

Racial and Ethnic Differences in Access to Medical Care

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The authors' review of the health services literature since the release of the landmark Report of the Secretary's Task Force Report of Black and Minority Health in 1985 revealed significant differences in access to medical care by race and ethnicity within certain disease categories and types of health services. The differences are not explained by such factors as socioeconomic status (SES), insurance coverage, stage or severity of disease, comorbidities, type and availability of health care services, and patient preferences. Under certain circumstances when important variables are controlled, racial and ethnic disparities in access are reduced and may disappear. Nonetheless, the literature shows that racial and ethnic disparities persist in significant measure for several disease categories and service types. The complex challenge facing current and future researchers is to understand the basis for such disparities and to determine why disparities are apparent in some but not other disease categories and service types.

In 1985, the Department of Health and Human Services (DHHS) released its Report of the Secretary's Task Force on Black and Minority Health (sometimes referred to herein as the Task Force Report) (U.S. DHHS 1985a,b, 1986a, b,c,d,e,f). This landmark report represented the first time DHHS had made a concerted effort among its agencies and programs to raise the awareness of the health of racial and ethnic minorities in the United States and the relative poor

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health of minority groups compared to the majority white population. The Task Force Report was the culmination of work, which began in 1984, of a primary group of 18 senior scientists and officials within DHHS charged by DHHS secretary Margaret M. Heckler with the responsibility of studying the persistent health disparity between white Americans and African, Hispanic, Native, and Asian Americans. Dr. Thomas E. Moore, deputy director of the National Institutes of Health, was appointed chairman of the task force, and experts from the nonfederal community were invited to consult with primary task force members in exploring the magnitude of health disparities and why these disparities continued to exist given the steady improvement in overall health in the United States. Acknowledging that health disparity was complex and influenced by many behavioral, social, economic, cultural, biological, and environmental factors, the task force further affirmed that the interaction of these factors on health status are "poorly understood for the general population and even less so for minorities." Existing sources of data were one obvious problem in attempting to understand dimensions of health disparity by race and ethnicity. More data existed on African Americans, although insufficient; data for other ethnic groups, such as on Hispanic and Asian subgroups and on Native Americans, were very limited and often lacking.

Nevertheless, it was apparent based on the available information at the time the task force began its work that African Americans, Hispanics, Native Americans, and some Asian/Pacific Islander groups, relative to white Americans, were not benefiting equally from the cumulative scientific knowledge and advanced medical capacity to diagnose, treat, and cure disease. And while the primary emphasis of the Task Force Report was health status differences by race and ethnicity, access, availability, and utilization of health services were discussed, albeit in a limited manner, as contributing factors to health status and the health disparity gap between minority and nonminority populations. The task force observed that gross indicators of access and utilization of services, such as the number of annual visits to a physician, had narrowed as a result of the major insurance programs of Medicaid¹ and Medicare.² However, the report indicated that racial and ethnic groups continued to have poorer access to quality health care services and different patterns of utilization relative to white Americans, including a lower use of preventive services, a greater likelihood of not having a usual source of care, and a greater likelihood of being uninsured.

Since the release of the Task Force Report along with its recommendations for eliminating disparities in health status, there has been an increased awareness and sensitivity to minority health issues and a proliferation of studies and reports attempting to investigate further racial and ethnic differences in health status, access to services, and outcomes. This article presents our review of the

literature on racial and ethnic differences in health care services from 1985 to the present. Particularly important among the task force recommendations that helped to guide our literature review is the call for the DHHS to adopt and foster a research agenda to investigate factors affecting minority health, specifically factors in the health care setting that influence diagnosis and treatment of racial and ethnic minorities.

NEW CONTRIBUTION

We critically reviewed the published research since 1985 to describe further the nature of racial and ethnic differences in access to preventive, diagnostic, and therapeutic services as well as how far research in these areas in the intervening years has advanced our understanding of these disparities. A main purpose for this review and synthesis of the health services research literature was to better understand the contributing factors for these disparities in access to health care services and to highlight areas that may be most productive in future investigations that aim to reduce disparities in access to health care between ethnic minorities and the majority white population.

METHODS

We searched the MEDLINE database for studies conducted in the United States and published in peer-reviewed journals during the period from 1985 through October 1999. We chose the year 1985 to coincide with the release of the Report of the DHHS Secretary's Task Force on Black and Minority Health. We initially searched the literature, with the assistance of experienced librarians, using the key words *racial stocks, ethnic groups, United States, health services accessibility, barriers to care, utilization, treatment, and diagnosis*. We then conducted a second search specific to key patient conditions or health service areas, such as cancer, cardiovascular disease and stroke, diabetes, infant mortality, child health, HIV and AIDS, mental health, psychiatric disorders, emergency care, preventive services, and health services utilization. Hard copies of all abstracts that indicated that a purpose of a study was access to screening, diagnostic care, and therapeutic care by race and ethnicity were retrieved, and each abstract was reviewed by at least two health outcomes research scientists for relevance to the topic. Hard copies of relevant articles were then retrieved and further reviewed. In instances where there may have been disagreement, the article was reviewed by a third or fourth research scientist, and any disagreement was resolved through consensus.

Articles selected for final inclusion in this review were those that (1) indicated that a primary purpose of the study was variation in medical care access by race and ethnicity, (2) contained original findings, (3) presented actual quantitative and comparative data, and (4) met general and acceptable principles of scientific research. Each article must have specified the racial or ethnic groups being compared, and any that lumped "minorities" into a single category for comparison to whites, for example, were excluded. With regard to Hispanics and Asians, our preference would have been to include only articles that indicated specific ethnicities, such as Mexican, Puerto Rican, or Cuban Americans and Japanese, Chinese, Korean, and so on. We allowed articles to remain in the review with broader categories of Hispanics or Latino and Asian or Pacific Islanders. With regard to scientific research, the article must have stated a clear research question or purpose and defined clearly the research methods, data sources, and data collections and analytical procedures. We considered certain articles to be sentinel because they reported original findings of disparities in access to medical care (or a lack thereof) or they provided unique insights that helped to explain previously published findings.³ Review articles were not considered in our synthesis.

After this literature review process, articles were categorized by major subheadings to coincide with major subject areas of the Task Force Report: heart disease and stroke, cancer, diabetes, and infant and child care. Other subheadings in this review include HIV / AIDS, specifically chosen because of the sufficient body of literature and of its impact on minority communities, and mental health, as a reasonable subheading for a broad and substantial body of literature on care access by race/ethnicity. We included another substantial body of literature on particular types of primary, rehabilitative, long-term, and emergency care under the subheading "health services" since it did not fit within a "health condition" structure.

Our purpose in this review is not to present information extensively and laboriously from the nearly 400 articles that were reviewed. Instead, we will present results of published articles that clearly indicate the nature of the disparities in access to care by race and ethnicity, represent the body of literature for the subheadings, and especially provide clues to explaining the observed racial and ethnic disparities in access to care. Under each subheading, we present the results from selected published articles (usually with accompanying explanatory comments and interpretation), provide a general critique of the body of literature, and where appropriate, suggest general areas for future investigations, based on study findings, that may be most productive in helping to explain racial and ethnic differences in access to health care services.

FINDINGS

Our review of the health services literature over the past decade and a half since the release of the Task Force Report revealed significant differences in access to medical care by race and ethnicity within certain disease categories and types of health services. Most studies have varied in their attempts to control for possible explanatory variables—most important, SES (or some surrogate measure of social and economic status), insurance coverage, stage or severity of disease, comorbidities, and type and availability of health care services. In some cases, when important variables are controlled, racial and ethnic disparities in access are reduced and may even disappear under certain circumstances. Nonetheless, the literature shows that racial and ethnic disparities persist in significant measure for several disease categories and service types. Findings are irrefutably consistent for certain areas (invasive cardiac care), requires careful interpretation in some areas (cancer and HIV/AIDS), and are muddled in other areas (mental health). In specific health care settings (diabetes care) and under certain circumstances, no racial and ethnic disparities are observed. Altogether, findings from the published literature raise many questions about equity and fairness in health care delivery.

REVIEW BY HEALTH CONDITION

HEART DISEASE AND STROKE

The 1985 Report of the Secretary's Task Force on Black and Minority Health documented the excess cardiovascular disease mortality burden, especially for stroke, among African Americans relative to whites as well as the higher rate among African Americans of nonfatal stroke (U.S. DHHS 1986b). Death rates from coronary heart disease were similar among black and white men, but among women, blacks had a higher mortality as well as incidence rate. While the data was more sparse for other ethnic groups, the Task Force Report indicated lower death rates for heart disease among Hispanic, Native American, and some Asian Americans compared to white and African Americans. The Task Force Report also noted the importance of access to care for cardiovascular disease and documented that African Americans made fewer physician office visits, were more likely to be seen in hospital clinics and emergency rooms, were less likely to be seen by a cardiovascular specialist, and were less likely to undergo coronary arteriography and coronary bypass surgery than were white Americans.

Since that time, researchers have repeatedly documented racial and ethnic differences in access to invasive diagnostic and therapeutic interventions for

heart disease and stroke. Study findings have consistently indicated that African Americans are less likely to receive pharmacological therapy, diagnostic angiography and catheterization, and invasive surgical treatments for heart disease and stroke relative to white Americans with similar clinical disease characteristics. The magnitude of the observed black-white differences often varies due to differences in the age and gender distributions of the study populations, data sources used in the investigations (such as hospital discharge, claimed based, or registry data), and other factors such as primary diagnosis of interests, diagnostic specificity or mix of participants included in the study, severity of disease, and comorbidities as well as study designs and analytical approaches used to estimate access disparity. Given the amazing consistency of findings of the numerous studies, it is highly unlikely that observed racial and ethnic differences are spurious. Equally unlikely is that these consistently observed differences are explained by known factors related to access to invasive cardiac procedures, such as disease severity.

Two major factors are important in assessing the use and appropriateness of invasive cardiac procedures: access to the cardiologist for comprehensive invasive diagnostic evaluation and disease severity, which is the strongest predictor of treatment selection. Those studies that include only angiographically confirmed diagnoses and account for some measure of disease severity are particularly informative in understanding racial and ethnic differences in cardiac care, since these major factors can no longer be considered explanatory if ethnic differences remain in study analytical results. One of the earlier studies by Maynard et al. (1986) is particularly noteworthy in that it not only documented differences by race in the receipt of invasive cardiac procedures for patients with coronary disease confirmed by angiography but also alluded to other factors beyond diagnostic evaluation, such as appropriate use of surgical treatment and possible patient refusal. In this study of patients enrolled from July 1974 to May 1979 in 14 clinics in the United States and one clinic in Canada, African Americans were less likely than whites (47% vs. 59%) to be recommended for bypass surgery—accounting for other sociodemographic factors such as age, gender and occupational status, and clinical factors, including disease severity. Furthermore, African American patients who were recommended for bypass surgery were also less likely to have surgery (81% vs. 90%), which resulted in the overall bypass surgery rate in this study of 38% among blacks and 58% among whites. The differences between surgery recommendation and having surgery indicate other complex care decision-making factors, including patient's preference or aversion, which may be related to the observed racial disparity in surgical treatment. It is also interesting to note that only 1% of blacks compared to 12% of whites

who were recommended for nonsurgical treatment had surgery, indicating perhaps an overuse of surgery in this study population, particularly for whites.

Albeit limited to a single institution, Peterson et al. (1997) at the Duke University Medical Center in North Carolina published one of the more comprehensive studies of black-white difference in cardiac care, accounting for more potentially explanatory variables and exploring many of the complex issues in clinical decision making as well as appropriateness of therapeutic procedures. Among patients diagnosed between 1984 and 1992 with obstructive coronary disease whose status and disease severity was angiographically defined, blacks were 32% less likely to have had coronary bypass surgery and similarly less likely to have any revascularization procedure. These differences were not explained by other demographic variables, such as age and gender, smoking status, comorbidities, disease severity, and insurance status. Of further note, black-white differences for bypass surgery were greater among patients with severe disease than among patients without severe disease and most pronounced among patients expected to survive for more than 1 year.

Hannan et al. (1999) extended the analysis of ethnic differences even further by specifically accounting for appropriateness as well as necessity of bypass surgery. Among patients with angiographically confirmed coronary artery disease admitted in 1994 to 1996 to mostly urban New York hospitals, African Americans and Hispanics were similarly less likely (36% and 40%, respectively) than non-Hispanic whites to undergo bypass surgery when the procedure was judged to be appropriate, that is, when expected health benefits exceeded negative consequences of surgery. African Americans were 37% less likely to undergo bypass surgery than whites when the procedure was judged to be necessary, that is, surgery was appropriate and the physician was obligated to recommend the procedure. (Hispanics were as likely as whites to undergo surgery when surgery was judged necessary.) Disease severity (measured by three-vessel disease and left main disease) was the strongest predictor of access to bypass surgery; age and insurance status but not gender were also predictors.

Most studies exploring racial and ethnic differences in cardiac care were not limited to angiographically confirmed subjects but rather generally investigated differences in diagnostic and therapeutic procedures. Weitzman et al. (1997) published study findings of patients hospitalized for myocardial infarction who were admitted between January 1987 and December 1991 to 22 participating acute care, teaching and nonteaching community hospitals in four states (North Carolina, Mississippi, Maryland, and Minnesota). While there was an indication of a racial difference for angiography, the results demonstrated significant differences for percutaneous transluminal coronary angioplasty, coronary artery bypass graft surgery, and thrombolytic therapy.

Blacks were 50 to 60 percent less likely to have had angioplasty, 60 to 70 percent less likely to have had bypass surgery, and 50 percent less likely to have had thrombolytic therapy, accounting for age, gender, comorbidity, geography, and availability of cardiac catheterization facilities. Other studies had previously shown the lower likelihood of these cardiac care procedures for African Americans relative to whites (Carlisle, Leake, and Shapiro 1995; Ford et al. 1989; Gillum 1987; Hannan et al. 1991; Wenneker and Epstein 1989). The black-white differences in access to invasive cardiac procedures are less consistent or the association is less strong for thrombolytic therapy, catheterization, or angioplasty versus the difference for bypass surgery (Giles et al. 1995; Maynard et al. 1991; Peterson et al. 1997).

Most studies have compared African Americans to whites, but some studies have investigated disparities for other ethnic Americans. Results may be less consistent for Hispanics and, in general, may not be observed for Asians (Canto et al. 1998). Ramsey et al. (1997) found no significant difference for bypass surgery and marginal differences for angioplasty between Mexican American and non-Hispanic whites in Corpus Christi, Texas. Goff et al. (1995) in Corpus Christi found a 43 percent less likelihood of thrombolytic therapy for Mexican Americans among myocardial infarction patients. Mickleson, Blum, and Geraci (1997), among the Veteran Administration (VA)⁴ Medical Center, found Hispanics to be 71 percent less likely to receive thrombolytic therapy. Canto et al. (1998) found a marginal difference between Asian-Pacific Islanders and whites for thrombolytic therapy among acute myocardial infarction patients but no significant differences for angiography, angioplasty, or bypass. This study also found no significant difference in invasive procedures between Native Americans and whites.

Black-white differences in access to cardiac care, on the other hand, are observed for the many populations studied, including Medicare beneficiaries (Allison et al. 1996; Ayanian et al. 1993; Gatsonis et al. 1995; Goldberg et al. 1992; McBean, Warren, and Babish 1994; Udvarhelyi et al. 1992) and military veterans receiving care in the VA hospitals (Mickleson, Blum, and Geraci 1997; Mirvis et al. 1994; Peterson et al. 1994; Sedlis et al. 1997; Whittle et al. 1993).

In addition to the above-mentioned disease diagnoses, black-white differences in access to care has also been documented for other cardiovascular conditions, including congestive heart failure (Philbin and DiSalvo 1998) and peripheral artery diseases (Brothers et al. 1997). Among low-income veterans with stroke or transient ischemic attacks who were less likely to have care supplemental care outside the VA health care systems, African Americans were significantly less likely than whites to receive cerebral arteriography (53 percent less likely) and subsequent carotid endarterectomy (72 percent less likely) (Oddone et al. 1993). Racial differences in access to heart transplantation have

also been documented, with African Americans less likely to receive transplants even after controlling for prognosis following transplantation, clinical and demographic factors, income, and distance to a transplant center (Ozminkowski, Friedman, and Taylor 1993). African Americans and Hispanics have also been observed to be less likely than whites to be screened for cholesterol level and diagnosed with hypercholesterolemia, even after controlling for insurance coverage, SES, and number of visits (Naumburg et al. 1993).

The degree to which racial and ethnic disparities exist in invasive cardiac procedures is influenced by insurance status, with the greatest differences found among the uninsured and Medicaid population and the smallest disparities among the privately insured (Carlisle, Leake and Shapiro 1997; Giles et al. 1995; Hannan et al. 1999). Among the uninsured, African Americans were half as likely to undergo angiography and one third as likely to undergo bypass surgery compared to uninsured whites, even after adjusting for comorbidities (Carlisle, Leake, and Shapiro 1997). Moreover, even within the VA health care system, which is mandated to provide inpatient care to all eligible veterans free of charge, investigators have found racial differences in the treatment of cardiac and stroke patients (Oddone et al. 1998; Peterson et al. 1994; Whittle et al. 1993). On the other hand, Mirvis and Graney (1998) found that the likelihood of cardiac catheterization and bypass surgery among VA patients with coronary diseases was greater for African Americans than for whites if a cardiac catheterization laboratory and cardiac surgical program were present at the local VA facility.

In contrast, one study showed that racial and ethnic differences in access can be mitigated by a universally accessible system. Specifically, Taylor et al. (1997) studied 1,441 military patients seeking care for acute myocardial infarction in the Department of Defense (DoD) health care system⁵ and found no racial differences in the rate of cardiac catheterization or revascularization after controlling for age, gender, cardiovascular risk factors, and clinical characteristics. However, whites were more likely than nonwhites to be considered for cardiac catheterization within 6 months of the initial hospital discharge.

The strength and weaknesses of each individual study vary, and there are methodological considerations in assessing the validity of findings. We have alluded to variables that were accounted for in published studies and thought to at least partially explain the observed racial/ethnic difference, including severity of disease and other factors related access to cardiac care, such as insurance status. The methodological inadequacy of an individual study may be a relatively moot point in the context of the body of literature that gives consistent findings and in which one study, often the more recent study, may overcome the specific failing of a previous investigation. As mentioned earlier,

studies in which the primary diagnosis is specific and disease status and severity of disease are well defined, such as angiographically, represent more refined investigations (Ayanian et al. 1993; Hannan et al. 1999; Peterson et al. 1997) compared to other studies in which diagnoses are not angiographically confirmed or include mixed and otherwise nonspecific cardiovascular disease diagnoses (Wenneker and Epstein 1989).

Of course, studies conducted in specific locales, such as urban settings, or statewide studies have limited generalizability to different geographic locations that may differ according to resources availability and population characteristics. Yet, despite varying locations of previous investigation, study results are almost invariably consistent.

The lack of SES indicators in the study of racial and ethnic differences in health care is a common refrain among researchers. Nearly all the studies of racial and ethnic differences in access to cardiac care reviewed lacked SES information and were not able to evaluate the relative influence of education, for instance, and insurance status. The argument regarding SES is valid because SES, of which income and education are components, is related to care-seeking behavior, lifestyle, and other behavioral factors. The argument, however, may be overblown in regard to access to cardiac care, in which the individual has presented himself for medical care for a major or threatening event of heart attack or stroke. The more salient factor at this point is insurance coverage.

The study by Daumit et al. (1999) helps to address SES and particularly insurance status in relation to catheterization and revascularization procedures in a 7-year longitudinal study of African American and white patients with new-onset end stage renal disease (ESRD), who are at high risk of cardiovascular disease, and who are eligible for Medicare insurance. This study also represents the exception in that it accounted for several SES variables (i.e., level of education, marital status, employment status and type of employment) and type of insurance in its analysis. Among ESRD patients, African Americans were 29 percent less likely to have had catheterization, 52 percent less likely to have had coronary angioplasty, and 44 percent less likely to have had bypass surgery during follow-up, even accounting for SES and insurance. However, among the subgroup of patients who were Medicare insured before the onset on ESRD and whose insurance status remained unchanged, there was no racial difference for cardiac procedure rates (all procedures combined) at follow-up.

The investigation by Peterson et al. (1997) of racial differences in cardiac care access among angiographically confirmed coronary artery disease patients did not have specific information on SES factors but did include type of insurance, which is a surrogate for SES, in its analyses. However, insurance

status was not a significant predictor of treatment selection in multivariate analyses, most likely due to the fact that 96 percent of whites and 87 percent of African Americans had private or Medicare insurance. If the "other" category of insurance (not defined by the authors) included mostly uninsured or Medicaid-insured African Americans, the 32 percent difference in the rate of bypass surgery for African Americans relative to whites is a conservative estimate (Carlisle, Leake, and Shapiro 1997). While this study also alluded to appropriateness and necessity of surgical treatment in cardiac care, Hannan et al. (1999) specifically addressed these two important issues and also found disparity in bypass surgery rates for African Americans relative to whites when the procedure was appropriate (a 36 percent rate deficit) and necessary (a 37 percent rate deficit). In contrast, the results of a study by Leape et al. (1999) found no racial/ethnic differences in revascularization procedure rates, but revascularization rate varied according to whether patients received the procedure on-site or off-site at participating hospitals. This study, however, with a smaller study sample did not distinguish between angioplasty and bypass surgery (the two procedures were lumped together) and did not define coronary disease diagnoses as specifically as Hannan et al. (1999), including as study subjects all patients with "suspected atherosclerosis." A previous study from Los Angeles by Laouri et al. (1997) is consistent with Hannan et al.'s (1999) findings. Among angiographically confirmed disease, African Americans were 51 percent less likely to undergo coronary bypass surgery and 80 percent less likely to undergo angioplasty when the procedures were considered necessary. Laouri et al. (1997) further accounted for the site in which the procedures were performed (public versus private hospital), which may explain the magnitude of differences in this and the Hannan et al. (1999) study, which were conducted in different geographic locations.

Another important factor that has been explored in more recent studies is the patient's refusal of or aversion to invasive procedures (Hannan et al. 1999; Oddone et al. 1998). The black-white differences in aversion rates tend to be small relative to the black-white differences in procedure rates (Oddone et al. 1998) and, at best, could only partially explain the procedure rate difference. Only 5 to 10 percent of patients refused revascularization according to interviews with the cardiologists (Leape et al. 1999), whereas the physician made the decision not to recommend bypass surgery 90 percent of the time among patients who did not undergo surgery (Hannan et al. 1999).

Studies that found greater racial/ethnic disparities among the uninsured and Medicaid populations compared to privately insured groups indicate that financial factors modify the effect of race/ethnicity on medical care access and suggest areas of research that may be very productive. Investigations that distinguish the features of health care systems where racial and ethnic differences

in access to care are diminished (e.g., DoD) relative to others (e.g., VA) would significantly advance our understanding of these disparities in regard to organizational and financial structures, since these systems also differ in accessibility (e.g. universal or equal), care management, and perhaps quality. Studies focusing on decision making by patients and physicians regarding cardiac diagnostic and therapeutic procedures would also be helpful. Such studies may reveal racial and ethnic differences in patients and physicians preferences for various cardiac procedures as well as the impact of physician-patient interactions on patients' decisions whether to receive such interventions. Studies that attempt to understand the psychosocial basis for higher aversion rates for invasive procedures may shed additional light on access disparities.

CANCER

The Task Force Report indicated that the poorer cancer survival rates observed for racial and ethnic Americans, particularly African Americans, may be due, in part, to delay in the detection of cancer and differences in the availability of various treatment options (U.S. DHHS 1986a). The data available to the task force was generally limited to cancer mortality and incidence rates; data on access to medical care by race and ethnicity was scarce and virtually unavailable for Asian, Hispanic, and Native Americans. Since the release of the Task Force Report, numerous investigators have attempted to confirm the task force findings and to determine the extent to which race and ethnicity affect access to screening and diagnostic and therapeutic interventions for various types of cancer. The results have been somewhat inconsistent.

With respect to breast cancer screening, earlier surveys showed racial disparities, but the gap appears to be narrowing (Ackerman et al. 1992; Breen and Kessler 1994), at least for women younger than age 65 (Burns et al. 1996). National survey results from 1992 indicate that white and African American women had similar rates of mammography and clinical breast exams (Burns et al. 1996; Frazier, Jiles, and Mayberry 1996; Martin et al. 1996) but also that Hispanic women were screened far less frequently (Arbes and Slade 1996; Perez-Stable, Sabogal, and Otero-Sagopal 1995; Tortoleno-Luna et al. 1995). Also, elderly African American women had lower mammography use rates than their white counterparts despite the initiation of Medicare reimbursement for screening mammograms in 1991 (Hoffman-Goetz, Breen, and Meissner 1998; Preston et al. 1997).

As observed for breast cancer, African American women were not disadvantaged in screening for cervical cancer, with similar rates among whites and African Americans (92 percent) but a somewhat lower rate among Hispanics (84 percent) (Martin et al. 1996). Indeed, after controlling for socioeconomic

factors including age, income, education, marital status, urbanicity, and source of care, African American women were 2.7 times more likely than white women to have had a Pap test, but Hispanic women remained 20 percent less likely than white women to have had a Pap test. The higher rate of Pap testing among African Americans was previously documented (Harlan, Bernstein, and Kessler 1991).

Screening is associated with several individual and population characteristics, including education or awareness level, health care utilization patterns and preferences, and cultural differences (Harlan, Bernstein, and Kessler 1991; Martin et al. 1996). Other factors, such as income and having a usual source of care, rather than race and ethnicity, may be predictors of breast and cervical screening (Kirkman-Liff and Kronenfield 1992; Martin et al. 1996). Having no source of care was the strongest predictor for breast and cervical cancer screening, even stronger than education level, and women in health maintenance organizations (HMOs) may be more frequently screened than women with other types of insurances (Harlan, Bernstein, and Kessler 1991). Among older women who were Medicare insured, the number of primary care visits was a predictor of mammography but did not explain the observed black-white differences in mammography screening (Burns et al. 1996). While the exact constellation of these factors may not be known with certainty in predicting cancer screening, national public awareness and early detection programs as well as community-based initiatives have incorporated knowledge of predictors in intervention efforts and contributed significantly to overall improvement in cancer screening and narrowing of the disparity gap.

In contrast to cancer screening, most studies, although not all, have documented racial and ethnic differences in the stage of cancer at diagnosis, with African Americans and Hispanics more likely to be diagnosed at advanced stages (Bentley et al. 1998; Eley et al. 1994; Mayberry et al. 1995; Mettlin et al. 1997; Optenberg et al. 1995; Polednak and Flannery 1992; Satariano, Belle, and Swanson 1986; Zaloznik 1995). For example, with respect to breast cancer in women younger than age 40, a study of women from the Metropolitan Detroit Cancer Surveillance System during a 9-year period found that African Americans were more likely to be diagnosed with remote disease than were whites (6 vs. 4 percent, respectively) (Satariano, Belle, and Swanson 1986); the difference was even greater for women older than 80 (21 vs. 13 percent, respectively). The proportion of patients diagnosed with metastatic stage prostate cancer was 35.4 percent for African Americans and 22.2 percent for whites according to data from the population-based Connecticut cancer registry (Polednak and Flannery 1992). Significantly, a study within the DoD health system, which ensures universal access for all beneficiaries, found no racial differences in stage of breast cancer at diagnosis (Zaloznik 1995). However,

this was not true for prostate cancer; 26 percent of black and 12 percent of white military active-duty personnel, dependents, and retirees had distant metastases at diagnosis according to DoD tumor registry data of newly diagnosed prostate cancer cases between 1973 and 1994 (Optenberg et al. 1995). The findings among DoD beneficiaries are not clearly explained. For breast cancer, equal frequency of screening may explain the lack of differences in breast cancer stage at diagnosis for black and white women. The black-white prostate cancer stage differences were crude or unadjusted and did not account for the possibility of age differences among blacks and whites and the increased risk of prostate cancer among younger African American men.

Research findings are not entirely consistent with regard to ethnic differences in cancer treatment. Early studies of breast cancer patients from the mid-1980s using data from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute reported crude or unadjusted racial differences in surgical treatment of breast cancer (Bain, Greenberg, and Whitaker 1986). Later SEER studies, however, revealed that African American, Hispanic, and white breast cancer patients received various treatments at similar rates (Farrow, Hunt, and Samet 1992). Satariano, Swanson, and Moll (1992), at the SEER program Metropolitan Detroit Cancer Surveillance System, also found no racial difference for early-stage breast cancer treatment and noted that hospital size was the strongest predictor of partial mastectomy for African American women. On the other hand, a study of women with ovarian cancer revealed that white women were more likely to receive a combination of chemotherapy and surgical intervention, while African Americans were more often treated with chemotherapy alone (Parham et al. 1997). Moreover, African American women were twice as likely as whites to receive inappropriate treatment and had poorer survival rates, even after controlling for age, residential area, income, and cancer care facility.

Ball and Elixhauser (1996) specifically investigated black-white differences in treatment procedures for patients hospitalized with colorectal cancer. Using 1987 discharge data from a representative sample of more than 500 acute-care hospitals in the United States participating in the Hospital Cost and Utilization Project, this study of men and women indicated that African Americans were less likely to receive major therapeutic procedures for colorectal cancer (colon resection, total cholecystectomy, colonoscopy, or bronchoscopy). Accounting for patient demographic characteristics (including insurance status), comorbidities, therapeutic complications, and hospital characteristics, African Americans with primary tumor and no metastasis were 41 percent less likely than similar whites to receive a major therapeutic treatment for colorectal cancer, whereas African Americans with metastasis were 27 percent less likely to receive a major treatment. In contrast, racial

disparities in access to treatment for colorectal cancer were not observed for veterans treated nationwide at VA medical centers (Dominitz et al. 1998). The study of patients with prostate cancer in the universally accessible DoD health care system revealed no racial disparities in waiting time for treatment, treatment methods, or survival rates (Optenberg et al. 1995).

One of the most compelling studies regarding the black-white disparity in cancer treatment was recently published by Bach et al. (1999). Among Medicare beneficiaries 65 year of age and older with early stage, non-small-cell lung cancer, a surgically treatable condition, the rate of surgery was lower among black than among white patients diagnosed between 1985 and 1993. The 17 percent less likelihood for African Americans to have undergone surgical resection was not due to comorbidity factors, age, gender, median income of residence area, geographic region, or type of Medicare insurance (managed care vs. indemnity coverage).

Perhaps one of the most disturbing studies of cancer patients found significant racial differences in the adequacy of pain management (Bernabei et al. 1998). Specifically, in a study of elderly nursing home residents with cancer, African Americans were 63 percent more likely than whites to receive no pain medication, accounting for gender, marital status, severity of illness, and cognitive performance.

Many of the cancer studies have significant data limitations. Often, cancer studies have relied on crude and incomplete measures of type of treatment provided and do take into account for comorbidities and other factors that influence treatment decisions. Therefore, the appropriateness of treatment cannot be determined. The specific chemotherapeutic agents and therapy amount and schedule are not evaluated in these studies, nor is stage-specific indication for treatment. Furthermore, the extent of disease, such as lymph node involvement and tumor size, may not have been compared among study subjects. Oftentimes, only the treatment delivered or planned as the first course is recorded in the medical record, and the comprehensiveness of treatment cannot be evaluated (Polednak and Flannery 1992). While surgery is an inpatient procedure, radiation treatment may be performed on the outpatient basis and is more difficult to document. In other words, these study results reflect only general patterns of cancer treatment and clinical management.

Observations of racial differences in access to cancer treatment in earlier studies may be explained by specific indications for cancer treatment (such as cancer stage at diagnosis, tumor histology, and coexisting medical conditions), which is information that was often not available to researchers. Future studies should focus on the quality and appropriateness of cancer treatments to further explore possible disparities in cancer treatment. Racial differences in cancer stage at diagnosis is another unexplored area that may be partially

explained by access to advanced cancer screening and diagnostic services. Cultural factors that may delay diagnosis and treatment for some ethnic groups should also be explored.

DIABETES

Racial and ethnic differences in medical care for diabetes have not been consistently documented since the release of the Task Force Report, and the published peer-reviewed literature on access to care by race and ethnicity was somewhat limited for this common condition. We identified four relevant articles: two were conducted in HMO settings (Martin, Selby, and Zhang 1995; Wisdom et al. 1997), one is a nationally representative cross-sectional survey conducted in 1989 (Cowie and Harris 1997), and the fourth is a study of national Medicare claims data for 1992 and 1993 (Wang and Javitt 1996). In the study of an HMO population in 1996, no racial disparities were found in patient and physician adherence to accepted diabetes management guidelines (Martin, Selby, and Zhang 1995). Another HMO study from 1997 found no racial differences in laboratory test frequency or results, but after adjusting for insulin use and socioeconomic variables, African Americans were found to have poorer glycemic control than were whites (Wisdom et al. 1997).

Other studies have also indicated no racial or ethnic variation in certain aspects of diabetes care but did reveal differences in methods of diabetes control and patient education (Cowie and Harris 1997). Specifically, African Americans were more likely to be treated with insulin but less likely to receive daily injections or to self-monitor their blood glucose levels. Also, while African Americans were more likely than other groups to receive patient education, the median number of hours of instruction was lower. In studies looking at complications from diabetes mellitus among Medicare beneficiaries, the findings revealed that African Americans with diabetes were 30 percent less likely than their white counterparts to have an eye care visit (Wang and Javitt 1996), a disparity potentially related to quality of preventive care.

The results of two HMO studies that found little or no racial differences in diabetes care access may be explained by the fact that study subjects were all privately insured patients in equally accessible health care systems. That black and white patients had similar primary care visits supports this interpretation of equal access for this study population (Wisdom et al. 1997). There were weaknesses to the study that found racial differences in eye care visits (Wang and Javitt 1996). The study could only account for SES factor—that is, income and education—using county-level and not individual-level data and did not account for insurance type. Accounting for individual-level data on SES factors may have indicated different results, most likely a greater black-white

difference, if African Americans were disproportionately in the low income and education as well as insurance strata.

Future research should attempt to identify ways to improve diabetes control by targeting ethnic minority groups as well as their health care providers. Emphasis should be given to identifying factors among ethnic groups that have an impact on the effectiveness of glycemic control efforts, including adherence to diabetes care guidelines.

HIV/AIDS

Our review of the HIV / AIDS literature of the past 14 years reveals the existence of significant racial and ethnic disparities in access to HIV / AIDS diagnostic services and therapy, although in some settings these disparities were not found. Moore et al. (1994) found that race was the strongest predictor of the receipt of drug therapy, with African Americans 41 to 73 percent less likely than whites to receive particular drug agents. Racial differences remained even after controlling for age, sex, mode of HIV transmission, insurance, residence, income, and education. The receipt of drug therapy was also found to be positively related to being white, having insurance, and a college education (Graham et al. 1994).

In contrast to the studies referenced above, Bennett et al. (1995) found no racial or ethnic differences in African American, Hispanic, Asian, and white VA patients in the timing of bronchoscopy or receipt of timely drug therapy. Among non-VA patients, racial differences appeared, with African Americans and Hispanics more likely than whites to die in the hospital and less likely to receive a timely diagnostic bronchoscopy. However, after controlling for insurance and admitting hospital characteristics, these racial differences lacked statistical significance for African Americans and were smaller for Hispanics. Nonetheless, a recent national survey of adults infected with HIV indicated that African Americans and Latinos (Hispanics) were less likely to receive adequate care for their disease relative to whites based on several measures including antiviral therapy, adjusting for multiple confounding variables including age, gender, education, and insurance coverage (Shapiro et al. 1999). The sample in this study included only 71 percent of eligible respondents, and those with poor access may have been underrepresented. The study also relied on self-reported data, including medication information, in which the reliability was unknown. Nevertheless, African Americans showed deficits in four of six access-to-care measures, and Latinos showed deficits in three of six access measures. These study results indicate the need to identify barriers to HIV/AIDS therapy that are not accounted for by insurance and education status.

INFANT AND CHILD HEALTH SERVICES

Prenatal Care. The Task Force noted racial differences in rates of infant mortality and low birth weight and highlighted the importance of assuring early and continuous prenatal care for ethnic Americans (U.S. DHHS 1986d). Since the release of the Task Force Report, these disparities in health outcomes persist, and racial and ethnic gaps in prenatal care continue. The racial and ethnic disparities in the receipt and sufficiency of prenatal care are well documented (Alexander and Cornely 1987; Moore and Hepworth 1994). Several studies have indicated that white women enter prenatal care earlier than Hispanic and African American women and are more likely to receive health behavior advice regarding their pregnancies (Balcazar, Cole, and Hartner 1992; Kogan et al. 1994). Further analyses have shown differences within the Hispanic population, with Cuban American women more likely to obtain adequate prenatal care than Puerto Ricans and Hispanic women of Mexican and Central/South American origin (Albrecht and Miller 1996).

As we have seen for other health care areas, the health care system, particularly the DoD, may reduce racial and ethnic disparities in access to care. Smaller racial differences were observed in prenatal care utilization in military women compared to civilian women (Barfield et al. 1996). Among military women, African Americans were 21 percent less likely than white women to initiate prenatal care in the first trimester of pregnancy; among civilian women, they were 49 percent less likely to initiate prenatal early in pregnancy.

Studies have also indicated that African American infants were admitted to neonatal intensive care units (NICU) more than 2.5 times as frequently as white infants (Langkamp, Foye, and Roghmann 1990). This disparity was not driven by the greater frequency of low-birth-weight infants among African Americans but rather due to the higher rates of neonatal complications and death. The specific content of prenatal care among racial and ethnic minorities has also been investigated in several studies. African American women are less likely to receive health behavior advice such as smoking cessation and alcohol use from their prenatal care providers (Kogan et al. 1994). In investigation of the use of prenatal care technologies among racial and ethnic groups (Brett, Schoendorf, and Kiely 1994), African Americans were less likely than whites to receive amniocentesis and ultrasound but not tocolysis. The results of a study of practice variation in high-risk pregnancies also showed no racial differences in receipt of tocolysis, a widely accepted treatment for premature labor, but also found that African American and Latino women were significantly less likely than white women to receive corticosteroid therapy, a less accepted treatment for this condition (Bronstein, Cliver, and Goldenberg 1997). Furthermore, tocolysis varied by clinical factors such as multiple births,

coexisting conditions such as diabetes, and by early stage of labor, whereas receipt of corticosteroid therapy varied by hospital site, indicating that discretionary factors influence treatment decisions.

The results in general indicate that the use and type of prenatal care differs for black and Hispanic women compared to white women, at least for certain content items. However, there are inherent limitations in these investigations. All the previous studies are limited to assessing a few prenatal care content items that are available in the data sources used. While finding differences among blacks and whites in prenatal care advice for smoking and alcohol use, the study did not find racial differences for advice for the other two items, drug use and breast-feeding (Kogan et al. 1994).

Furthermore, the research on health education provided during pregnancy was based on self-reports from a national survey, and the reliability of the responses were unknown. The reliability of information is also an issue for the national study, which used only birth certificate data to assess variation in amniocentesis and ultrasound (Brett, Schoendorf, and Kiely 1994); study results varied. For example, in a cohort study of all single live births at a teaching hospital, African American women were more likely than whites to receive a prenatal ultrasound examination (Moore, Kaczmarek, and Hamburger 1990). Furthermore, receipt of an ultrasound was inversely related to education, which was less frequent among privately insured patients. Others have also found that certain prenatal care services vary by SES factors, that is, marital status and education, more so than by race (Hansell 1991), which may help to explain the variation in these study results reported. Also, related to the issue of whether race or other factors are more predictive of care access, LaVeist, Keith, and Gutierrez (1995) showed that racial/ethnic difference in certain measures of prenatal care were explained by private insurance, clinic availability, and travel distance.

Immunization. Immunization rates among racial and ethnic groups have improved in recent years, and the gap between ethnic minority and white children has narrowed. Several studies from the early and mid-1990s documented low immunization rates among minority children (Centers for Disease Control and Prevention 1997). In a study of low-income children in Los Angeles, only 70 percent of Latino children and 53 percent of African American children were up-to-date for vaccinations at 3 months, and even fewer—only 43 percent of Latino and 26 percent of African American children—were up-to-date at 2 years of age (Wood et al. 1995). From 1994 to 1995, the National Immunization Survey found similar disparities in racial and ethnic immunization rates in 28 urban center (Centers for Disease Control and Prevention 1996). However, by 1996, survey findings showed that immunization rates for

minority children ages 19 to 35 months approached or exceeded the 90 percent national objective for coverage, and the gap between white children and African American and Hispanic children had narrowed (Centers for Disease Control and Prevention 1997). Moreover, researchers have found that disparities in vaccination rates are linked to socioeconomic variables such as insurance status and family characteristics rather than to race or ethnicity per se, with urban areas less well vaccinated (Moore, Hepworth, and Fenlon 1996).

Children's Health. In general, minority children appear to have poorer access to health care services than do white children—but this pattern is also highly linked to economic status. Study findings have shown that poor, non-white children had longer waiting times and fewer visits at doctors' offices and were more likely to use the emergency room for primary care (Cornelius 1993; Flores et al. 1999; Fleischer, Feldman, and Bradham 1994; Halfon, Newacheck, and Wood 1996; Moore and Hepworth 1994). Furthermore, study findings indicate that African American and Hispanic children were less likely to receive prescription medications and had fewer medications in general than did white children, even after adjusting for socioeconomic factors, including mother's education, insurance coverage, usual source of medical care, health conditions, and number of physician visits (Hahn 1995).

African American children were observed to use emergency departments as their usual source of care at twice the frequency of white children (Halfon, Newacheck, and Wood 1996). Besides ethnicity, significant demographic risk factors for routine use of emergency departments by children included having a single parent, having a mother with less than a high school education, being poor, and living in an urban setting. Polynesian children (i.e., Hawaiian, Samoan, and other Pacific Islanders) were more likely to seek emergency care at pediatric emergency departments than were whites and African Americans (Yamamoto et al. 1995). Frequent users of emergency departments did not appear to lack medical care resources as measured by immunization rates, insurance, and a primary care physician, suggesting that sociocultural factors are related to the use of emergency services for routine care.

Asthma Care. Racial differences in patterns of care for children with asthma have also been observed. Among Medicaid beneficiaries, African American children with asthma were more likely to make emergency room visits for care, less likely to make primary care office visits, and equally likely to have a prescription filled relative to white children (Lozano, Connell, and Koepsell 1995). Another study of Medicaid enrollees found that African American children who had been hospitalized for asthma had significantly fewer primary care visits following hospitalization than did their white counterparts (Ali and Osberg 1997). Incidentally, similar patterns of care have also

been observed for African Americans and white adults with asthma (Murray, Stang, and Tierney 1997). While both studies were among children with similar insurance coverage (i.e., Medicaid), administrative claim-based data do not include measures of disease severity.

Further studies should focus on causes of adverse pregnancy outcomes and evaluate prenatal care quality and the specific content of services as well as attempt to explain the reasons for lower-quality prenatal care rendered to minority women. Identifying social and cultural determinants of early initiation of prenatal care, especially among low-income women, would improve the effectiveness of intervention programs. Evaluation of previous and ongoing programs to improve immunization coverage for inner-city communities would enhance future interventions. Regarding asthma care, sociocultural variables should be explored in explaining racial and ethnic differences in the use primary care services and the proclivity for using emergency departments as a primary source of care.

MENTAL HEALTH

As with some other disease categories, studies of the use of mental health services by racial and ethnic minorities have yielded mixed results. Racial and ethnic disparities have been noted in outpatient services, inpatient admissions, and drug therapy, although the findings have not been consistent and their implications are not understood (Padgett et al. 1994; Snowden and Cheung 1990).

No differences in psychiatric hospitalization rates or inpatient hospital days by race and ethnicity were observed among insured federal employees, based on a national database of administrative claims, whereas age, residence, hospital bed availability, and insurance plan option were predictive (Padgett et al. 1994). In a study of inpatient and outpatient services of the Los Angeles County mental health system, race and ethnicity did not have a consistent pattern related to number of treatment sessions, treatment modality, treatment settings, and the therapist's professional discipline, although SES status, primary language, and diagnosis were related to the type and amount of treatment services used (Flaskerud and Hu 1992). The study by Padgett et al. (1994), which lacked diagnostic data on the nature and severity of the mental health problems, indicates some of the methodological limitations of many of these studies.

Inpatient and outpatient diagnoses also varied by race and ethnicity, although the patterns were not consistent (Flaskerud and Hu 1992). African Americans were more than 6 times as likely as whites to receive a diagnosis of alcohol or substance abuse, whereas whites were nearly 4 times as likely to

receive a diagnosis of a personality disorder (Chung, Mahler, and Kakuma 1995). Interestingly, African Americans with high SES were more than 3 times as likely as their white counterparts to be tested for alcohol or substance abuse, suggesting a provider's biased perception of African Americans. Various researchers have shown that African Americans and Asians were more likely than whites to be diagnosed with an organic or psychotic disorder such as schizophrenia, while Hispanics were less likely to be so diagnosed (Chung, Mahler, and Kakuma 1995; Leo et al. 1997; Strakowski, Shelton, and Kolbrener 1993).

This body of literature is particularly muddled regarding access to mental health care by race and ethnicity. Future investigations should focus on differential diagnoses and treatment among racial and ethnic groups to determine if misdiagnoses are occurring. Furthermore, studies should determine whether variation in inpatient and outpatient services exists and for what reasons as well as the appropriateness of service utilization.

REVIEW BY HEALTH SERVICE

In addition to reviewing the literature on access to medical services by health condition, we also reviewed studies that looked at access to particular types of services—specifically, primary, rehabilitative, and long-term services. There is obviously a good deal of overlap in the two bodies of literature, and herein, we discuss only those significant works that did not fit within our health condition structure above.

In general, studies of access to health services find health insurance and poverty status to be the strongest determinants (Guendelman and Schwalbe 1986), but often, race and ethnicity were found to have an independent effect as well. Study findings have consistently indicated that adolescent and adult African Americans and Hispanics were less likely than whites to have any physician contact in the past year even after accounting for income and health status (Bartman, Moy, and D'Angelo 1997). African Americans who did have physician contact reported fewer visits than whites and less satisfaction with the physicians' treatment (Blendon et al. 1989). Moreover, in one study limited to Medicare beneficiaries, African Americans were found to have lower use of ambulatory and preventive services than were whites, even after adjusting for income (Gornick, Eggers, and Reilly 1996).

In looking at hospital services, studies have documented lower access among African Americans and other minorities even after taking into account differences in health status, source of payment, and site of hospitalization (Carlisle, Valdez, and Shapiro 1995). Racial and ethnic minorities were less likely than whites to receive a wide range of procedures, including dialysis,

arterial catheterization and cardiac bypass, endoscopy, bronchoscopy, Caesarian section, and organ transplantation (Abrams and Nathan 1991; Gonwa et al. 1991). While African Americans were less likely to receive some procedures, they were significantly more likely to receive an inpatient service for organ removal (bilateral orchiectomy) or (lower limb) amputation, accounting for age, gender, and income (Gornick, Eggers, and Reilly 1996). Moreover, studies of Medicare beneficiaries found that African Americans had less access to technologically advanced procedures and rehabilitation services than did whites (Baron et al. 1996).

Many studies have examined the relationship between race and ethnicity and the routine use of emergency rooms. Disparities in use of the emergency care department among African American, white, and Hispanic ambulatory adult patients have been explained by differences in age, health insurance coverage, having a regular source of care, and having barriers to health care (Baker, Stevens, and Brook 1996). Although African Americans and whites were observed to use hospital emergency rooms at the same rate, marital status was a unique determinant of use for African Americans, and gender, education, insurance, employment status, and region of residence were unique determinants for whites (White-Means and Thornton 1989). Even within the emergency department, services may vary by race and ethnicity. In a unique study among persons seen at an emergency department for long-bone fractures, Hispanics were found to be twice as likely as non-Hispanic whites with the similar fractures to receive no pain medication (Todd, Samaroo, and Hoffman 1993). In multivariate analyses, adjusting for patient characteristics (including insurance), severity of injury, physician characteristics (including specialty), and possible ethanol intoxication, the risk of no pain medication was more than 7 times that of whites.

Racial and ethnic disparities have also been documented in the use and types of posthospital services. For example, discharge planning for African American patients compared to whites was less likely to involve a nursing home placement and more likely to use formal services in the home, which the authors attributed to differences in cultural preference (Falcone and Broyles 1994). In addition, for those African Americans who did seek nursing home placement, discharge delays from the hospital were longer than for whites regardless of clinical and demographic characteristics (Falcone and Broyles 1994).

The studies varied widely in source of data and potentially explanatory variables available for analysis. In some cases, only age and gender were accounted for (Baron et al. 1996; Escarce et al. 1993). In other instances, surrogates of SES were accounted for (Gornick, Eggers, and Reilly 1996), and in

some instances, major factors such as insurance status, comorbidities, and diagnostic information were also accounted for (Giacomini 1996).

This is a broad body of literature that raises several issues, which to date, has not been adequately addressed. Future studies are needed to understand why racial and ethnic disparities in access to various health care services exist. Studies should assess ethnic differences in patient preferences, medical knowledge, health beliefs and perception of illness, satisfaction with health care, compliance with prescribed medication, and availability of social, economic, and caregiving support. Studies that examine the appropriateness of care according to presenting signs and symptoms will also help to clarify this body of literature. Whether barriers exist, such as shortages, lack of financial resources and/or insurance, language, discrimination, and cultural attitudes and expectations of medical care, have not been extensively investigated. Also, future studies should attempt to understand the bases for racial differences in patients' use of specialty care providers and utilization of specialized procedures. Finally, future research should also focus on the level of cultural competency of providers, physicians' attitudes toward minority patients, the effect of race on physicians' treatment decisions, the effect of patient-physician discordance on clinical decisions, and institutional decision-making policies.

DISCUSSION

Our review of the literature over the past 15 years revealed that racial and ethnic minorities often do not have access to health services at the same rate as do whites. The reasons for these disparities are varied, complex, and, in general, poorly understood at this point. In fact, our understanding of the health care disparities by race and ethnicity has advanced very little since the 1985 release of the DHHS Task Force Report on Black and Minority Health. And while we do not know why these disparities exist, it is clear from the entire literature that disparities in access to health care are not adequately explained by insurance, income or other measures of SES, comorbidities, severity of disease at diagnosis, availability of services, or patient preferences. That these disparities exist in some areas, such as cardiac care, cancer surgical treatment, and HIV/AIDS therapy, and not for other areas, such as diabetes care and cancer screening, suggest that the cost of care is an important consideration in clinical decisions for ethnic minority groups. Study findings that suggest that the disparity is reduced for privately insured patients may also be an indication of payment-conscious clinical decisions.

That racial and ethnic disparities in treatment are not found in the universally accessible DoD health care system suggests that clinical decisions are related to consideration of the importance of human capital and perhaps that uniformity in care delivery eliminates racial and ethnic disparities. On the other hand, racial and ethnic disparities are observed among patients for whom care is equally accessible, such as patients in the VA system and Medicare and Medicaid beneficiaries, and suggest that potentially equal access to care does not reduce inequities. And yet, under special circumstances within these care systems, racial and ethnic disparity is eliminated (i.e., long-term care for ESRD patients who have Medicare coverage) (Daumit et al. 1999).

For cardiac care, a straightforward explanation of access disparity seems reasonable; ethnic minorities, particularly African Americans, are denied access to invasive procedure more so than are whites. That is, the physician does not recommend the procedure as often for African Americans. The presumed reason not to recommend bypass surgery is the physician's best judgment, based on the patient's clinical condition (Hannan et al. 1999). One may then assume that the variation in the rates of cardiac recommendation and procedures between black and white patients are due to real differences in clinical disease or fallibility of diagnostic information on which the physician makes a decision. The fallibility of diagnostic information seems a less likely explanation (Johnson et al. 1993). However, the aggressiveness of the diagnostic evaluation in explaining racial disparity in cardiac care has not been investigated (Peterson et al. 1997). There are unknown and subjective factors related to clinical decision that have resulted in a lower rate admission to coronary triage (Johnson et al. 1993) and lower catheterization rates (Schulman et al. 1999) for African Americans. These subjective factors may also explain the lower rates of recommendation and subsequent invasive coronary surgery for African Americans.

A similar explanation of observed racial and ethnic disparities on cancer treatment is precluded because of the lack of data on appropriateness of treatment and quality of previous investigations. At best, the current research provides a general indication that African Americans and other ethnic minorities may have lower access to diagnostic tests and may be less likely to receive major therapeutic interventions on a timely basis. Furthermore, when there is general agreement on the appropriateness of treatment—for example, surgical resection for early stage, non-small cell lung cancer—African Americans are less likely to be treated (Bach et al. 1999). Study results of patients in the universally accessible DoD health care system (Optenberg et al. 1995) and among veterans treated nationwide at VA medical centers (Dominitz et al. 1998) again suggest that equality in access and uniformity in the delivery of services reduce racial disparity in cancer treatment.

Moreover, the reasons ethnic minorities may be diagnosed with cancer at more advanced stages are poorly understood and seldom explored in the current literature. While equal or universal access to diagnostic services may provide some answer, other explanations must be sought. Researchers beginning to investigate this issue have found that patient delay in seeking treatment as well as certain cultural beliefs that discourage women from seeking care may play an important role in the stage at which breast cancer is diagnosed (Cowie and Harris 1997). Whatever the basis for the disparity, however, stage of cancer at diagnosis is the primary explanatory factor for racial differences in cancer survival rates (Eley et al. 1994). Consequently, further investigations aimed at understanding racial and ethnic disparities in the timeliness of diagnosis hold great potential for improving cancer survival rates for minorities. These investigations must recognize the intersection of personal factors (screening frequency), preventive behavior (symptom recognition and care-seeking behavior), and aggressiveness of diagnostic evaluation to more fully understand the nature of racial disparities in care (Hunter et al. 1993). Little is known about ethnicity-specific cultural factors for Asian subgroups, Hispanic subgroups, Native Americans, and African Americans related to cancer diagnosis as well as treatment (Lannin et al 1998).

While younger African American women appear to have achieved equivalent or even superior access to certain screening services, Hispanic women continue to lag behind. That older African American women have lower mammography screening rates than do white women also provides challenges in explaining disparity in certain subgroups of the population. Immunization coverage in children is also indicative of disparities in subgroups, such as urban minorities. Cancer screening and children immunizations are preventive services in which the effectiveness and benefits are proven. Herein may lie a greater commonality between cancer screening and immunization services. They represent the interrelationships of SES, culture, belief, and behavior. But more important, national efforts by the public and private sector as well as community-based initiatives have resulted in closing (breast and cervical cancer screening) or narrowing (childhood immunization) the racial/ethnic gap.

Racial and ethnic variation in access to health services may be affected by numerous other variables that were not consistently considered in the existing literature. Numerous investigators have found that health insurance and SES are the greatest predictors of access to health care but do not fully account for the observed disparities by race and ethnicity. Other important factors include the age of onset and duration of disease, severity of disease and symptoms, coexisting conditions, physical and psychological characteristics, geographic location, family and social supports, and the type of hospital where care is

received (Allison et al. 1996; Goff et al. 1995). And while studies of racial and ethnic disparities in access to care have not consistently adjusted for these important factors, the published literature routinely indicates significant variation in access to primary, rehabilitative, and long-term care services by race and ethnicity.

Despite the limitations described above, the literature documents well poorer access to medical care among racial and ethnic minorities for several disease groups and types of health services. Indeed, the literature has generally documented racial differences in access to primary care services, prenatal care, and various high-tech diagnostic and therapeutic procedures. In addition, racial differences in the receipt of mental health services has been documented. For this area of research, it is difficult to discern clear patterns of racial and ethnic differences in diagnosis and treatment. Also, with respect to treatment for HIV / AIDS, African Americans have been shown to be significantly less likely to receive particular drug agents, even after controlling for various socioeconomic factors.

It is also significant that several studies showed that racial and ethnic differences in access to medical treatment are reduced or absent under universally accessible systems such as the DoD health care system, the VA medical system (for some disease conditions), and in HMOs (Clancy and Franks 1997). Nonetheless, even under the theoretically universal access system offered by the VA, studies have shown that racial and ethnic disparities persist (Peterson et al. 1994).

The lack of racial and ethnic difference in diabetes care may be related to the setting of care and the nature of care. In general, difference in care among blacks and whites were not found in HMO settings. Diabetes care is also provided by primary care physicians. Patient education and self-management are significant components and less costly to the medical care system.

In sum, the literature shows that racial and ethnic minorities frequently do not have the same access to medical treatment and other health services as the majority white population. This is particularly true for African Americans, and the differences observed between blacks and whites in access to care is not due to the fact that African Americans have been studied more (Hannan et al. 1999). The magnitude of these disparities are related to socioeconomic and insurance status but also to other factors that are ill defined and difficult to quantify. The history of medical care in the United States is replete with examples of discriminatory practices that denied ethnic minorities access to services based on skin color. Thus, the medical care system of the past is correctly described as a racist institution, and the legacy of racism should not be minimized. Clearly, the patient's race, but specifically skin color, influence physician decision making, whether it is overt prejudice or subconscious

perceptions. Nonetheless, in a nation that prides itself on having the best health care system in the world, racial and ethnic disparities in access to medical care require greater public attention and further scrutiny to correct the critical injustice they create.

Future investigations that further document disparity by race and ethnicity will provide little to advance our understanding in this area. Focused studies that explore the reasons for racial and ethnic disparities in access to health services will be most helpful in reducing racial and ethnic disparities in access to care. Much of the current literature has focused on African American versus white comparisons and, to a much lesser degree, on Hispanics and other minority groups; future work should attempt to discern the particular factors important to improving access for these groups as well.

Other important areas of research should include analyses of the impact of financial barriers, organizational barriers, and physician and patient decision making on racial and ethnic differences in access to specific health services. Intragroup versus intergroup comparisons may be a productive approach to discern why, for instance, some African Americans achieve access while others do not. The intragroup comparison study approach is particularly important because it seems apparent that some, if not most, persons within an ethnic group have access to quality care. The effort to distinguish why some members of a particular ethnic group have access to services while others do not may reveal some of the sociocultural factors that distinguish the ethnic minority group from the white majority population and may provide the opportunity to identify unique within-group factors that could lead to improved access for these populations.

NOTES

1. The Medicaid Program became law in 1965 as a jointly funded cooperative venture between the federal and state governments to assist states in the provision of adequate medical care to eligible needy persons. Medicaid is the largest program providing medical and health-related services to America's poorest people. It covers approximately 36 million individuals, including children, the elderly, and people who are eligible to receive federally assisted income maintenance payments.
2. The Medicare Program is the nation's largest health insurance program, covering approximately 39 million Americans. The program, administered by the Health Care Financing Administration (HCFA), provides health insurance to people age 65 and older and those who have permanent kidney failure and certain people with disabilities. Medicare was established by Congress in 1995.
3. Free copies of the commissioned report (No. 1526), which includes annotated sentinel articles, are available on the Kaiser Family Foundation Web site (<http://www.kff.org>) or through the publication request line at 800-656-4533.

4. To minimize the effect of insurance status, many studies in our review confined their study populations to individuals covered by specific health care programs, in this case, the U.S. Department of Veterans Affairs (VA). About 10 percent of 27 million veterans use the VA's system of inpatient, outpatient, and community-based services each year; if veterans are eligible for services, the care is free. Compared to other hospitals, VA facilities are more likely to be large, located in urban areas, and serve more chronic psychiatric patients. VA users are more likely to be African American, male, older, poor, less educated, underemployed, without family support, and more likely to have worse health conditions, besides lacking other health insurance coverage.
5. The Department of Defense guarantees free access to health care services to all active-duty and retired military personnel and their dependents. Approximately 9 million people are served through a large, nationwide, staff-model managed care plan that operates military hospitals and free-standing clinics and directly employs physicians and other providers. Care at these facilities is free to beneficiaries.

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