days (**Table 1**). Respondents who reported being classified as black or African American by others were significantly more likely to report having emotional upset and/or physical symptoms due to treatment based on race than those respondents classified by others as white (18.4% vs. 3.7%). The rate of reporting emotional upset and/or physical symptoms decreased significantly with increasing age. In general, persons of lower education and income were more likely to report emotional upset and/or physical symptoms. After simultaneously adjusting for the other demographic characteristics, race, age, and household income were significantly associated with reporting emotional upset and/or physical symptoms. The odds of African Americans reporting emotional upset and/or physical symptoms due to treatment based on race were much greater than that for whites (OR=5.30, $p < 0.001$).

The odds of reporting emotional upset and/or physical symptoms were also significantly higher for adults ages 18-34 years (OR=3.41, $p < 0.05$), 35-44 years (OR=2.82, $p < 0.05$), and 45-54 (OR=2.40, $p < 0.05$) than for adults age 65 and older. The odds of reporting emotional upset and/or physical symptoms were significantly higher for adults with a household income less than \$15,000 (OR=2.11, $p < 0.05$) than for those with a household income of \$50,000 or greater.

Table 2 presents data on adults’ reported differential experiences when seeking health care compared to people of other races, by demographic characteristics and with adjusted odds ratios. The total rate of perceived unequal experiences when seeking health care compared to people of other races (sum of rates for worse experiences and better experiences) was approximately 10 percent. The rate of experiences perceived to be worse than other races was 2.5 percent; 7.4 percent reported experiences better than other races. Males, African Americans, adults under 55 years of age, and those with a high school education or less, with less than \$25,000 household income, and without health insurance coverage were more likely to report worse experiences than other races when seeking health care.

The results for better experiences than other races when seeking health care are nearly opposite to those for worse experiences than other races. Females, whites, adults older than 55 years of age, and those with at least some college education, with an income of \$50,000 or greater, and with health insurance coverage were more likely to report better experiences than other races.

Polytomous logistic regression analysis revealed that, after adjusting for other demographic characteristics, the odds of African Americans reporting experiences worse than other races when seeking health care were approximately 5 times that for whites (OR=4.92, $p < 0.001$). In contrast, the odds of African Americans reporting experiences better than other races when seeking health care were approximately half that for whites (OR=0.48, $p < .05$). Adults under 65 years of age were more likely to report experiences worse than other races when

Table 1. Adults Reporting Emotional Upset and/or Physical Symptoms Due to Treatment Based on Race by Demographic Characteristics, with Adjusted Odds Ratios (North Carolina BRFSS, 2002)

Reported Emotional Upset/Physical Symptoms Due to Treatment Based on Race					
Demographics	Total Respondents	N	%	95% C.I.	Adjusted Odds Ratio
Total	5,850	324	6.5	(5.5- 7.6)	
Sex					
Male	2,219	124	6.9	(5.4- 8.7)	1.24
Female	3,631	199	6.1	(4.8- 7.6)	1.00
Race					
Black or African American	953	162	18.4	(14.7-22.7)	5.30*
White	4,897	162	3.7	(2.9- 4.6)	1.00
Age Groups					
18-34	1,328	102	9.2	(6.8-12.2)	3.41*
35-44	1,122	81	7.1	(5.2- 9.7)	2.82*
45-54	1,201	76	6.2	(4.6- 8.3)	2.40*
55-64	874	32	3.6	(2.3- 5.7)	1.35
65 +	1,277	26	3.2	(1.9- 5.3)	1.00
Education Level					
Less Than High School	789	49	8.2	(5.8-11.5)	1.67
High School	1,731	103	6.7	(4.9- 9.1)	1.14
Some College	1,417	92	6.8	(5.0- 9.3)	1.09
College Graduate +	1,898	78	4.7	(3.5- 6.3)	1.00
Household Income					
Less than \$15,000	557	56	11.1	(7.7-15.7)	2.11*
\$15,000- \$24,999	884	59	7.2	(4.8-10.8)	0.93
\$25,000- \$34,999	705	51	9.0	(5.6-14.0)	1.45
\$35,000- \$49,999	829	45	5.4	(3.6- 8.1)	0.91
Unknown/Refused	1,522	51	4.7	(3.3- 6.8)	0.94
\$50,000+	1,353	62	5.6	(4.0- 7.7)	1.00

N = Number of respondents reporting that they did have emotional/physical symptoms, % = Weighted Percentage, 95% C.I. = Confidence Interval on the weighted percentage.

* Indicates that Adj. OR (Adjusted Odd Ratio) is significant at least at the 0.05 probability level; ORs are adjusted for all other variables in the table (sex, race, age group, education level, and household income).

seeking health care (age 18-34 years OR=1.78, age 35-44 OR=2.90, age 45-54 OR=2.48, and age 55-64 OR=2.05) and less likely to report experiences better than other races (age 18-34 years OR=0.61, age 35-44 OR=0.71, age 45-54 OR=0.61, and age 55-64 OR=0.84). After controlling for other demo-

graphic characteristics, education level remained a strong predictor of reporting experiences better than other races when seeking health care. Those with less than a college education were significantly less likely to report experiences better than other races.

Table 2. Adults Reporting Experiences When Seeking Health Care by Demographic Characteristics, with Adjusted Odds Ratios* (North Carolina BRFSS, 2002)

Demographics	Experiences When Seeking Health Care											
	Total	Worse Than Other Races			Better Than Other Races			Same as Other Races				
		N	%	95% C.I.	Adj. OR	N	%	95% C.I.	Adj. OR	N	%	95% C.I.
Total	5,009				498	7.4	(6.4- 8.4)		4,391	90.1	(88.9-91.2)	
Sex												
Male	1,911	2.9	(2.0- 4.3)	1.44	170	6.7	(5.3- 8.4)	0.77	1,694	90.4	(88.3-92.1)	
Female	3,098	2.2	(1.6- 3.0)	1.00	328	8.0	(6.8- 9.4)	1.00	2,697	89.9	(88.3-91.2)	
Race												
Black or African American	853	7.2	(5.0-10.3)	4.92*	38	3.2	(2.1- 5.0)	0.48*	753	89.6	(86.3-92.2)	
White	4,156	1.4	(1.0- 1.9)	1.00	460	8.4	(7.3- 9.7)	1.00	4,450	90.2	(88.9-91.4)	
Age Groups												
18-34	1,203	2.5	(1.4- 4.1)	1.78	74	7.8	(5.5-10.8)	0.61*	1,106	91.3	(88.9-93.3)	
35-44	1,005	3.2	(2.0- 5.3)	2.90*	102	7.7	(5.8-10.3)	0.71	873	89.0	(86.0-91.4)	
45-54	1,046	2.8	(1.6- 4.9)	2.48	100	6.8	(4.9- 9.4)	0.61	918	90.4	(87.4-92.8)	
55-64	745	2.4	(1.4- 4.1)	2.05	85	8.6	(6.3-11.7)	0.84	640	88.9	(85.6-91.6)	
65 +	969	1.4	(0.7- 2.8)	1.00	108	8.9	(6.8-11.7)	1.00	850	89.7	(86.8-92.0)	
Education Level												
Less Than High School	636	4.2	(2.3- 7.4)	1.37	40	5.3	(3.5- 7.8)	0.38*	570	90.6	(86.9-93.3)	
High School	1,492	3.1	(2.0- 4.6)	1.03	89	5.5	(4.0- 7.5)	0.43*	1,359	91.5	(89.1-93.4)	
Some College	1,233	1.6	(1.0- 2.6)	0.60	89	5.2	(3.9- 6.8)	0.40*	1,117	93.2	(91.4-94.7)	
College Graduate +	1,638	1.8	(1.0- 3.2)	1.00	280	13.1	(10.9-15.6)	1.00	1,336	85.1	(82.4-87.4)	
Household Income												
Less than \$15,000	445	4.3	(2.7- 6.8)	1.60	29	5.2	(3.1- 8.7)	0.73	389	90.5	(86.6-93.4)	
\$15,000- \$24,999	758	4.7	(2.6- 8.2)	1.48	62	5.7	(4.0- 8.2)	0.88	669	89.6	(85.8-92.4)	
\$25,000- \$34,999	632	2.0	(1.1- 3.6)	0.87	55	5.8	(3.8- 8.6)	0.69	562	92.3	(89.2-94.5)	
\$35,000- \$49,999	735	1.3	(0.5- 2.8)	0.56	62	6.1	(4.3- 8.6)	0.65	661	92.7	(89.9-94.7)	
\$50,000+	1,354	1.7	(1.0- 3.1)	1.00	184	10.7	(8.5-13.4)	1.00	1,155	87.5	(84.7-89.9)	
Unknown/Refused	1,085	2.7	(1.5- 4.8)	1.14	106	6.9	(5.1- 9.1)	0.78	955	90.5	(87.7-92.7)	
Health Insurance Coverage												
Yes	4,417	2.1	(1.5- 2.8)	0.63	456	7.9	(6.9- 9.1)	1.37	3,873	90.0	(88.7-91.2)	
No	582	5.3	(3.2- 8.8)	1.00	42	4.0	(2.5- 6.3)	1.00	509	90.7	(86.9-93.4)	

N = Number of respondents with that response, % = Weighted Percentage, 95% C.I. = Confidence Interval on the weighted percentage.

* Indicates that Adj. OR (Adjusted Odds Ratio) is significant at least at the 0.05 probability level; ORs are adjusted for all other variables in the table (sex, race, age group, education level, household income, and health insurance coverage status).

#Adj. ORs (from polytomous logistic regression) for "Worse than Other Races" and "Better than Other Races" are relative to the reference groups, indicated by an Adj. OR of 1.00, and also relative to the "Same as Other Races" group.

Relationships between Health Indicators and Measures of Perceived Treatment Based on Race

Respondents who reported having emotional upset or physical symptoms due to treatment based on race had significantly higher rates of disability, fair or poor health, and seven or more days of poor physical health, poor mental health, and activity limitation in the past month, compared to those who reported having no emotional upset/ physical symptoms (Table 3). Respondents who reported experiences worse than other races when seeking health care had significantly higher rates of disability, fair or poor health, and seven or more days of poor physical health, poor mental health, and activity

limitation in the past month, compared to those who reported having experiences the same as other races (Table 4). For example, more than 40 percent of respondents who reported experiences worse than other races when seeking health care also reported having a disability, compared to 18.1 percent among those who reported experiences the same as other races (reference group). In contrast, adults who reported experiences better than other races when seeking health care were less likely to report that they had a disability (16.3%) compared to those who reported experiences the same as other races (18.1%).

Table 3. Age-Adjusted Percentages for Quality of Life Measures, Chronic Conditions, and Risk Conditions Comparing Adults Who Did and Did Not Report Emotional/Physical Symptoms Due to Treatment Based on Race, with Adjusted Odds Ratios (North Carolina BRFSS), 2002			
	Reported Emotional Upset/Physical Symptoms Due to Treatment Based on Race[#]		
	Yes	No	Adj. OR
Quality of Life Measures			
Disability	33.2*	17.8	2.35*
Fair or Poor Health	36.3*	18.7	1.70*
Seven or More Days Poor Physical Health	33.4*	15.3	2.03*
Seven or More Days Poor Mental Health	26.4*	11.0	2.87*
Seven or More Days Activity Limitation	21.8*	6.8	3.09*
Chronic Conditions			
Arthritis	40.7*	28.6	1.95*
Current Asthma	12.0	6.1	1.61
Diabetes	11.2	7.1	1.16
Risk Conditions			
Current Smoking	24.4	26.8	1.10
Obese	37.6*	23.2	1.35

[#]Note: The percentages are age-adjusted using the age distribution of the 2000 U.S. population. Adj. ORs (Adjusted Odds Ratios) are adjusted for sex, race (white and African American), age group (18-24, 25-34, 35-44, 45-54, 55-64, and 65+), education level (less than H.S., H.S., some college, and college graduate) and household income levels (less than \$15,000, \$15,000-\$24,999, \$25,000-\$34,999, \$35,000-\$49,999, \$50,000+, and unknown household income). Additionally ORs for quality of life measures are adjusted for presence and absence of the three chronic conditions.

* Indicates that the percentages for those who did and did not report emotional/physical symptoms are significantly different from each other at least at the 0.05 probability level or adjusted odds ratios are significant at least at the 0.05 probability level.

Table 4. Age-Adjusted Percentages for Quality of Life Measures, Chronic Disease Conditions, and Risk Conditions by Perceived Unequal Experiences Compared to Other Races when Seeking Health Care, with Adjusted Odds Ratios (North Carolina BRFSS, 2002)

	Experiences when Seeking Health Care [#]					
	Worse Than Other Races		Same as Other Races		Better Than Other Races	
	%	Adj. OR	%	Adj. OR	%	Adj. OR
Quality of Life Measures						
Disability	40.5*	2.87*	18.1	1.00	16.3	1.02
Fair or Poor Health	47.5*	2.57*	20.0*	1.00	13.1	0.79
Seven or More Days Poor Physical Health	46.3*	3.06*	15.4	1.00	14.7	1.07
Seven or More Days Poor Mental Health	36.5*	3.49*	11.9	1.00	11.2	1.01
Seven or More Days Activity Limitation	27.1*	3.62*	7.0	1.00	7.6	1.25
Chronic Conditions						
Arthritis	49.3*	3.04*	28.9	1.00	30.5	1.13
Current Asthma	11.0	1.89	6.5	1.00	6.6	1.12
Diabetes	14.5*	1.66*	7.3*	1.00	3.4	0.56
Risk Conditions						
Current Smoking	31.1	0.91	26.1	1.00	21.6	1.01
Obese	36.3*	1.16	24.8	1.00	20.0	0.92

#Note: The percentages are age-adjusted using the age distribution of the 2000 U.S. population. Adj. ORs (Adjusted Odds Ratios) are adjusted for sex, race (white and African American), age group (18-24, 25-34, 35-44, 45-54, 55-64, and 65+), education level (less than H.S., H.S., some college, and college graduate) and household income level (less than \$15,000, \$15,000-\$24,999, \$25,000-\$34,999, \$35,000-\$49,999, \$50,000+, and unknown household income), and health insurance coverage status. Additionally, ORs for quality of life measures are adjusted for presence and absence of the three chronic conditions.

* Indicates that the percentage for "worse than other races" or "better than other races" is significantly different than the percentage for "same as other races" group at least at the 0.05 probability level or adjusted odds ratios are significant at least at the 0.05 probability level.

Similarly, respondents who reported having emotional upset or physical symptoms due to treatment based on race and respondents who reported experiences worse than other races when seeking health care had percentages of arthritis, current asthma, and diabetes approximately twice as high as respondents who reported having no emotional upset or physical symptoms or those who reported experiences the same as other races ($p < 0.05$). For example, the rate of diabetes was 14.5 percent among respondents who reported experiences worse than other races when seeking health care compared to 7.3 percent among those who reported being treated the same as other races (Table 4).

The prevalence of obesity was significantly higher among respondents who reported having physical or emotional symptoms due to treatment based on race (37.6%) and also among those who reported experiences worse than other races when seeking health care (36.3%), compared to the reference groups (23.2% and 24.8% in Tables 3 and 4 respectively). However, smoking behavior was similar across the comparison groups.

After controlling for demographic characteristics (including race) and chronic conditions, the odds of having a disability, fair or poor health, and reporting seven or more days of poor physical health, poor mental health, and activity limitation in the

past month were statistically significant and two to three times larger among respondents who reported having emotional upset or physical symptoms due to treatment based on race, compared to those reporting no symptoms (Table 3). The odds of having these health conditions were also significantly higher among those who reported experiences worse than other races when seeking health care, compared to those with experiences the same as other races (Table 4; health insurance coverage is also controlled for in this table).

The logistic regression analyses also showed a significant association between reporting emotional upset and/or physical symptoms and a higher rate of being diagnosed with arthritis (OR=1.95, $p < 0.05$ from Table 3) after controlling for gender, age, race, education level, household income, and health insurance coverage. Likewise, the logistic regression results revealed that reporting experiences worse than other races when seeking health care was associated with higher rates of arthritis (OR=3.04, $p < 0.05$) and diabetes (OR=1.66, $p < 0.05$) diagnoses (Table 4).

Discussion

The results of this study show that perceived unequal treatment based on race is associated with lower quality of life and with higher rates of chronic diseases and health risks. The relationship between perceived treatment based on race and chronic conditions is consistent with other studies of cardiovascular disease and hypertension.^{30,31} Intergenerational exposures to racism and disparaging racial stereotypes are considered chronic stressors that have a “weathering down” effect over time, taking a toll on people’s health and thereby increasing their risk for conditions such as hypertension, diabetes, and cardiovascular disorders.³² It is especially interesting that perceived worse treatment based on race in this study was associated with chronic conditions such as arthritis, asthma, and diabetes, which may have some autoimmune causes. Continued exposure to chronic stress and attempts to cope with it may wear down an individual’s immune system, resulting in a lowered resistance to illness.³³

An important feature of this study was that we were able to control for the prevalence of chronic conditions when looking at the associations between the quality of life measures and the two measures of perceived treatment based on race (emotional upset or physical symptoms and experiences worse than other races when seeking health care). Yet we still found a significantly lower quality of life reported among persons with experiences worse than other races when seeking health care and those reporting emotional upset or physical symptoms due to treatment based on race.

One should not conclude from the strong associations observed here between chronic conditions and the two measures of perceived treatment based on race that there is a cause-and-effect relationship. We have self-reported data for these respondents, we do not know their history of exposure, and many of these conditions may take a long time to develop. Establishing such a causal relationship would require a carefully planned, longitudinal study involving a large number of participants. Nevertheless, given the strong statistical associations in the present study, our findings suggest that unequal treatment based on race may be one factor leading to development of these chronic conditions. Unfair treatment based on race or racial discrimination has historically been strongly linked to an unequal distribution of social, political, and economic resources, which are important determinants of health status.³⁴

There are several limitations to this study. First, the BRFSS data, which are cross-sectional, do not allow for causal inferences, as mentioned in connection with chronic conditions. Second, telephone surveys are limited to persons living in households with telephones; thus, they may underrepresent groups such as the poor, those located in a rural or inner city areas, and renters.³⁵ However, approximately 95 percent of households in North Carolina do have one or more telephones. Furthermore, post-stratification weights are used to help correct for any bias caused by non-telephone coverage. Finally, the data are self-reported by the respondents, which may result in misreporting of certain health conditions.

One factor that could confound these findings is that people with chronic conditions use health services more often than those without these conditions.^{36,37} Thus, the chance of being exposed to unequal treatment when seeking health care is higher for those with chronic conditions. By including health insurance coverage in the logistic models involving differential treatment when seeking health care, we attempted to reduce the influence of more frequent doctor visits.³⁸⁻⁴³

Finally, we did not perform separate analyses for the two racial groups because we were interested in examining associations between the two measures of perceived treatment based on race and a set of health indicators, regardless of racial classification. Yet, the results of this study clearly show that even after controlling for gender, age, education level, household income, and health insurance coverage, people who are classified by others as black or African American are far more likely than whites to report that their experiences when seeking health care were worse than for other races, and to report that they had emotional upset and/or physical symptoms due to treatment based on race.

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