

Racial Disparities in Health between White and African American Family Practice Patients: Clinical Implications

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Abstract

Objective: To identify differences in self-reported health status and prevalence of chronic disease between African American and white patients.

Study Design: A representative sample of African American and white adult patients from a stratified sample of family practices in North Carolina completed a questionnaire that included self-reported racial status, certain sociodemographic data, health risk factors, chronic conditions, and health status measures.

Data Source: The North Carolina Health Project, a practice-based cohort of adult patients from a representative sample of family practice offices in North Carolina.

Principal Findings: African Americans report poorer general health status than whites. Obesity, insufficient exercise, high blood pressure, and diabetes are more prevalent among African American than white family practice patients, even after adjusting for age, gender, and educational attainment.

Conclusions: This study complements previous evidence of disparities in chronic disease and health risk factors between African Americans and whites, and it highlights specific factors that may be important in the primary care setting.

Relevance: By focusing clinical attention on the prevention or treatment of specific factors that are known to be more prevalent among certain racial groups, primary care providers may help to reduce racial differences in healthcare.

Key words: Health Disparities, Race, Ethnicity, Family Practice Network, Risk Factors, Health Conditions, Health Status

Introduction

Compared with other ethnic groups, African Americans have a disproportionately high prevalence of many risk factors and diseases, and these are associated with increased morbidity and mortality. For clinicians to better serve African American

patients, they must understand the disparities that exist, their causes, and practical means of intervening. African Americans have historically had less access to and use of ambulatory care services, and there appear to be potentially important differences in the ways that African Americans and whites perceive their health status.¹⁻⁴ African Americans may also differ from whites

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in how they perceive benefits or harms that they associate with certain medical or surgical interventions.^{5,6} It is unclear to what extent race contributes directly to disparities in perceived health status, as opposed to serving as a proxy for other, more directly pertinent factors such as socioeconomic status. Race, however, is a salient attribute for many individuals, either in how they identify themselves, or how they are identified by others, including healthcare providers. It is useful and informative, therefore, to assess the extent to which actual and perceived health status differs between members of different races who reside in the same community and who receive medical care from the same provider.

The primary care physician's office practice constitutes an important site for both prevention and treatment of health problems. Therefore, it is important for primary care physicians to be sensitive to race and ethnicity-related issues in their patients, to be aware of the care their patients receive, and to provide complete and accurate information about healthcare options to all of their patients.

This study compared general health status, health risk factors, and chronic disease rates between African American and white patients in a representative sample of family practices in North Carolina. The study aimed to identify how perceived health status, as well as healthcare needs and access, differ by race, so as to better inform the delivery of health interventions that are appropriate to African American and white patients in the primary care setting.

Methods

Data for this study are from the North Carolina Health Project (NCHP), a network of 13 family practices with 16 location sites in North Carolina. The study selected practices by a purposive sampling method that ensured representation of rural and urban sites in each of the state's three geographic regions (west, central, and east), and that preferentially selected practices serving high proportions of racial/ethnic minorities. Rural and urban status was designated based on the United States Department of Agriculture's (USDA) rural-urban county codes for the county in which the practice was located.⁷ All selected practices agreed to participate in data collection.

The study placed research assistants at each participating site for a four-week data collection period. The research assistants offered a four-page, self-report questionnaire, available in English or Spanish, to each non-emergency adult patient who presented for an office visit. As needed, the research assistants explained the questionnaires and consent forms, answered participants' questions, and assisted them with questionnaire completion, which took place in the healthcare provider's office at the time of the visit.

The questionnaire included the following measures:

- **Sociodemographic data:** age, race, gender, marital status, work status, education level.
- **Physical measures:** weight and height. Body mass index (BMI) was calculated from the reported weight and height.
- **Health risk behaviors:** exercise habits and smoking status.
- **Chronic health conditions:** high blood pressure, heart disease, osteoarthritis, depression, chronic back pain, and diabetes.

Table 1.
Selected Characteristics of African American and White Adult Patients in North Carolina Family Practice Settings

	African Americans (N=900) % or Mean	Whites (N=3,481) % or Mean	p Value*
Female Gender	75.9%	69.5%	0.018
Age in Years	46.0	48.0	0.342
Residence in Rural County	48.1%	53.1	0.781
Educational Attainment			
Less than high school	29.6%	16.5%	
High school diploma	31.7%	30.1%	
Beyond high school	38.7%	53.4%	0.031
Marital Status			
Married	32.7%	65.4%	
Widowed	12.1%	8.4%	
Living w/ partner	5.3%	2.7%	
Separated/divorced	22.6%	13.4%	
Never married	27.3%	10.3%	0.016
Currently Working	49.2%	58.7%	0.062
Health Risk Factors			
Smoking now	24.2%	25.4%	0.482
No exercise	56.3%	41.6%	0.001
Obese (BMI > 30)	53.4%	35.5%	< 0.001
Chronic Conditions			
High blood pressure	48.6%	31.9%	0.004
Heart disease	9.8%	11.4%	0.295
Osteoarthritis	24.7%	23.8%	0.763
Depression	23.7%	26.4%	0.185
Chronic back pain	24.1%	25.1%	0.503
Diabetes	21.6%	12.0%	0.006
General Health Status			
"Fair" or "poor" health	36.6%	24.3%	0.009

* Significance tests for comparisons were calculated using Pearson's chi-square test for categorical variables and the 2-sample t-test for continuous variables, adjusted for stratified sampling design using SUDAAN 8.1

■ **Health status:** self-rated health status as assessed by the question, “In general, would you say that your health is: excellent, very good, good, fair, poor?”

Research assistants mailed completed and incomplete questionnaires to the principal investigators on a weekly basis. All data were then entered into an Access database.

The investigators stratified the subjects’ demographic and clinical characteristics by race (African American vs. white) and excluded data from subjects who did not identify themselves as either African American or white from these analyses. We used Pearson chi-square analyses and 2-sample t-tests to measure the significance of differences between the two study groups, and we dichotomized the five-point scale for general health status into two categories: fair/poor *versus* excellent/very good/good. We analyzed educational attainment in three categories: less than a high school diploma, high school diploma, and more than a high school diploma. In calculating odds ratios between African Americans and whites, we used logistic regression, with health habits, risk factors, chronic conditions, and health status as dependent variables, and age, gender, and education level as co-variates. All statistical tests were two-sided ($\alpha=0.05$) and were adjusted for the clustering of residents within clinics using Taylor series expansion methods,⁸ as implemented in SUDAAN software.⁹

Results

Response rate

In the 16 practice sites, we found 7,680 eligible patients, of whom 4,760 consented to participate, yielding a recruitment rate of 62%. Approximately 10% of respondents required support from study research assistants to complete the self-report questionnaires. Sixty-nine (1%) respondents identified themselves as belonging to more than one racial group (mixed race), and 310 (7%) checked neither “black” nor “white.” Of these, 95 (31%) identified themselves as either “Mexican, Mexican-American, or Chicano” or “Other Spanish, Hispanic, or Latino.” We omitted these respondents from the analyses. The total analysis sample consisted of 4,381 respondents, 3,481 (79%) of whom identified themselves as white and 900 (21%) who identified themselves as black. In this paper, we use the term African American to refer to the participants who checked “black” in accordance with convention in the medical literature, even though the African ancestry may be distant for many of the individuals in this sample. All of the respondents included in this study completed the English version of the study questionnaire.

Demographics

Demographic data for the study sample, stratified by race, appear in Table 1. Within the study sample, 76% of African Americans and 70% of whites were female ($p=0.018$). The mean ages in years for African Americans and whites were 46 and 48, respectively ($p=0.342$). Approximately half of the sample of both African Americans and whites resided in a rural county. Whites tended to have higher educational levels, with a greater percentage

of whites having had more than a high school education than African Americans ($p=0.031$). More whites (65%) than African Americans (33%) reported being married ($p=0.016$). More whites (59%) than African Americans (49%) also reported being currently employed, either full-time or part-time ($p=0.062$).

Health risk factors

We found no significant difference in smoking status between African Americans and whites; approximately one-quarter of both groups were smokers. There was, however, a significant racial difference in the percentage of the population whom we defined as obese (BMI > 30), with 54% of African Americans *versus* 36% of whites meeting this criterion ($p<0.001$). African Americans also tended to be more sedentary; 56% of African Americans compared to 42% of whites reported getting no exercise on a typical day ($p<0.001$).

We report the odds ratios for selected risk factors and conditions among African Americans and whites, adjusted for age, gender, and education level, in Table 2. Compared to white patients, the adjusted odds for African Americans are lower for current smoking status (OR 0.76, 95% CI 0.61-0.94) and higher for reporting no exercise on a typical day (OR 1.63; 95% CI 1.29-2.05) and for being obese (OR 1.92; 95% CI 1.61-2.30).

Chronic conditions

Of the self-reported chronic conditions selected for analysis, we found that the frequency of heart disease, osteoarthritis, depression, or chronic back pain did not differ by race. However, African Americans did report more high blood pressure (49% vs. 32%, $p=0.004$) and diabetes (22% vs. 12%, $p=0.006$) than did whites (See Table 1). After adjusting for age, gender, and education, this difference still held: African Americans were more likely than whites to report high blood pressure (OR=2.44; 95% CI 2.05-2.91) and diabetes (OR=2.16; 95% CI 1.66-2.78) and less likely to report depression (OR=0.74; 95% CI 0.58-0.95) and chronic back pain (OR=0.81; 95% CI 0.71-0.94). The adjusted odds of reporting heart disease or arthritis were not statistically different from 1.00, when controlling for age, gender, and education (See Table 2, Model 1). However, after controlling for the additional variables of current smoking, exercise status, and obesity, the odds of African Americans reporting heart disease were significantly lower than for whites (See Table 2, Model II; OR=0.73; 95% CI 0.60-0.88).

Health status

More African Americans rated their general health as “poor” or “fair” than whites (37% vs. 24%, $p=0.009$) (See Table 1). This difference remained significant even after controlling for age, gender, education, current smoking, exercise status, and obesity (OR=1.47; CI 1.06-2.04) (Table 2).

Discussion

The United States is becomingly increasingly diverse racially and ethnically. Racial disparities in health and in the receipt of healthcare in the United States are well documented.

Table 2.
Adjusted Odds Ratio of Selected Health Indicators among African American Patients Compared to Whites in Family Practice Settings

Dependent Variables	Odds Ratios (95% CI)	
	Model I ^a	Model II ^b
Health Risk Factors		
Smoke now	0.76 (0.61, 0.94)	—
No exercise	1.63 (1.29, 2.05)	—
Obese (BMI > 30)	1.92 (1.61, 2.30)	—
Chronic Conditions		
High blood pressure	2.44 (2.05, 2.91)	2.11 (1.67, 2.67)
Heart disease	0.88 (0.71, 1.08)	0.73 (0.60, 0.88)
Osteoarthritis	1.10 (0.86, 1.39)	0.97 (0.75, 1.25)
Depression	0.74 (0.58, 0.95)	0.65 (0.53, 0.78)
Chronic back pain	0.81 (0.71, 0.94)	0.72 (0.60, 0.85)
Diabetes	2.16 (1.66, 2.82)	1.83 (1.37, 2.45)
General Health Status		
“Fair” or “poor” health	1.59 (1.23, 2.06)	1.47 (1.06, 2.04)

Odds ratios calculated using logistic regression with race as the explanatory variable, and adjusted for stratified sampling design using SUDAAN 8.1.

^a Model I: adjusted for subject age, gender, and education.

^b Model II: adjusted for subject age, gender, education, current smoking, exercise status, and obesity.

Maintaining and improving the nation's health will, therefore, be dependent in part on reducing the factors that lead to health status disparities between minority groups and whites.¹⁰ This study confirms that African American patients report poorer health status and greater prevalence of certain risk factors for poor health, particularly obesity, sedentary lifestyle, and high blood pressure, compared to their white counterparts in the primary care setting of North Carolina. The purpose of this study was to confirm and measure these health disparities in the family practice setting in order to illustrate the challenges that face primary care providers in North Carolina. Because the offices of primary care physicians are common sites of medical care for persons with risk factors who have not yet developed overt disease, primary care physicians could play an important role in decreasing the observed disparities in health outcomes.

Data for this study were obtained only from individuals who received medical care from family practice providers in the state of North Carolina. Our findings may therefore not be readily generalized to other regions of the United States, or to other medical practice settings. An additional limitation is that the data were obtained by patient self-report, which makes the health risk factors and chronic condition reports subject to bias or inaccuracies due to misunderstanding of medical diagnoses by some respondents. On the other hand, the study has a unique strength: it is the first to examine health risk factors, chronic conditions, and self-reported health status among a representative sample of family practice patients across an entire state.

There are many plausible explanations for observed disparities in health, including potential differences in socioeconomic status, educational attainment, access to healthcare, health-related behavior, discrimination, and racism. In our study, disparities in risk factors and chronic conditions persisted after adjusting for educational attainment (See Table 2). Furthermore, every study participant had at least some access to primary care, although we did not assess the quality or quantity of healthcare services available to individual patients. It therefore seems unlikely that access to healthcare is a major contributor to the race-related differences observed in this study. Other explanations must be considered, including the possibility that some forms of discrimination or racism occur in the community or in the healthcare setting. Evidence that suggests that a patient's race may influence providers' decisions or actions has been found in studies that reveal that physicians may sometimes perceive African Americans as less intelligent and less likely

to adhere to medical advice compared to white patients,¹¹ that medical students judge black patients to have a lower quality of life than white patients with similar symptoms,¹² and that the race and sex of patients may independently influence the way a physician elects to manage chest pain.¹³

Strong evidence exists to suggest that a primary care office may be an appropriate setting to bring about change in health-related behaviors. A meta-analysis of primary-care-based intervention studies revealed that physical activity counseling is often effective, with stronger results obtained from interventions that are brief (3-10 minutes), tailored to the patients' characteristics and preferences, and that include supplemental written materials.¹⁴ Physician intervention can also lead to smoking cessation.^{15,16} Moreover, achieving a healthy weight tends to improve patients' subjective well-being.¹⁷ It has also been shown that minority and economically disadvantaged patients are less likely to receive screening¹⁸ and behavioral interventions¹⁹ from their physicians. Finally, steps to increase cultural competency among healthcare providers may help to reduce the tendency toward racial and ethnic bias in the provision of care. Elements of cultural competency within the practice setting include: a culturally diverse staff that reflects the community served; bilingual providers and/or translators when significant language barriers exist; providers who are knowledgeable about different health beliefs, cultural practices, or values among their patients; patient education materials that are culturally and linguistically appropriate; and a practice that engages in community outreach activities.²⁰ **NCMJ**

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REFERENCES

- 1 The Morehouse Medical Treatment and Effectiveness Center. Racial and ethnic differences in access to medical care: a synthesis of the literature. Menlo Park, Calif: The Henry J. Kaiser Foundation; 2000.
- 2 Larson SL, Fleishman JA. Rural-urban differences in usual source of care and ambulatory service use: analyses of national data using Urban Influence Codes. *Med Care* 2003;41 (7 Suppl):III65-III74.
- 3 Weinick RM, Zuvekas SH, and Cohen JW. Racial and ethnic difference in access to and use of health care services, 1977 to 1996. *Med Care Res Rev* 2000; 57(S1):36-84.
- 4 Gaskin DJ and Hoffman C. Racial and Ethnic Differences in Preventable Hospitalizations across 10 States. *Med Care Res Rev* 2000; 57(S1):85-107.
- 5 Ibrahim SA, Siminoff LA, Burant CJ, Kwok CK. Differences in expectations of outcome mediate African American/white patient differences in "willingness" to consider joint replacement. *Arthritis Rheum* 2002; 46(9):2429-35.
- 6 Ibrahim SA, Siminoff LA, Burant CJ, Kwok CK. Understanding ethnic differences in the utilization of joint replacement for osteoarthritis. *Med Care* 2002; 40(1, Supplement): I44-51.
- 7 US Department of Agriculture, Economic Research Service. Rural-urban continuum codes, 2003. Accessed May 31, 2004. Available at: <http://www.ers.usda.gov/Briefing/Rurality/ruralurbcon/Code03.htm>.
- 8 Woodruff, R. S. A simple method for approximating the variance of a complicated estimate. *J American Stat Assoc* 1971; 66:411-414.
- 9 Research Triangle Institute (2001). SUDAAN User's Manual, Release 8.0. Research Triangle Park, NC: Research Triangle Institute.
- 10 US Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With understanding and improving health and objectives for improving health. 2 vols. Washington, DC: US Government Printing Office, November 2000.
- 11 van Ryn M, Burke J. The effect of patient race and socio-economic status on physicians' perception of patients. *Soc Sci Med* 2000;50:813-828.
- 12 Rathore SS, Lenert LA, Weinfurt KP, Tinoco A, Taleghani CK, Harless W, Schulman KA. The effects of patient sex and race on medical students' ratings of quality of life. *Am J Med* 2000 May;108(7):561-6.
- 13 Schulman KA, Berlin JA, Harless W, Kerner JF, Sistrunk S, Gersh BJ, Dube R, Taleghani CK, Burke JE, Williams S, Eisenberg JM, Escarce JJ. The effect of race and sex on physicians' recommendations for cardiac catheterization. *N Engl J Med* 1999;340:618-26.
- 14 Eakin EG, Glasgow RE, Riley KM. Review of primary care-based physical activity intervention studies. *J Fam Pract* 2000;49(2):158-68.
- 15 Kottke TE, Battista RN, DeFries GH, Brekke ML. Attributes of successful smoking cessation interventions in medical practice: a meta-analysis of 39 controlled trials. *JAMA* 1988;259:2882-9.
- 16 Klein JD, Portilla M, Goldstein AO, Leininger L. Training pediatric residents to prevent tobacco use. *Pediatrics* 1995;96:326-30.
- 17 Finkelstein MM. Body mass index and quality of life in a survey of primary care patients. *J Fam Pract* 2000;49(8):734-7.
- 18 Schneider EC, Zaslavsky AM, Epstein AM. Racial disparities in the quality of care for enrollees in medicare managed care. *JAMA* 2002 Mar 13;287(10):1288-94.
- 19 Taira DA, Safran DG, Seto TB, Rogers WH, Tarlov AR. The relationship between patient income and physician discussion of healthcare risk behaviors. *JAMA* 1997 Nov 5;278(17):1412-7.
- 20 James S. Primordial prevention of cardiovascular disease among African-Americans: a social epidemiological perspective. *Prev Med* 1999;29:S84-S89.