

Increasing Racial and Ethnic Diversity Among Physicians: An Intervention to Address Health Disparities?

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INTRODUCTION

Health disparities across racial and ethnic groups in the United States have been well documented for over a century and have remained remarkably persistent in spite of the changes in many facets of the society over that period. Despite dramatic improvements in overall health status for the U.S. population in the 20th century, members of many racial and ethnic minority populations experience worse health status along many dimensions compared with the majority white population. These disparities are the result of multiple root causes. Social inequalities resulting directly from discrimination and indirectly from structural factors have led to inequalities in socioeconomic position, health insurance status, and environmental and occupational exposures, all of which influence health status (Kington & Nickens, 2001). Health disparities are associated with cultural and psychosocial factors related to patient perceptions of health, illness, and the health care system, all of which influence health care-seeking behavior and are also influenced by structural characteristics of our health care system.

Because many minority neighborhoods have a shortage of physicians (Komaromy, 1996) and less access to medical care, increasing the supply of minority physicians has been proposed as an intervention that may help to ameliorate differences in health status. Programs to increase the numbers of underrepresented minority physicians have been the subject of much debate in recent years.

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Efforts of colleges and universities to increase the enrollment of minority students also have increasingly become the focus of sharp criticism (Bowen, 1998). While empirical evidence of the impact of diversity in colleges and universities has become a core part of the debate about college admission policies, little attention has been given to rigorously assessing the scientific evidence about the likely impact of increasing the numbers of underrepresented minority physicians, especially as an intervention to improve health care for minority populations and, ultimately, to reduce health disparities in the United States.

The goals of this paper are to present a brief overview of racial and ethnic disparities in health and the potential causes of these differences, primarily related to health care, and then to review the conceptual underlying bases and the evidence about the likely pathways by which increasing the diversity of physicians might decrease disparities. We focus on three hypothesized pathways. The first pathway is through the practice choices of minority physicians, which may lead to increased access to care in underserved communities. The second pathway is through improvements in quality of health care due to better physician-patient communication and greater cultural competency. The third hypothesized pathway is through improvements in the quality of medical education that may accrue to medical students as a result of increasing diversity in medical education.

BACKGROUND

Disparities in Health Status Across Racial and Ethnic Groups in the United States

Differences in health status across racial and ethnic groups in the United States have been described for a wide array of diseases, conditions, and outcomes (NCHS, 2000). Despite overall improvements in life expectancy in the past century, African Americans still experience a lower average life expectancy at birth and higher average age-adjusted all-cause death rates than Whites. African Americans also experience higher death rates for many conditions, including coronary disease, stroke, and cancer, and infant mortality rates are higher among both African-American and American Indian/Alaska Native populations than among Whites and most Hispanic subpopulations. Mexican Americans experience a higher rate of uncontrolled hypertension than white Americans. Asian and Pacific Islander Americans, African Americans, and Hispanic Americans all have an elevated incidence of tuberculosis compared with the white population. African Americans, Hispanics, and Native Americans have surpassed Whites in the incidence of HIV infection, and die at higher rates than Whites from diabetes mellitus, homicide, and unintentional injuries (NCHS, 2000). With respect to health-related quality of life, higher percentages on African Americans and Hispanics report that they are in fair or poor health as compared to Whites (NCHS, 1994).

Differences in health status between white and minority populations may arise from many causal factors. These include patient-level risk factors, such as differences in education and economic resources, health behaviors, nutrition, genetic predisposition, and environmental exposures. Health care system characteristics that influence access to appropriate health care services and the quality of care also contribute to health status. These factors are especially important because they may be directly effected by public policy.

Racial and Ethnic Differences in Access to Health Care

An individual's access to health care may be conceptualized in terms of a model that groups factors into those affecting: 1) the predisposition to use services as suggested by demographic and social characteristics as well as beliefs about health services (predisposing characteristics); 2) the ability to secure services as indicated by personal resources and availability of services in the community (enabling characteristics); and 3) health status, as perceived by the patient and evaluated by a professional (need characteristics) (Andersen, 1978). Access to health care is monitored and evaluated using a number of different indicators, including health insurance status and having a usual source of medical care; rates of utilization of different types of services; rates of negative health outcomes thought to be preventable such as certain diagnoses, complications, and types of utilization such as hospitalization; and structural indicators such as the availability of physicians, clinics, and other types of health services.

Three common indicators of access to care are health insurance status, having a usual source of health care, and having a regular physician. While health insurance alone cannot ensure that patients will obtain all needed services, it can help protect individuals and families from the costs of illness and routine health maintenance. Lack of health insurance coverage and a usual source of care have both been associated with lower utilization of preventive and disease-management health services, even when controlling for patient health status (Freeman et al., 1990; Moy, 1995). Having a regular source of care has been shown to be an independent predictor of access to care rather than merely a result of access to care (Kuder, 1985).

Usual Source of Care

African-American and Hispanic patients have been found to be less likely to have a regular physician than Whites, even after controlling for socio-demographic characteristics (Gray, 1997). In an analysis of nationally representative household surveys over a 20-year period, Hispanics were found to be nearly twice as likely to lack a usual source of care as Whites (Zuvekas & Weinick, 1999). This gap widened over the study period and could not be explained solely by changes in health insurance status over the period studied. In

fact, health insurance status explained only approximately one-fifth of the decline in usual source of care among Hispanics. Similar patterns are observed among children. African-American and Hispanic children have been shown to be more likely to lack a usual source of care than white children (Cornelius, 1993; Newacheck, 1996), and may be less likely to obtain as many physician visits as a result (Lieu et al., 1993).

Health Insurance Status

Lack of health insurance is a barrier to access to health care, and one that is more prevalent among racial and ethnic minorities than Whites (Freeman et al., 1990). In a study of the health insurance status of white, black, and Hispanic Americans in two time periods (1987 and 1996) gaps in coverage were identified between Blacks and Hispanics and Whites (Monheit & Vistnes, 2000). Racial and ethnic minorities continue to be more likely to lack insurance coverage than Whites. The gap in employment-related coverage between white and Hispanic males actually expanded by 6.4 percentage points over the decade, leaving Hispanic males with the highest rates of being uninsured of all racial/ethnic groups (38.9%).

Health Services Utilization

The utilization of a wide range of health care services varies across racial and ethnic groups. Variations in utilization across subpopulations may be due to differences in patient health care-seeking behavior, health status, and personal preferences for different treatment options and willingness to pay for them. Other reasons for differences in utilization include differences in the availability of services, individual physician or health care organization preferences and their propensity to make certain recommendations, patient differences in ability to pay for desired services, and differences in non-financial factors such as transportation or child care issues.

Despite having worse health status, rates of utilization of many types of services—including routine physician visits, preventive services, procedures, and treatments for illness—have long been shown to be lower for many racial and ethnic minorities as compared with Whites. Ambulatory service use has been found to be lower among Blacks and Hispanics as compared with Whites (Cornelius, 1993). Health screening rates for women of reproductive age have been shown to be lower among Hispanics, Native Americans, and Asians and Pacific Islanders (Wilcox, 1993).

After gaining access to the health care system, minority patients have a lower likelihood of receiving appropriate management of and treatments for their conditions. Black patients have been found to receive a lower intensity of hospital services than Whites (Yergan et al., 1987), and to experience higher

rates of post-discharge problems after hospitalizations for several major conditions in a national study of hospital care (Kahn et al., 1994).

Racial variations have been shown in numerous studies of cardiac procedure use and survival after a myocardial infarction. Blacks and Hispanics in New York with angiographically confirmed coronary artery disease were found to be between 36% and 40% less likely to receive bypass surgery than Whites when the surgery was judged medically appropriate, and Blacks were 37% less likely to receive the procedure when judged medically necessary, controlling for disease severity, age, gender, and insurance status (Hannan, 1999). Other studies have found similar results with respect to cardiac care and invasive cardiac procedures, even when controlling for demographic, socioeconomic, and clinical variables (Carlisle et al., 1995; Ferguson et al., 1997). Racial differences have also been observed in the likelihood of receiving care from high-quality cardiac surgeons (Mukamel et al., 2000).

In a study of analgesia practices in the emergency department of a large teaching hospital, Hispanics were less likely to receive adequate analgesia for long bone fractures than white patients and were twice as likely to receive no analgesia whatsoever (Todd et al., 1993). Inadequate pain management has also been found to be significantly more likely among black nursing home patients with cancer compared with Whites (Bernabei, 1998). In multiple studies, Blacks and Hispanics with HIV infection have been found to have lower outpatient utilization and less treatment with antiretroviral medications and prophylactic medications (Andersen et al., 2000; Schwarcz, 1997; Moore et al., 1994; Easterbrook et al., 1991).

Health Outcomes

Patients seek medical care to obtain some improvement or to prevent or delay deterioration in health status. The examination of health outcomes and how they vary across subpopulations is an important tool in the evaluation of the quality of medical care. The health outcomes that can be influenced by health care include physical outcomes (death, complications, and physical functioning), patient satisfaction, and quality of life.

In a study of 1993 administrative data for 26.3 million Medicare beneficiaries over the age of 65, age and sex adjusted mortality rates were higher among black men as compared with white men (O.R = 1.19, $p < 0.001$) and for black women as compared with white women (O.R = 1.16, $p < 0.001$) (Gornick et al., 1996). Studies have shown that minorities experience higher hospitalization and mortality rates due to conditions that many providers and health services researchers agree should be preventable with appropriate outpatient management (Schwartz, 1990). Blacks experience higher rates of uncontrolled hypertension, contributing to major coronary heart disease-related events (Clark, 1999). Age-adjusted mortality rates from cervical cancer were found to be twice as high among Blacks as compared with Whites in a Chicago sample of women, and the differences remained signifi-

cant even after adjusting for income (Samelson, 1994). In a study of U.S. mortality data, African Americans were found to experience higher standardized mortality rates due to asthma than Whites, controlling for income and educational level (Grant, 2000). African Americans and Hispanics who have been in contact with the health care system also tend to report lower satisfaction with medical care than Whites (Blendon et al., 1989; Morales et al., 1999).

Physician Supply

Other important indicators of access to quality health care include structural characteristics of the health care system, particularly the availability of physician services. Whether the United States as a whole faces a physician oversupply has been a matter of debate for some time (Schwartz, 1988; Ginzberg, 1989). Whether or not there are “too many” physicians in the country overall, many areas remain underserved. Thousands of areas throughout the country are designated as Health Professionals Shortage Areas by the Health Resource Services Administration (HRSA.gov, 2001). In particular, many predominantly minority communities face shortages of health services. In California, research has shown that physician supply is inversely related to the concentration of Blacks and Hispanics in a health service area, even after adjusting for community income level (Komaromy et al., 1996). This relationship was found in both urban and rural areas. Population projections indicate that by the year 2020, the minority populations of many of these regions are likely to increase substantially.

As part of a study to project the numbers of minority physicians needed to achieve a race/ethnicity-specific physician-to-population ratio of 218 per 100,000, Libby and colleagues provide data about the numbers of active physicians in 1990 from the Census Bureau’s Equal Employment Opportunity database (1997). A projection model developed by Libby yielded results indicating that in order to reach 218 physicians per 100,000 persons for each racial/ethnic group, the numbers of first year residents would need to roughly double for Hispanic and black physicians, triple for Native American physicians, and be reduced by two-fifths for white and Asian physicians. Although we do not assert that exact racial and ethnic parity in physician-to-population ratios should be an explicit public policy goal, these numbers and projections illustrate the extent to which Blacks, Hispanics, and Native Americans are underrepresented in medicine relative to their numbers in the population. Although underrepresented minority enrollment increased by 43% after 1986, it peaked in 1994, did not increase in 1995, and actually declined by 5% in 1996 (Carlisle et al., 1998). It is likely that gains made in numbers of underrepresented minorities to enter medicine in the early 1990s, a period that saw a 27% increase in underrepresented minority enrollment (Nickens, 1994), are now being reversed by restrictions in affirmative action programs across the country.

TABLE 1 Numbers of Active Physicians per 100,000 Persons, 1990, and Average Annual Increase, 1980–1990, by Race/Ethnicity

Race/ethnicity	1990		1980–1990	
	Active physicians	Population in thousands	Active physicians per 100,000 persons	Average annual increase in physicians
Hispanic (all races)	27,620	22,354	124	835
Black	20,032	29,216	69	649
Native American	833	1,794	46	31
Asian	60,988	6,968	875	1,813
White, non-Hispanic	453,295	188,128	241	8,746
Total	562,768	248,710	227	12,074

Based on Libby et al., 1997, with data from the U.S. Bureau of the Census Equal Employment Opportunity File (Washington: U.S. Department of Commerce, 1990) and G. Roback, L. Rudolph, and B. Seidman, *Physician Characteristics and Distribution in the United States: 1992 Edition* (Chicago, AMA, 1992).

THE IMPACT ON HEALTH DISPARITIES OF INCREASING THE NUMBER OF UNDERREPRESENTED MINORITY PHYSICIANS: A REVIEW OF THE EVIDENCE

Medical training for African Americans first became a topic of policy debate in the United States in the context of the post-Civil War South as a way to address the health needs of the African-American community. Disparities between the health status of Whites and African Americans had been observed throughout American history. In the antebellum South, slave owners documented health problems that threatened productivity, and pointed out health disparities between African Americans and Whites to reinforce beliefs that biological differences between the races justified slavery (Savitt, 1985). Common health problems ranged from injuries and malnutrition to pneumonia and tuberculosis. Conditions in the South after the Civil War were not dissimilar to other postwar periods, with many people left homeless—refugees in search of a place to live and a way to make a living (Summerville, 1983). Lack of food, water, and sanitation exacerbated what had already been extremely poor living conditions. The result was major outbreaks of pneumonia, cholera, diphtheria, smallpox, yellow fever, and tuberculosis. Yet, very few white physicians were willing to see black patients, and very few African Americans could afford their fees. The education of African-American physicians and other health professionals was seen as a necessary step to improve the health of Blacks and to protect the public health of the communities where African Americans lived, primarily in the South. African-American medical schools were founded to address this need.

Against the backdrop of institutionalized segregation, Flexnor (1910) echoed both social justice and public health arguments for training black physicians in his famous report, with the underlying assumption that the best way to meet the great health needs of black communities in the United States was by providing more black physicians. His recommendation was to concentrate resources on the two black medical schools out of seven that he believed had the best chance of meeting the standards being set for modern medical training programs, Howard and Meharry. The preface to his recommendations reflects the tension between the societal goals of improving access to care by training more physicians and changing requirements to standardize and improve the quality of practicing physicians, while simultaneously an unstated goal and trend was also restricting entry into the profession (Starr, 1982). As recently as 1965, only 2% of all medical students were black, and three-fourths of these students attended Howard or Meharry.

In sum, the social and public policy questions and debates regarding the training of minority physicians have been with us for some time, and are not likely to be resolved in the near future.

Practice Choices of Underrepresented Minority Physicians

Since the 1970s and 1980s, when minority students were first admitted to medical schools in larger numbers, a number of studies have examined the practice patterns of minority physicians as compared with white physicians. These studies have varied in terms of study samples, data sources, and methodologies. These studies have also examined alternative hypotheses through various methods, including statistically controlling for potential confounders and conducting additional analyses to address certain additional questions raised by the main analyses. Despite their differences, empirical analyses regarding the practice locations and patient populations of minority physicians have been remarkably consistent. Minority physicians tend to be more likely to practice in underserved areas and to have patient populations with a higher percentage of minorities than their white colleagues. Some evidence also suggests that minority physicians tend to have a higher percentage of patient populations with lower incomes and worse health status and who are more likely to be covered by Medicaid.

Underserved Practice Locations

A good deal of interest has focused on whether minority physicians are any more likely to practice in underserved areas than white physicians. One of the early studies to describe the practice patterns of black physicians was based on data from the 1975 National Ambulatory Medical Care survey, a nationally representative survey conducted by the federal government. These data confirmed

that black physicians practice predominantly in metropolitan areas. The analysis showed that 4,679,145, or (91.8%) of ambulatory visits by black patients to black physicians and 583,491 (94.4%) of ambulatory visits of white patients to black physicians occurred in metropolitan areas. In contrast, 28,842,477 (69.3%) of visits of black patients to non-black physicians and 369,081,473, or 72.6% of visits of white patients to non-black physicians occurred in metropolitan areas (Rocheleau, 1978). The 1975 data set was designed to over-sample black physicians to obtain more information about their practices than had previously been available. However, only crude measures of differences in practice location by race were presented. Race was only available classified as white, black, and other, and practice location was divided only into metropolitan area or non-metropolitan area.

In other studies, Howard University College of Medicine alumni were surveyed about their current or planned practice patterns. The study by Lloyd et al. (1978) surveyed Howard College of Medicine alumni from seven selected classes that had graduated between 1955 and 1975. More recent classes were over-sampled. Of the 729 individuals surveyed, 311 responded (49%). Older individuals were more likely to respond, as were graduates in medical specialties (85% vs. 75%). An additional analysis of the survey data only included data provided by black alumni in the analysis (Lloyd & Johnson, 1982). The additional analyses also explicitly compared the responses regarding practice patterns of earlier graduates (1955–1970) to the planned practice patterns of the more recent graduates (1973–1975).

Black Howard alumni were slightly less likely to respond than were non-black alumni (81% vs. 85%). Statistical tests with respect to characteristics associated with non-response were not reported. The results showed that the majority of respondents (59.9%) reported practicing or planning to practice in a large city (500,000 population or more). Of all respondents, 32% reported practicing or planning to practice in an inner-city area. Interestingly, the authors noted, this figure is higher than the proportion of respondents who reported growing up in an inner-city area (22.1%), attending college in an inner-city area (25.7%), or who planned to work in an inner-city area at the time of applying to medical school (18%). A higher percentage of earlier graduates (1955–1970) reported inner-city practice. The authors speculate that this may be the result of more opportunities outside of inner cities being available to more recent graduates, as well as fewer of the more recent graduates having come from an inner-city background.

Keith and colleagues (1985) sought to examine for minority and non-minority physicians of the “affirmative action era” the choices of practice location, specialty, specialty board certification, and patient population served. The authors examined data collected from class of 1975 medical school graduates by the American Association of Medical Colleges. The class of 1975 was chosen because of the concern that physicians who graduated earlier may have had less

freedom of choice regarding practice location and patient populations due to segregation and overt discrimination in many communities.

Of the 13,428 individuals who received M.D. degrees between June 1974 and July 1975, the AAMC provided data on 12,065, including 574 Blacks, 36 Native Americans, 78 Mexican Americans, 27 mainland and Commonwealth Puerto Ricans, 9,467 Whites, and 219 Asians. Whites and Asians were classified as non-minorities. On average, non-minorities were found to have come from higher socioeconomic status (SES) backgrounds, based on parent education and occupation. Non-minorities also had higher scores on a pre-med performance index, which uses undergraduate science GPA and four components of the MCAT and was designed to predict scores on Part II of the NBME test. Therefore, non-minorities that most resembled minorities in terms of these characteristics as well as medical school attended and other pre-admission characteristics were over-sampled. In addition, all non-minority graduates of Howard and Meharry were included in the sampling frame. Nonetheless, differences persisted between the minority and non-minority samples (1.1 S.D. on the performance index and 0.6 S.D. on the SES index). Questionnaires were mailed to all of the sampled individuals for whom the AMA Masterfile or medical schools could provide addresses. Response rates were 77% for the minority sample and 85% for the non-minority sample. Non-respondents did not differ significantly from respondents on the performance index or in terms of SES. Non-minority primary care physicians did respond less frequently than other specialists; however, this was only a 1.1% difference.

The results of this study showed that overall, almost twice the proportion of minority graduates as non-minorities were practicing in federally designated manpower shortage areas (11.6% vs. 6.1%, $p < 0.001$). This trend appeared in each of the eight specialty categories included in the study. One hypothesis is that minority physicians practice in underserved areas because they face more difficulties obtaining work elsewhere when they wish to. However, the authors found this argument to be inconsistent with one measure of potential competitiveness—a performance index score. The mean score on the performance index for minority physicians practicing in manpower shortage areas actually exceeded that of minority physicians who practiced in non-shortage areas. The location of minority physicians in manpower shortage areas was not explained by socioeconomic status. Although lower socioeconomic status was associated with the likelihood of non-minority physicians practicing in shortage areas, SES did not explain the effect of race/ethnicity.

Significantly more underrepresented minority physicians chose primary care specialties as compared with white physicians, and family and general practitioners were the most likely to serve manpower shortage areas for both groups.

A study of graduates of California medical schools assessed whether minority and non-minority physicians differed in terms of practice patterns, particularly in terms of practicing in areas of California with health personnel shortages and

serving underserved populations (Davidson & Montoya, 1987). The study examined data collected using a survey of 1974 and 1975 graduates of seven of California's eight medical schools. Alumnae of one school were excluded due to the school's religious medical missionary focus, which leads to many of its graduates going abroad after graduation. The years 1974 and 1975 were selected as the earliest in which significant numbers of minorities graduated from California medical schools. Contact information for minority (black, Mexican American, mainland Puerto Rican, and American Indian) and non-minority graduates was provided by the medical schools. All minority graduates and a sample of non-minority graduates were selected for a final study population of 144 minority and 145 non-minority graduates. Of 289 questionnaires mailed, 138 were returned, for a response rate of 48%. Response rates differed slightly between minority (46%) and non-minority (50%) subjects, but this difference was not significant at the 0.05 level. Response rates did not differ by school, with the exception of one school that required graduate permission before the release of contact information. Respondents and non-respondents did not differ by likelihood of serving underserved areas except for this school, whose respondents were more likely to report serving underserved areas. Since these subjects were given prior information about the nature of the study, it is possible that only the graduates who were most committed to issues of the underserved chose to release their contact information in order to participate in the study.

The study findings revealed that minority physicians were more likely than white physicians to be practicing in or adjacent to areas designated as having a health care personnel shortage (53% vs. 26%). Although the numbers of physicians in the survey were relatively small (45 minorities and 53 non-minorities), the differences were statistically significant at the 0.01 level. These findings were unadjusted for physician characteristics that might have explained the observed effect of physician race/ethnicity on practicing in an underserved area.

A 1996 study examined the racial and ethnic background of physicians in California and the characteristics of the communities in which they practice (Komaromy et al., 1996). This study took a multiple-step approach. Data from the AMA Masterfile and from the U.S. Census were used to explore the geographic distribution of California physicians and the characteristics of the communities they served. To learn about the association between physician race/ethnicity and the characteristics of the patient population served, a sample of California physicians was then surveyed. The questionnaire included items regarding physician racial/ethnic identification, and the racial/ethnic makeup and distribution of health insurance status of the physicians' patient populations.

First, physician shortages were examined in relation to community racial/ethnic makeup. Areas with shortages of physicians were defined as those with fewer than 30 office-based primary care physicians per 100,000 population. Using the AMA Masterfile and the census data, the examination of the distribution of office-based primary care physicians—including family practitioners,

general practitioners, general internists, general pediatricians, and obstetricians and gynecologists—revealed that the supply of physicians was more strongly associated with the proportion of black and Hispanic residents in the community area than with the area's income level. In urban communities, areas with high proportions of both black and Hispanic residents had, on average, the lowest ratio of physicians to population. In contrast, urban areas with high levels of poverty and lower concentrations of Blacks or Hispanics had three times as many physicians per capita. This association was similar for communities with low levels of poverty and for rural areas with high and low levels of poverty.

Next, physician survey data were analyzed to learn about the practice patterns of black and Hispanic physicians. Overall, black and Hispanic physicians were more likely to practice in the areas with fewer primary care physicians per capita and in poorer areas as compared with white physicians. Overall, physicians tended to practice in areas with relatively high proportions of residents of their own race/ethnicity.

As in the study led by Keith et al., the authors also attempted to address the question of whether physicians practicing in underserved areas did so by choice. To test this hypothesis, the authors surveyed graduates from the University of California San Francisco (UCSF) Medical School. Because UCSF is a highly competitive medical school, the authors posit that UCSF graduates would have many opportunities available to them in terms of choice of practice location. Among UCSF graduates, the results were consistent with the findings of the physician survey discussed above. Black physicians tended to practice in areas with higher proportions of black residents than other physicians (14% vs. 6%), and Hispanic physicians practiced in areas with higher proportions of Hispanic residents than other physicians (19% vs. 12%).

One limitation of this study was the lack of objective data or means to validate data about physician's patient populations. The only available source of data about the makeup of individual physicians' patient populations was physician self-report, which may not be accurate. Furthermore, physicians were asked to report on the proportions of patients of different race, ethnicity, and insurance status backgrounds, but the joint distributions of these characteristics at the individual patient level was unknown. Thus, it was not possible to study the independent effects associated with each of these variables.

A number of the aforementioned studies also examined the patient populations of physicians by physician race and ethnicity. The following sections review the evidence regarding service to potentially vulnerable patient populations irrespective of practice location.

Service to Vulnerable Patient Populations

Rochelau's analysis of data from the 1975 National Ambulatory Medical Care Survey (NAMCS) found that a far greater proportion of black patients was

seen in the ambulatory care setting by black physicians than by non-black physicians (87% vs. 7.4%) (Rocheleau, 1978). Black physicians also saw a caseload that may have been somewhat sicker, on average, than that of non-black physicians; however, differences were small and statistical tests for differences were not conducted. Black physicians reported caseloads of which they classified 21.6% as having serious or very serious conditions and 34.1% as having slightly serious conditions. In contrast, non-black physicians characterized 18.8% of their caseload as having serious or very serious conditions, and 32.4% as having slightly serious conditions.

The study of Howard University College of Medicine alumni also asked physicians to estimate the proportions of their patients populations that fell into various categories, including racial (black, white, other) and economic status (well to do, comfortably well off, not very well off, very poor) categories. The authors found that black physicians reported caring for or planning to care for a substantially higher proportion of black patients (72%) than all respondents on average (65%). In addition, the 1982 analysis comparing the earlier and later graduation cohorts suggests that more recent graduates reported caring for or planning to care for a higher percentage of black patients than earlier graduates. Very slightly higher proportions of the patients cared for by black respondents were characterized as very poor (23.5% vs. 21.5%) or not very well off (19.0% vs. 18.3%). This trend did not vary notably between the earlier and more recent graduates. Again, statistical comparisons were not made and potential confounding factors, such as the physician's socioeconomic background or age, were not controlled by the study design or in the analysis. However, restricting the study to the graduates of one medical school, while limiting generalizability, also has the effect of minimizing some of the potential differences in the respondents that might have biased these results.

Keith and colleagues also examined the characteristics of the patient populations reported by physician survey respondents. The authors found that physicians were more likely to treat higher proportions of patients from their own racial and ethnic groups. Thus, black physicians saw higher proportions of black patients than other physicians, and Hispanic physicians saw higher proportions of Hispanic patients. Black patients made up 56% of the patient populations of the black physicians, as compared to 8% to 14% of the caseloads of other physicians. Hispanic patients represented 30% of the patient populations of Hispanic physicians, as compared to 6% to 9% of the caseloads of physicians from other racial/ethnic groups.

The service provided by California physicians to patients on Medicaid and to minority patients was studied by Davidson and Lewis (1997). They found that minority physicians had higher percentages of patients covered by Medicaid in their practices than did non-minority physicians. 31% of minority physicians reported that over 40% of their caseloads was made up of patients covered by Medicaid, as compared with 10% of non-minority physicians. At the other ex-

tre, 33% of minority physicians reported that less than 10% of their caseloads comprised Medicaid patients, as compared with 59% of non-minority physicians. A pooled contingency table indicated a statistically significant difference between the minority and non-minority physicians ($p < 0.02$). Minority physicians also saw higher percentages of minority patients than non-minority physicians in the study. Minority graduates treated significantly higher proportions of patients who were black (23.5% vs. 6.7%) and Hispanic (33.1% vs. 12.5%). However, minority physicians did not treat only minority patients. Black physicians also reported that approximately 33% of their patients were non-minorities, and Hispanics reported a patient mix including 42.2% non-minorities. Unfortunately, because no study thus far has combined data from surveyed physicians about their patient case mix as well as patient-level data from individual patients, it is unclear what the joint distribution of medical indigence and minority status among patients is. These findings were unadjusted for other factors that might explain the apparent concordance between physician race/ethnicity and that of the patient case mix. Furthermore, none of the studies that ask physicians about their general patient case mix was able to collect data regarding patients' reasons for selecting their physician.

The study of California physicians conducted by Komaromy and colleagues also examined the relationship between patient and physician characteristics. They also found significant racial/ethnic concordance between physicians and their patient populations. Even after controlling for the racial/ethnic makeup of the communities in which physician respondents reported practicing, the results revealed that black physicians reported caring for significantly more black patients (25%, $p < 0.001$) and Hispanic physicians reported caring for significantly more Hispanic patients (21%, $p < 0.001$) as compared with other physicians. The results also showed that black physicians cared for more patients covered by Medicaid (45% vs. 18%, $p < 0.001$) and Hispanic physicians cared for a higher proportion of uninsured patients (9% vs. 6%, $p < 0.03$) than non-Hispanic white physicians.

Moy et al. (1995) analyzed data from the nationally representative 1987 National Medical Expenditure Survey (NMES) to test the hypotheses that non-white physicians are more likely to provide care for racial and ethnic minority patients, indigent patients, and sicker patients. Their analysis was limited to patients with at least minimal access to the health care system in that they were able to identify a regular physician as their usual source of care, a total of 15,801 respondents to the survey. Respondents provided detailed data regarding their own personal characteristics, health services utilization, physical and mental health status, functional status, and characteristics of their regular physicians including racial/ethnic group.

Patients of minority physicians, including black, American Indian, Asian, and other physicians were compared to patients of white physicians. Patient race/ethnicity was self-reported as either white, non-Hispanic white, non-Hispanic black, Hispanic, American Indian, or Asian/Pacific Islander. Medically

indigent patients were defined as those with incomes under 200% of the federal poverty level. Health insurance status was also examined with patients classified as insured by a plan other than Medicaid, insured by Medicaid, or uninsured.

Moy et al. (1995) found that, among patients who reported having a regular physician as their usual source of care, minority patients were over four times as likely to report receiving care from minority physicians as were white patients (O.R. = 4.39, C.I. = 3.36–5.73). Between 19% and 29% of the low-income, Medicaid-covered, and uninsured patients received care from minority physicians, as compared with 13% of the more affluent patients. Patients who were low-income, poor, or near poor were 1.68 times as likely to receive care from a minority physician as a white physician. Among the uninsured, the odds of having a regular physician who was a minority were 1.44 times as great as the odds of having a regular physician who was white. Patients covered by Medicaid were 2.62 times as likely to receive their care from a minority physician as a white physician. Patients with worse health status were also more likely to receive care from minority physicians than white physicians. Adult Americans who identified a nonwhite physician as their regular source of care also tended to be sicker than the patients who reported having white physicians. A significantly higher percentage of patients of non-white physicians reported being in fair or poor health compared to those of white physicians. Furthermore, patients of non-white physicians reported significantly greater numbers of emergency department visits and hospitalizations and reported experiencing more acute complaints, chronic conditions, functional limitations, and psychological symptoms than patients of white physicians.

To control for other characteristics that could potentially explain this relationship, the authors also constructed multiple logistic regression models. The models to predict the likelihood of receiving care from a nonwhite physician controlled for physician sex, specialty (generalist vs. specialist), workplace setting (office, clinic, other), region of the country (Northeast, Midwest, South, West), and urbanicity (MSA vs. non-MSA). None of these covariates explained the relationships between patient characteristics and likelihood of reporting a minority physician as a usual source of care.

In addition, the researchers addressed two other potential confounders: language concordance and how recently the physicians were trained. One concern was that race/ethnicity was a proxy for patient preferences for a physician who speaks the same language as the patient. The analyses were repeated, excluding respondents who reported a first language other than English. Among native English speakers, physician race remained associated with patient race and ethnicity, medical indigence, and severity of illness. Another hypothesis was that the pattern of physician race and patient race/ethnicity and other patient characteristics is associated with how recently physicians were trained. To test whether results varied with the length of time since the physician was trained, the authors split the data set into two samples, one with patients who had been with their

physician for over 10 years (with less recently trained physicians, on average) and one with patients who had been with their physician for less than 10 years (with more recently trained physicians, on average). In both groups, physician race remained associated with patient race/ethnicity, medical indigence, and worse health status.

To determine whether underrepresented minority physicians were more likely to serve underserved groups, including poor and Medicaid-covered patients and minority patients, data from the 1987 and 1991 Young Physicians Survey were analyzed (Cantor et al., 1996). The 1991 data were analyzed cross-sectionally to examine these study questions. The longitudinal sample was then used to determine whether service patterns were sustained over a four-year period. Physicians less than age 40 and in practice at least one year were sampled from the AMA Masterfile and invited to participate in the telephone survey. Minority physicians were over-sampled. Physicians without patient care practices, those who reported practicing less than 10 or more than 126 hours per week, and radiologists, pathologists, and anesthesiologists were excluded. Survey response rates were 70% in 1991 and 63% in 1987. The AMA had previously conducted a study of survey non-response and found that non-respondents were similar to respondents in most respects, and sampling weights were used to correct for differential non-response.

The five outcome variables included the percentages of physicians' patient populations that were black, Hispanic, uninsured, or poor, and the percentage of the physician's revenue derived from Medicaid. The principle independent variables were physician race/ethnicity, sex, socioeconomic status (based on the respondent's parental income level on a five-point scale and highest education level achieved by either of respondent's parents), as well as characteristics of training and practice. Additional analyses examined respondent satisfaction with different aspects of their career.

Of 4,581 respondents in 1991, the racial/ethnic distribution was 85.1% white, 3.0% black, 3.4% Hispanic, and 8.5% other. In bivariate analysis, black physicians were found to serve relatively high proportions of black patients, and Hispanic physicians were found to serve relatively high proportions of Hispanic patients. In addition, minority and female physicians served high proportions of patients who were poor and covered by Medicaid. Physicians from low socioeconomic backgrounds reported higher levels of service to black, Hispanic, poor, and Medicaid patients as compared with physicians from higher SES backgrounds.

In multivariate analysis, controlling for physician sex, physician SES did not explain the physician race/ethnicity effect on patient population served. Additional variables related to physician practice choices were then added to this base model, including specialty, practice setting, urban, rural, or suburban practice location, respondent educational debt, participation in a service program, and type of medical school. These mediating variables did not account for the relationship between physician race/ethnicity and patient characteristics. In this

multivariate analysis, educational debt and participation in a service payback program showed little relationship with service of underserved groups. In the longitudinal analysis, little change was observed over time. Generally, service to the underserved did not decrease over the four-year study period, indicating that physicians did not serve these vulnerable patient populations on a merely temporary basis. The authors concluded that socioeconomic disadvantage is not a substitute for race/ethnicity in terms of likelihood to serve minority, poor, uninsured, and Medicaid-covered patient groups. Although physicians from lower socioeconomic backgrounds were more likely to serve the underserved, the relationship between such service and physician race/ethnicity was much stronger.

As with much of the extant literature, this study may be subject to measurement error resulting from measuring characteristics of the patient population using only physician self-report. Although some physicians in certain practice settings may be acutely aware of the percentages of patients they serve who are uninsured and covered by Medicaid, many may be likely to over- or underestimate these figures, as well as figures on the racial/ethnic makeup of their patient population.

The most current literature continues to support the findings that minority physicians are more likely to treat minority and underserved patients. In an analysis of data from the 1987 National Medical Expenditure Survey, the same data source used in the study by Moy, Gray and Stoddard (1997) sought to test the hypothesis that minority patients are more likely than white patients to report a minority physician as their regular source of care, independent of socioeconomic status. Like Moy, Gray studied data on access to care from patients who responded to a nationally representative household survey. However, unlike the method employed by Moy, which included only respondents who reported having a particular physician as a usual source of care, Gray jointly modeled the probability of having a regular provider and the race/ethnicity of that provider while controlling for patient socioeconomic status using a bivariate probit model. Minorities included the categories of African American, Hispanic, and other. Whites and Asians were classified as non-minorities. Patient characteristics included age, sex, poverty status, educational level, employment status, type of insurance, region of residence, and urban residence. The unadjusted results reveal disparities in access to having a regular physician. The likelihood that a Hispanic or African American reported having a regular physician was 50%, as compared with 70% for non-minorities. The unadjusted results also suggest that a strong relationship exists between patient and physician race/ethnicity. Conditional on having a regular physician, minorities were more than five times as likely as Whites to identify a minority physician as their regular provider. After controlling for sociodemographic characteristics, the results showed that minority patients were less likely to have a regular physician than Whites. But for those who had a regular physician, minorities were more likely to have a minority physician compared with non-minority patients ($p < 0.001$). Thus, the authors

showed that race/ethnicity is independently related with physician-patient pairing after controlling for numerous sociodemographic patient characteristics. They conclude on this basis that physician-patient racial concordance is the result of physician and/or patient preferences. This conclusion, while a plausible hypothesis, may be unwarranted based on the results of this study alone, which did not address physician characteristics that might be associated with serving a particular patient population.

As a result of concerns over shortages of primary care physicians in the United States, a recent study focused specifically on the practice patterns of generalist physicians and the predictors of their providing care to underserved populations (Rabinowitz et al., 2000). As part of a larger study to learn about influences on choice of generalist careers, a survey was conducted among a stratified random sample of generalists (specialists in family practice, general practice, general internal medicine, or general pediatrics without subspecialization) who had graduated between 1983 and 1984. In all, 2,199 (74%) of the 2,955 surveyed physicians responded. Respondents were considered ineligible for the study if they had left general practice or worked for the military (310) or if they failed to provide responses regarding the outcome variable, one or more of the seven predictor variables, or both (185). Results from 1,704 eligible respondents were analyzed.

The authors tested whether seven variables [sex, belonging to a minority group that is underserved (black, Hispanic, American Indian, Alaska Native), family income when growing up (by quintile), growing up in an inner city or rural area, National Health Service Corps participation, strong interest in underserved practice prior to medical school, and clinical experience with the underserved during medical school] were predictive of reporting providing substantial care to underserved populations after medical school. Care of the underserved was not measured merely in terms of relative proportions of physicians' caseloads that were medically indigent. Substantial care to the underserved was defined as 1) self-reported practice in a federally designated underserved area, 2) having a caseload of which 40% or more of the patients are medically indigent (insured by Medicaid or uninsured), or 3) having a caseload in which 40% of patients are poor. Results of a multivariate logistic regression showed that of seven predictor variables tested, four were significantly and independently predictive of providing substantial care to underserved populations: 1) belonging to a minority group that is underserved, 2) participation in the National Health Service Corps, 3) strong interest in practicing in an underserved area prior to medical school, and 4) growing up in an underserved area. Sex, family income while growing up, and curricular exposure to underserved populations were not significantly associated with caring for the underserved in the adjusted model. The authors found a clear and statistically significant monotonic relationship between the number of predictors and the likelihood of serving an underserved population. However, those belonging to a minority group had the greatest in-

creased likelihood of providing substantial care to the underserved, controlling for all other factors (O.R. = 2.9, $p < 0.001$).

The primary intent of this study was not aimed solely at testing whether or not minority physicians provide more care to the underserved. However, the findings with respect to this study question appear quite robust. By being restricted to generalists, the study controlled for differences in practice patterns between generalists and specialists, although this limits the ability to generalize about minorities in other specialties. It also controlled for sex, family background, and experience with the underserved in medical school. For the purpose of testing whether minority physicians are more likely than others to serve the underserved, the authors may have overcontrolled for confounding by including physician interest in serving the underserved and participation in the National Health Service Corps in the multivariate model. Despite this modeling approach, minority status again emerged as significantly and independently associated with serving a substantial proportion of underserved patients in their caseloads.

TABLE 2 A Summary of Characteristics of Minority Physician Practice Literature Reviewed

Author, Year	Data Source	Controls, Patient unit of analysis	Controls, Physician unit of analysis				Outcomes			
			Patient socio- economic status?	Physician socio- economic status?	Physician medical school/ educational performance?	Physician educational debt/ participation in NHSC?	Did minorities practice in underserved geographic area?	Did minorities serve more minority patients?	Did minorities serve more medically indigent/ poor patients?	Did minorities serve sicker patients?
Rocheleau, 1978	1975 NAMCS	-	No	No	No	Metro area	Yes	-	Yes	
Lloyd et al., 1978; 1982	1975 HUCM Alumni Survey	-	No	All Howard alumni	No	Inner city	Yes	Yes	-	
Johnson et al., 1989	1985 HUCM Alumni Survey	-	No	All Howard alumni	No	Inner city	Yes	Yes	-	
Keith, et al. 1985	National Physician Survey of 1975 graduates	-	Yes	Yes	No	Yes	Yes	Yes	-	
Komaromy, et al. 1996	Census, CA physician survey	-	No	Yes, sub-analysis of UCSF alumni	No	Yes	Yes	Yes	-	

Davidson & Lewis, 1997	CA physician survey	-	No	All California medical school alumni	No	Yes	Yes	Yes	-
Moy et al., 1995	NMES	Yes	-	-	-	-	-	-	Yes
Cantor et al., 1996	1987 and 1991 Young Physicians Survey	-	Yes	No	Yes	Urban/ rural	Yes	Yes	-
Rabinowitz et al., 2000	National generalist physician survey	-	Yes	No	Yes	Yes	-	Yes	-
Gray & Stoddard, 1997	NMES	Yes	-	-	-	-	Yes	Yes	-

UNDERREPRESENTED MINORITY PHYSICIANS, CULTURAL COMPETENCE, AND THE PHYSICIAN- PATIENT RELATIONSHIP

We now review the evidence for the hypothesis that improving the diversity of the health care workforce might improve disparities in health status by providing more culturally competent care. The foundation of this hypothesis is that for some minority patients, having a minority physician may lead to better health care because minority physicians may communicate better and provide more culturally appropriate care to minority patients. If underrepresented minority physicians provide higher-quality care to minority patients along the interpersonal dimensions of care, including doctor-patient communication and cultural competence, this could result in higher patient trust and satisfaction. This may in turn facilitate better health outcomes.

Cultural Competence

Clinician skills are often divided conceptually into technical skills and interpersonal skills. Clinicians with equivalent skills along the technical dimension of care may still provide differing quality care to patients along the interpersonal dimension. Increasing attention is being devoted to the technical and interpersonal skills of clinicians in cross-cultural environments, or “cultural competence.” Cultural competence may affect barriers both to access to care and to the receipt of appropriate treatments.

As the U.S. population has become more diverse, the concept of “cultural competence” has come into focus as a potentially important factor in serving the health care needs of the population. It has been widely hypothesized that culturally and linguistically competent care will result in better clinician-patient communication, and better communication will facilitate more successful patient education efforts. The hypothesis is that this will lead to an increased likelihood of patients modifying health behaviors and avoiding exposure to risk. More culturally competent care may also influence patient health care-seeking behavior and health care preferences by affecting patient familiarity with and trust in the health care system, thus widening the range of possible acceptable treatment options. The benefits may range from more thorough and accurate documentation of medical histories to greater adherence to treatment regimens by improving trust, communication, and continuity of care. Finally, the spread of improvements in cultural competence throughout the health care system may expand patient choice and access to a wider range of providers. Unfortunately, there is no empirical evidence directly supporting or refuting the hypothesis that cultural competence in providing health care affects health outcomes in such a way that leads to reductions in health disparities. Indeed, there is not even agreement on exactly what constitutes cultural competence.

Cultural competence has been defined in various ways. A broad definition put forth by the proposed DHHS Office of Minority Health National Standards of Cultural and Linguistic Competency is “the ability of health care providers to understand and respond to the cultural and linguistic needs brought by patients to the health care encounter” (DHHS OOMH, 2000). Lavizzo-Mourey and Mackenzie (1996) conceptualized cultural competence “as the demonstrated awareness and integration of three population-specific issues: health related beliefs and cultural values, disease incidence and prevalence, and treatment efficacy.” We present hypertension as an example illustrating the application of this conceptual model.

With regard to understanding a disease’s epidemiology, hypertension in African Americans is more prevalent, occurs at younger ages, and has three to five times the mortality rate in African Americans as compared with Whites. Furthermore, African Americans experience higher rates of cardiovascular and renal damage at each severity level of hypertension than Whites. Since hypertension is a such a common and important risk factor for coronary heart disease-related events in African Americans, risk prediction algorithms that fail to take this into account may have less predictive value in this population than in others. With regard to understanding treatment efficacy, hypertension in African Americans as compared with Whites is, in general, more responsive to monotherapy with diuretics and calcium channel blockers than to beta blockers or ACE inhibitors. If beta blockers or ACE inhibitors are used, treatment guidelines recommend that the differences in efficacy be offset by a reduction in salt intake, higher doses of the drug, or the addition of a diuretic (NHLBI, 1997). With regard to understanding cultural implications, African-American patients may find adherence to recommended dietary and exercise regimens challenging due to financial, environmental and cultural factors, and experience lower satisfaction with their care than other patients (Coleman et al., 2000). Thus, greater attention to education, counseling, and continuity of care with a physician to gain a patient’s trust may be indicated to achieve adherence goals.

Physicians with an understanding of these issues as well as greater interpersonal skills, particularly in a cross-cultural physician-patient encounter, may be better equipped to collect a more accurate patient history, to learn about the specific issues each patient faces, and to work with the patient over time to achieve better blood pressure control.

A number of studies of mental health services have attempted to address the role of race in the patient-provider relationship. Psychiatrists point out that the race of the patient and the mental health professional may influence patient transference and may affect the therapist’s ability to empathize with the patient to an appropriate degree (Brantley, 1983). The mental health literature provides some mixed findings with respect to the relationship between provider-patient racial/ethnic concordance and patient treatment adherence and outcomes. Some research has found no relationship between provider-patient racial/ethnic pairing

and service use or outcomes (Chinman, 2000). Other work in mental health lends some support to the cultural competence hypothesis. Studies have found that black clients paired with white providers had lower program participation and less improvement (Rosenheck et al., 1995), that ethnic pairing is related to length of treatment and, among non-English speakers, with outcomes (Sue et al., 1991), and that changes in a community mental health system, including an increase in the diversity of mental health providers, were associated with an increase in the mean numbers of visit, particularly among minority clients (O'Sullivan et al., 1989). However, many of these studies examined only case management services rather than physician services. Moreover, with the exception of one study that measured linguistic competence, the outcomes of interest were only indirectly associated with racial/ethnic concordance, while details of the provider-patient relationship that might relate to cultural competency were unmeasured. Important factors to measure might include physician communication skills, patient trust, and patient satisfaction.

A study of the role of race and the effectiveness of drug treatment programs examined the racial makeup of the client population, rather than of the medical staff. Results suggested that race is not a predictor of treatment success when other effects of other characteristics of the treatment environment such as socioeconomic status of the organization's service area, organizational factors and treatment practices were controlled in the analysis (Howard et al., 1996).

Another study of the influence of patient-physician racial concordance on the quality of nursing home care found no effect. Among a sample of elderly nursing home residents in the south, African-American patients with hypertension were more likely to receive medication and to adhere to their prescribed medication regimen than white patients, regardless of white-African American or African American-white patient-provider racial concordance (Howard, et al. 2001). Finally, a recent study of Medicare beneficiaries hospitalized for myocardial infarctions found that black patients had lower rates of cardiac catheterization regardless of whether the patient's attending physician was white or black (Chen et al., 2001).

Patient Trust and Satisfaction

Physicians require the trust of their patients in order to treat them effectively. Work by Thom et al. (1999) to measure patient trust has shown that trust can be measured and demonstrated to be a related but distinct construct from patient satisfaction. The authors found that after controlling for age, education, length of relationship with physician, active choice of a physician, and preference for care, trust was highly predictive of continuity with a physician, self-reported adherence to medications, and satisfaction after six months with a physician. A study by LaVeist and colleagues found that this mistrust is signifi-

cantly associated with lower satisfaction with care among African-American cardiac patients (2000).

Historically, some minority groups have had negative experiences with the health care system (Thomas et al., 1991; Gamble, 1997; White, 2000). Research abuses, racism, and race-related misconceptions and stereotyping contribute to mistrust among African Americans of the U.S. health care system. Native American, Latino, and Asian patients have other historical and cultural experiences contributing to suspicion and skepticism of the U.S. health care system and physicians. Minority mistrust of physicians can prove to be a stumbling block to the development of a productive clinician-patient relationship. Some hypothesize that this may result in sub-optimal quality of care and, ultimately, lower health status.

One small study found no evidence of patient preferences about the race or ethnicity of their physician. In interviews with 66 patients, patients reported being more concerned that physicians were caring, competent, and able to listen and understand what they had to say than they were over the race/ethnicity of their physician. However, this study included a convenience sample of patients of only three physicians in a single clinic, and included too few Latino or Asian patients to analyze (Bertakis, 1981). A more recent investigation used national data from the Commonwealth Fund's Minority Health Survey. In this study, Saha et al. (1999) found that black and Hispanic patients were more likely to rate care as excellent and very good from physicians of the concordant race. Blacks with racially concordant physicians were more likely to rate them as excellent in terms of providing health care, treating them with respect, explaining medical problems, listening to concerns, and being accessible. Black and Hispanic patients reported that they were more likely to choose a physician of their same race because of personal preferences and also because of ability to speak the patient's language. Patients with racially concordant physicians were also more likely to report that they had received preventive services and needed medical care during the previous year.

There is further evidence in support of the hypothesis that racial concordance can be beneficial to the doctor-patient relationship. A study of African-American patient adjustment to vitiligo, a de-pigmentating skin condition, found that patients treated in an outpatient hospital clinic with a predominantly African-American patient population and clinical staff showed better adjustment to their condition than African-American patients who received comparable treatment in a similar clinic with a predominantly white patient population and clinical staff. African-American patients treated in the predominantly African-American clinic were also more likely to report that their doctor adequately explained the disease to them compared with African-American patients treated in the predominantly white clinic. In addition, the patients treated in the predominantly African-American clinic reported more satisfaction with levels of trust,

comfort, and feeling that the doctor was interested in and showed concern for the patients (Porter & Beuf, 1994).

Doctor-Patient Communication

Language is naturally a key component of physician-patient communication. Many health care organizations lack effective access to interpreters with an understanding of medical concepts and terminology. When patients speak some English and the need for an interpreter is not readily apparent, misunderstandings often go unrecognized. A study of patient ratings of satisfaction with their physicians (Morales et al., 1999) showed that overall, Hispanics were more dissatisfied with their communications with Whites. Moreover, Hispanic Spanish-language respondents were significantly more dissatisfied with care compared with Hispanics who had responded in English and compared with non-Hispanic Whites when asked about 1) whether medical staff listened to what they had to say, 2) receiving answers to their questions, 3) explanations about prescription medications, 4) explanations about medical procedures and tests, and 5) reassurance and support from medical staff. The multivariate model included controls for potentially confounding differences in demographic (age, sex), socioeconomic (education, income, marital status, household size), health insurance, and physical and mental health status characteristics.

Other studies of the doctor-patient relationship and doctor-patient communication have examined the construct of participatory decision making (PDM) (Kaplan et al., 1995; Cooper-Patrick et al., 1999). Among patients in the Medical Outcomes Study, Kaplan found that higher PDM styles were associated with greater patient satisfaction and less likelihood of switching physicians. She also found that minorities tended to rate their physicians as being less participatory than white patients did. Cooper-Patrick specifically examined the relationship between patient PDM ratings of their physicians and race/ethnicity, including PDM, in race-concordant and -discordant physician-patient dyads. Overall, minority patients rated their physicians as having lower PDM scores than non-minority patients. Patients in race-concordant relationships with physicians reported that their physician visits were significantly more participatory than did patients in race-discordant relationships, although the magnitude of the difference in scores was small (2.2%, $p < 0.02$). Patient satisfaction was higher with higher PDM styles across ethnic groups in the study.

Kaplan also found that PDM score was significantly related to time spent with patients, a variable that was not controlled for in the Cooper-Patrick analysis. Black and Hispanic physicians were found to spend more time on office visits on average in several of the aforementioned studies on physician practice pattern by race. However, this alternative hypothesis does not explain why white patients rated visits with white physicians as more participatory than did black patients of white physicians. Patient PDM ratings also varied with other charac-

teristics that could be related with patient comfort level and willingness to be involved during a physician visit, such as patient education and having been a patient of the same physician for a longer period of time. This suggests that PDM is not merely a proxy for average length of office visit alone. Rather, it seems likely that PDM represents a construct related to trust, familiarity with the health care system, communication style, and satisfaction.

In summary, there is little consistent empirical evidence to support or refute the hypothesis that cultural competence influences patient health outcomes, or that training more minority physicians could improve the quality of care delivered to minority patients through improved cultural competence. Indeed, there is currently little agreement with respect to the definition or measurement of cultural competence. Moreover, we must take care to avoid the erroneous assumption that physician race/ethnicity is a proxy for cultural competence or sensitivity, or that patients of similar cultural backgrounds necessarily have similar expectations and preferences. Models from the fields of medical anthropology and sociology remind us that the provider-patient relationship is influenced by many factors including but not limited to characteristics of the patient and the provider, their respective cultural identities, models of health and illness, expectations of one another, and the social distance between them. More research is needed to define and measure cultural competence and to demonstrate its linkages to patient outcomes.

DIVERSITY AMONG MEDICAL STUDENTS AND THE QUALITY OF MEDICAL EDUCATION

The third hypothesized mechanism by which diversity may improve disparities in health status is through the effect of diversity on medical education. Increasing diversity in medical training may expose physicians-in-training to a wider range of different perspectives and cultural backgrounds among their colleagues in medical school, residency, and in practice. Such exposure may provide physicians with experiences and interactions that will broaden their interpersonal skills and help in their interactions with patients. These skills may increase the effectiveness of health care providers in addressing health disparities. There is suggestive evidence that medical students bring racial prejudices with them to medical school. In a study of the physician contribution to differences in quality of care, medical student perceptions of model actors were examined and compared (Rathore, 2000). Students were randomized to view a video of a black woman or a white man reporting identical symptoms of angina. Non-minority students rated the health state described by the black woman as less severe than that described by the white man, while the ratings provided by minority students did not differ. These results suggest that there is reason to suspect that medical students are not significantly different from the rest of the population in that they bring with them to medical school differing perspectives based upon their pre-

existing beliefs, values, and experiences, and are challenged in medical school to learn essential skills about interacting with patients and colleagues from differing perspectives. However, the ways in which increasing diversity in medical education might affect the educational environment and the quality of physicians it produces have not been systematically studied, and as a result there is currently no evidence to support or refute the hypothesis that having a diverse student body enriches the education of all medical students, resulting in better-educated, more culturally competent physicians and better health outcomes for minority patients as well as majority patients.

THE COMING CHALLENGE

Variations in medical care by patient race/ethnicity are at least in part attributable to differences in severity of illness and comorbidities. These factors may be influenced by many patient-level characteristics, including genetic factors, health behaviors, and environmental factors. They are also influenced by patient-level variables that affect access to care, such as socioeconomic status and health insurance status. In addition, access to care is influenced by the physical availability of care, the ease of use of care, and the ability to develop a meaningful doctor-patient relationship.

The goal of increasing the diversity of the physician workforce in the United States in a sense dovetails with other efforts to alter medical education by reflecting a greater emphasis on development of core competencies in interpersonal skills that affect the care of patients. As they shape the entering classes of their institutions, admissions committees may increasingly emphasize diversity of background; life experiences, including cross-cultural experiences; and language and interpersonal skills as well as excellence in the classroom. However, evidence is needed to demonstrate whether such efforts have an impact on the overall quality of medical education or the quality of care ultimately delivered by physicians.

Numerous programs have been implemented over the past 20 years aimed at increasing the numbers of underrepresented minority physicians and improving service to underserved communities. Recent limits on affirmative action pose a serious challenge to many such interventions. This threat is of particular concern as the proportion of racial and ethnic minorities in the U.S. population continues to increase. As minority populations grow, the importance of the supply of minority physicians is likely to increase. Keeping up with this need will require premedical education programs, medical school admissions policies, and physician workforce planning to include explicit strategies to increase the supply of underrepresented minority physicians. However, the racial and ethnic composition and life experiences of minority populations in the United States are constantly in flux. Programs and policies should be constantly reassessed in light of these changes.

The goal of this paper has been to review and synthesize the scientific thinking and evidence related to the potential impact of increasing the racial and ethnic diversity of U.S. physicians on racial and ethnic differences in health status. Strong, compelling evidence suggests that minority physicians are indeed more likely to provide precisely those services that may be most likely to reduce racial and ethnic health disparities, namely primary care services for underserved poor and minority populations. It is the opinion of the authors that the strength of that evidence alone is sufficient to support continued efforts to increase the numbers of physicians from underrepresented minority groups. Some evidence also supports the hypothesis that some patients prefer physicians from their own racial or ethnic group, suggesting the possibility that diversity among physicians may provide greater choices for patients to choose physicians with whom they feel most comfortable. Clearly, the low numbers of physicians from underrepresented minority groups will limit choices for patients.

Although we believe that the evidence supports efforts to increase diversity among health providers to address disparities, we also recognize that we must be vigilant against the potentially pernicious effects of creating the expectation that minority physicians are being trained solely to provide health care services to minority patients or to research minority health issues.

Finally, there is a great need to apply rigorous scientific methods to assess the impact of the race and ethnicity of physicians and patients on health outcomes and the impact of diversity on the quality of medical education for all students and on the quality of health care. We must bring these research findings to bear on continued efforts to assure diversity among health care providers.

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