

Racial/Ethnic Variations in Women's Health: The Social Embeddedness of Health

Originally published as: David R. Williams, PhD, MPH. Racial/Ethnic Variations in Women's Health: The Social Embeddedness of Health. *Am J Public Health*. 2002;92:588–597.

This article provides an overview of the magnitude of and trends in racial/ethnic disparities in health for women in the United States. It emphasizes the importance of attending to diversity in the health profiles and populations of minority women. Socioeconomic status is a central determinant of racial/ethnic disparities in health, but several other factors, including medical care, geographic location, migration and acculturation, racism, and exposure to stress and resources also play a role. There is a need for renewed attention to monitoring, understanding, and actively seeking to eliminate racial/ethnic disparities in health. (*Am J Public Health*. 2002;92:588–597)

Race/ethnicity, gender, and socioeconomic position are 3 social status categories that lead to the differential distribution of health risks and thus to variation in the rates of disease in society.^{1,2} In this article I provide an overview of racial/ethnic disparities in health for US women. I discuss the role of socioeconomic status (SES) in accounting for these disparities and the complex interactions between race/ethnicity and SES in affecting women's health. Finally, I highlight the ways in which other social structures and processes affect the distribution of disease among American women.

RACIAL/ETHNIC DIFFERENCES IN HEALTH

In the United States, as in other industrialized societies, women have higher levels of multiple indicators of morbidity but lower rates of mortality than men. In 1998, US women had a life expectancy at birth of 79.5 years, which was 5.7 years longer than that of men (73.8 years).³ Disaggregation of these data by racial and ethnic status was provided only for Blacks (African Americans) and Whites. The gender difference of 7.2 years within the African American population (74.8 vs 67.6) was larger than the 5.5-year gender difference for Whites (80 vs 74.5). Thus, although women of both racial groups outlive their male counterparts, White women have a life expectancy at birth that exceeds that of their Black peers by 5.2 years.

An examination of age-adjusted mortality rates for all causes by race/ethnicity for women reveals that despite declining death rates over time, African Americans have consistently had higher mortality rates than Whites.³ The Black–White mortality ratio for females declined from 1.7 in 1950 to 1.5 in 1998. These data also highlight the problem of data availability for racial/ethnic groups other than Black and White. Nationally reported data for American Indians and Asians/Pacific Islanders are available only from 1980, and data for Hispanics only from 1985. Coverage of Hispanics has increased from only 17 states and the District of Columbia in 1995 to all 50 states and the District of Columbia in 1997.³

American Indian women have mortality rates that are comparable to those of their White counterparts in nationally reported data.³ However, mortality data from the Indian Health Service (covering American Indians who live on or near reservations) reveal that between 1955 and 1993 the American Indian–White mortality ratios declined but remained large for some causes of death, such as accidents, homicide, tuberculosis, and alcoholism, and increased for others, such as diabetes, liver cirrhosis, and suicide.⁴ Asian American and Hispanic women had mortality rates that were lower than those of their White peers in the first year of available data, and both of these groups have maintained this advantage over time. Across all racial/ethnic categories, the mortality rates for

women are considerably lower than those for men, but the minority–White mortality ratio for women is very similar to that of men.

The quality of mortality data is much better for Blacks and Whites than for the other racial/ethnic groups, owing to a substantial undercount in the numerator that understates officially reported mortality rates for American Indians, Asians/Pacific Islanders, and Hispanics.^{5,6} For example, Sorlie and colleagues⁷ compared self-reported race from a personal interview with the race of the decedent as recorded on the death certificate. Race on the death certificate is typically based on observation or proxy reports. High agreement from both sources was evident for Blacks and Whites, but 1 in 4 American Indians and 1 in 5 Asians/Pacific Islanders were classified as belonging to another race (mainly White) on the death certificate. Ten percent of self-identified Hispanics were misclassified as non-Hispanic.

Racial and ethnic disparities in the severity and course of disease also contribute to observed disparities in disease prevalence and mortality. Black–White differences in survival rates from cancer illustrate this.³ Between 1974 and 1979, 57% of White females, compared with 47% of their Black counterparts, had a 5-year survival rate for cancers from all sites. Data for 1989 to 1995 revealed that the 5-year cancer survival rate increased modestly for White females, to 63%, and only slightly for Black females, to 49%. Thus, the racial difference for cancer survival increased from 10 percentage points in the earliest period for which data are available to 14 percentage points in the most recent one.

There is some variation by specific types of cancer. Racial differences for breast cancer are considerably larger than those for lung cancer and colon cancer. The case of breast cancer is instructive because, compared with Black women, White women have a higher incidence rate but a lower mortality rate.

There are racial differences in cancer staging; Black women are likely to have more advanced cancer at the time of diagnosis than their White peers. However, poorer stage-specific survival rates are also evident for Black compared with White women.⁸ Not surprisingly, between 1989 and 1995, the 5-year-survival rate for breast cancer was 71% for African American females and 86% for White females.

Comorbid chronic illnesses disproportionately affect minority women, and the sequelae of multiple illnesses are worse for at least some minority populations than for Whites. Among persons with diabetes, both male and female African Americans are more likely than their White counterparts to become blind, to become amputees, to develop end-stage kidney disease, and to die of diabetes.⁹ Similarly, hypertension is more strongly associated with the development of renal disease for American Indians and African Americans than for Whites.¹⁰ Other recent data document that in contrast to other US racial/ethnic groups, rates of cardiovascular disease are rising for American Indians and coronary events are more often fatal for this population.¹¹

DIVERSITY OF HEALTH PROFILES

The 10 leading causes of death in 1998 for women in each of the major racial/ethnic populations illustrate that there is variation in the major health challenges faced by these groups.³ These data also hint at some of the morbidity challenges facing US women. Coronary heart disease and cancer, in that order, are the 2 leading causes of death for all women in the United States except Asian/Pacific Islander women, for whom the order is reversed. Accidents and unintentional injuries are the third leading cause of death for American Indian women, unlike all other women, for whom cerebrovascular disease is third.

Hypertension is a common chronic disease that is a major risk factor for both coronary heart disease and cerebrovascular disease. Rates of hypertension are 1.8 times higher for African American than for White women.³ Mexican American, Puerto Rican, Native Hawaiian, and American Indian women also have rates of hypertension that are higher than those of their White counterparts.⁹

Filipina women aged 50 years and older in California exhibit a rate of hypertension that is slightly higher than that of similarly aged African American women.⁹

Diabetes, a chronic condition that can have an important negative impact on the quality of life, is the fourth leading cause of death for African American, American Indian, and Hispanic women. These 3 groups have higher diabetes mortality rates than Whites, and these rates have increased in recent years, both absolutely and relative to White rates.³ One third of Native Hawaiian women are diabetic, and the highest prevalence of diabetes in the United States has been observed for Yaqui Indian women.⁹ In this population 50% of women aged 35 to 54 years and 92% of women aged 55 to 64 years have diabetes.

There are also several conditions that are among the 10 leading causes of death for only one population. Suicide is a leading cause of death (ranked 8th) only for Asian/Pacific Islander women. HIV/AIDS is a leading cause of death (ranked 10th) only for African American women, congenital anomalies (ranked 10th) only for Hispanics, and Alzheimer disease (ranked 8th) only for Whites. The leading causes of death for all racial/ethnic groups vary markedly by age, such that a consideration of racial/ethnic differences across major age groupings would reveal an even more complex pattern of heterogeneity.

Table 1 illustrates the complex pattern of racial/ethnic disparities in health for women by presenting age-adjusted mortality rates for Whites and minority-White ratios for selected

causes of death. Several points are noteworthy. First, all of the non-Black minority populations have markedly lower death rates than Whites for heart disease and cancer, the 2 leading causes of death in the United States. This is a key contributor to the lower death rates for these populations for all-cause mortality. Second, like African Americans, American Indians and Hispanics have higher mortality rates than Whites for some causes of death, such as homicide and HIV/AIDS.

Third, White women have higher death rates than Black and other minority women for some causes of death. Mortality from chronic obstructive pulmonary disease is higher for White women than for all minority women. This probably reflects the earlier onset and increased rates of cigarette smoking among White women.¹² African American and Hispanic women also have markedly lower rates of suicide than White women. Finally, with the exception of homicide, for which their rate is only slightly lower than that of Whites, Asian/Pacific Islander women have death rates that are markedly lower than those of Whites for all causes of death considered.

DIVERSITY OF POPULATIONS

Each racial/ethnic population is characterized by considerable diversity. Data on cancer incidence provides a unique glimpse of the heterogeneity within the Asian/Pacific Islander category.¹³ For example, Vietnamese

TABLE 1—Age-Adjusted Mortality Rate (per 100 000) for Non-Hispanic Whites and Minority-White Ratios for Selected Causes of Death: Women in the United States, 1996–1998

Cause	White Rate	Black-White Ratio	Aml-White Ratio	API-White Ratio	Hispanic-White Ratio
Heart disease	91.3	1.63	0.80	0.54	0.70
Cancer	108.0	1.21	0.70	0.58	0.60
Homicide	2.2	4.27	2.23	0.95	1.54
HIV/AIDS	0.8	18.75	1.38	0.38	5.00
Suicide	4.7	0.40	1.13	0.70	0.40
Pulmonary disease	19.2	0.68	0.62	0.27	0.35

Note. Aml=American Indian/Alaska Native; API=Asian/Pacific Islander.
Source. National Center for Health Statistics.³

women have a rate of cervical cancer that is considerably higher than that of both Black and White women and about 6 times that of Japanese and Chinese women. Similarly, breast cancer incidence for Native Hawaiian women is higher than that of African American women and more than twice that of Korean and Vietnamese women.

There has been limited attention to diversity within the Black population, but some research suggests there may be important health status variations within this group as well. For example, Fruchter and colleagues¹⁴ found that among Black women, American-born and Haitian-born women had higher rates of cervical cancer than women from the English-speaking Caribbean, but both immigrant groups had lower rates of breast cancer than American-born Black women. Variations within the Black population of the United States have also been reported for birth outcomes¹⁵ and mental health.¹⁶

Similarly, an overall health statistic for Hispanic women hides the heterogeneity that exists among Latinas. For multiple causes of death, Puerto Rican women have higher mortality rates than other Latinas.¹⁷ Considerable heterogeneity also exists for multiple health behaviors. For example, in 1998, 74% of Hispanic women received prenatal care during the first trimester of pregnancy, compared with 88% of non-Hispanic Whites and 73% of Blacks.³ However, first-trimester prenatal care use ranged from 92% for Cubans to 73% for Mexican Americans. Smoking during pregnancy is another example. Only 4% of Hispanic mothers smoked during pregnancy in 1998, compared with 16% of non-Hispanic Whites, 10% of African Americans, and 20% of American Indians.³ However, smoking rates varied from 2% for Central and South Americans and 3% for Mexican Americans to 11% for Puerto Ricans.

UNDERSTANDING RACIAL/ETHNIC DISPARITIES IN HEALTH

Early research on racial differences in health in the United States viewed racial categories as capturing biological homogeneity and racial disparities in health as genetically determined.¹⁸ There is growing recognition that it is scientifically untenable to view race

as capturing biological divisions within human populations.^{19–22} Our racial categories are more alike than different in terms of biological characteristics and genetics, and they do not capture patterns of genetic variation well. Thus, it is not biologically plausible for genetic differences alone to play a major role in racial/ethnic differences in health.²³ Biological factors (including genetic ones) may, nonetheless, play a small role in accounting for population differences in health. Biology is not static but adapts over time to the conditions of the environment. Thus, for racial/ethnic groups living under different environmental conditions, interaction between biology and socially determined exposures can lead to adaptations that may contribute to population differences in health.

SOCIOECONOMIC STATUS AS A DETERMINANT OF HEALTH DISPARITIES

A growing body of research is focusing on the social context of minority women as reflected in their socioeconomic position. SES is a term conventionally used to refer to an individual's or group's location in the structure of society that determines differential access to power, privilege, and desirable resources. SES is typically assessed by income, education, or occupational status. The major racial/ethnic categories in the United States capture differences in socioeconomic circumstances, and SES plays a large role in accounting for disparities in health.

Table 2 presents age-adjusted rates of hypertension and overweight for White, Black, and Mexican American women in the United

States, stratified by income. There are marked racial differences on these 2 indicators of health status; White women have lower levels of both hypertension and overweight than their Black and Mexican American counterparts. Rates of hypertension are about 1.8 times as high for Black women than for White women, and both African American and Mexican American women are more than 1.5 times as likely to be overweight as White women.

Several patterns are evident in these data. First, income is strongly linked to hypertension for Black and White women and to overweight for White and Mexican American women. Women with lower levels of income have worse health than their economically favored counterparts. However, income was unrelated to hypertension for Mexican American women and was not strongly associated with overweight for African American women.

Second, despite the truncation of the high-end of income, differences in hypertension rates by income within the Black and White populations are almost as large as the overall Black–White differences. It is frequently observed, for multiple indicators of health status, that differences between socioeconomic categories within a race are larger than differences between races.^{24–26} Third, racial differences persist at every level of SES, emphasizing that race is more than SES. This pattern of findings may reflect complex interactions between racial/ethnic status and migration history or culture, long-term effects of exposure to social and economic adversity during childhood, independent contributions of institutional and individual discrimination, or the

TABLE 2—Age-Adjusted Rates for Hypertension and Overweight, by Race/Ethnicity and Average Annual Income: Women in the United States Aged ≥20 Years, 1988–1994

Income Level	Hypertension, %			Overweight, %		
	White	Black	Mexican American	White	Black	Mexican American
All (ages 20–74 only)	19.3	34.2	22.0	32.5	53.3	51.8
Poor	30.2	39.9	24.5	42.0	55.0	54.9
Near poor	23.9	35.9	22.4	36.6	51.0	48.7
Middle/high income	20.2	30.0	25.2	30.0	52.4	45.3

Source. National Center for Health Statistics.⁸⁵

noncomparability of SES indicators across racial/ethnic populations.^{27,28}

Thus, although SES is, almost universally, a central determinant of variations in health,²⁹ its effects are conditioned by the presence of other factors. The interplay of migration with SES may underlie the absence of an association between income and hypertension for Mexican Americans. A similar pattern has been observed between SES and blood pressure for Mexican Americans.³⁰ It is unclear whether this pattern reflects a healthy-immigrant effect, protective effects of an immigrant's culture, or differences in the historical time period between Mexico and the United States in the secular distribution of hypertension and other risk factors for heart disease. The Mexican American population has a large number of immigrants who are low in SES but in relatively good health. At the same time, several health behaviors that adversely affect health status and the prevalence of multiple health conditions increase with acculturation and length of stay.³¹

The absence of an association between overweight and income for Black women highlights the need to better understand the role of culture and interactions between cultural orientations and social conditions. Some evidence suggests that Blacks have more tolerant attitudes toward obesity.³² It is possible that such a cultural preference could lead to culturally normative elevated rates of overweight among all Black women and thus dampen the expected tendency for income to predict variations in weight.

Alternatively, the absence of a pattern of overweight by income could reflect the impact of the social and economic characteristics of the communities in which African American women reside. Irrespective of household income, Black women are more likely than women of other racial groups to reside in highly segregated neighborhoods with a greater concentration of poor persons.^{33,34} These communities tend to have limited exercise facilities and reduced opportunities to engage in physical exercise under conditions of assured safety. Moreover, in addition to having high rates of poverty, Black women are also more likely than women of other groups to be single parents. The combination of these factors can lead to high levels

of stress and create constraints on time, financial resources, and access to exercise facilities that can lead to lower levels of leisure-time physical activity.³⁵

Table 3 further illustrates the complexity of the associations between race, SES, and health. The percentage of women who smoke cigarettes is only slightly higher for Whites than for Blacks. However, for both groups, the risk of cigarette smoking is strongly patterned by income. Poor White women are 1.7 times as likely as their middle- and high-income peers to smoke, and poor African American women are almost twice as likely as their higher-income counterparts to smoke. Within each racial group, the differences by economic status are large, much larger than the overall difference between races.

At each economic level, African American women report markedly lower levels of smoking than similarly situated Whites. This difference between racial groups suggests the presence of health-enhancing factors within the African American population that reduce the normally expected levels of smoking. The roughly comparable proportions of smokers among Black and White women overall reflects the fact that, compared with their White counterparts, Black women are overrepresented among the poor and underrepresented among middle- and high-income persons.

Infant mortality rates are strongly patterned by educational level for both Black

and White women, with increasing years of education predicting lower levels of infant mortality. Among Whites, women who did not complete high school have an infant mortality rate that is 2.4 times the rate of women who graduated from college. Similarly, among African Americans, women with less than 12 years of education have an infant mortality rate that is 1.5 times as high as that of college graduates.

However, the racial difference at every level of education is striking. Infants born to Black women in the lowest education category are 1.7 times as likely to die before their first birthday as are infants born to similarly educated White females. At every other level of education, the Black-White ratio is greater than 2. In fact, White women who did not complete high school have a lower infant mortality rate than Black college graduates, and the Black-White ratio for infant mortality increases with level of education: Black college graduates have an infant mortality rate that is 2.7 times the rate of their White counterparts.

NONEQUIVALENCE OF SOCIOECONOMIC STATUS ACROSS RACIAL/ETHNIC GROUPS

This pattern of findings reflects, at least in part, the nonequivalence of measures of SES across race and ethnicity.^{27,28} That is, there

TABLE 3—Black-White Differences in Cigarette Smoking and Infant Mortality, by Socioeconomic Status Indicators: Women in the United States, 1995

	White	Black	Black-White Ratio
Cigarette smokers,%,by income level^a			
All	23.6	22.8	0.97
Poor	38.6	29.3	0.76
Near poor	31.6	24.9	0.79
Middle/high income	22.2	15.7	0.71
Infant mortality rate,by maternal education^b			
<12 y	9.9	17.3	1.74
12 y	6.5	14.8	2.28
13-15 y	5.1	12.3	2.41
≥16 y	4.2	11.4	2.71

^aAge-adjusted, age 18 years and older.

^bWomen aged 20 years and older.

Source. National Center for Health Statistics.⁸⁵

are group differences in the very nature of SES that make all of the standard SES indicators noncomparable across race. In this article, I provide details on racial/ethnic differences in wealth and income for given levels of education, but similar disparities also exist for the quality of education, the purchasing power of income, the stability of employment, and the health risks associated with working in particular occupations.²⁷

Racial/ethnic differences in wealth are considerably larger than those in income, and focusing only on income understates the racial/ethnic disparities in economic status. For example, in 1995, the median wealth (net worth) of White households, \$49 030, was almost 7 times that of Black (\$7073) and Hispanic (\$7255) households.³⁶ These differences persist at every level of income. White households in the lowest quintile of income had a net worth of \$9720, compared with \$1500 for Blacks and \$1250 for Hispanics. At the highest quintile of income the net worth was \$123 781 for White, \$40 866 for Black, and \$80 416 for Hispanic households. There are also large racial differences in home ownership, a key source of wealth for the average American family. Fewer than half of Black and Hispanic households own their homes, compared with more than 70% of White households.³⁷

Among men, the income returns for a given level of education are large, with Black and Hispanic males at every level of income earning considerably less than their similarly educated White counterparts.³⁸ In contrast, there are only small differences among women in personal earnings at various levels of education (Table 4). These data mask racial differences in pay.

Analyses of weekly earnings of Black and White women between 1967 and 1997 reveal that the Black–White gap in pay narrowed in the 1960s and early 1970s but has widened since the early 1980s.³⁷ Women of all races have high rates of employment in technical, sales, and administrative-support occupations. However, while a high percentage of White and Asian women are employed in managerial and professional occupations, a high percentage of Black, Hispanic, and American Indian women are employed in service occupations.

Black families have historically relied more heavily on women’s earnings than do other families, and the proportion of female-headed households is highest among Blacks. These racial differences in marital status, and thus in the number of adults contributing to the household income, mean that focusing only on personal income understates racial differences in the flow of economic resources into

the household. Table 4 shows median household income by years of education for White, Black, and Hispanic women. The racial/ethnic differences in income are now marked. At every level of education, Black and Hispanic women earn considerably less than Whites of similar education. Blacks earn less than Hispanics, and the differences between Blacks and Whites are especially large. For example, Black high school graduates earned 64 cents, and college graduates 74 cents, for every dollar in total household income earned by similarly educated White women.

These data highlight the critical need to comprehensively assess SES in its multiple dimensions and trace its health consequences across the life course. Recent research on economic hardship highlights the fact that there are important racial differences in economic circumstances that are not captured by the traditional measures of SES. Data from the Survey of Income and Program Participation indicated that even after controlling for SES (income, education, transfer payments, home ownership, and employment status) and demographic factors (age, sex, marital status, children, disability, health insurance, and residential mobility), African Americans were more likely than Whites to experience 6 of 9 hardships examined.³⁹ That is, they were more likely to report being unable to meet essential expenses, being unable to pay full rent or mortgage, being unable to pay full utility bills, having had utilities shut off, having had telephone service shut off, and having been evicted from apartment or home.

Part of this difference in economic hardship is driven by the geographic location of minority women and the resulting cost of housing. African American, Hispanic, Asian, and American Indian households are nearly twice as likely as non-Hispanic White households to spend 50% or more of their income on housing costs.³⁷ Housing expenditures of less than 30% of income are considered affordable or desirable. High housing costs limit a household’s ability to procure other necessities.

TRENDS IN ECONOMIC AND HEALTH DISPARITIES

Analysis of trends in Black–White inequality in economic status and health over the last

TABLE 4—Personal and Household Income (\$) of Non-Hispanic White, Black, and Hispanic Women: United States, 1996

	Non-Hispanic White	Black	Hispanic
Education		Personal earnings	
≤ 8 y	8 056	9 694	9 392
9–11 y	10 666	10 369	10 360
12 y	15 701	15 050	14 146
Some college	18 183	19 640	16 386
Associate degree	21 727	22 020	20 515
Bachelor’s degree	26 703	27 534	26 454
Professional degree	46 307	27 323	38 602
Education		Household income	
≤ 11 y	18 471	13 100	19 310
12 y	37 000	23 556	32 000
13–15 y	45 510	33 162	38 000
Bachelor’s degree or more	64 007	47 100	56 765

Source. Personal earnings are from the US Bureau of the Census³⁸; household income is from the National Center for Health Statistics.⁸⁵

50 years reveals that racial disparities in health are sensitive to changes in racial inequality in economic circumstances. During the 1960s and early 70s, the civil rights movement led to improvements in the political and economic situation of Blacks and a narrowing of the Black–White gap in income.⁴⁰ Between 1968 and 1978, African American men and women aged 35 to 74 years had a larger decline in overall mortality than Whites in the same age group, on both a percentage and an absolute basis.⁴¹ This pattern was evident across multiple causes of death. For example, the mortality rate for Black women declined by 538 deaths per 100 000 population, compared with a decline of 186 deaths for White women. This was a 29% change in mortality rates for Black women and a 17% change for White women.

However, the narrowing of the Black–White economic gap stalled in the mid-1970s and widened in the early 1980s.⁴⁰ The health of poor women and their children worsened in 20 states in the wake of the budget cuts in health and social service spending by the Reagan administration in the early 1980s.⁴² Similarly, access to health care declined and levels of blood pressure increased among persons terminated from Medicaid in the state of California.⁴³

Not surprisingly, the health of African American men and women declined relative to that of Whites between 1980 and 1991.⁴⁴ For example, the Black–White ratio for infant mortality for females increased from 2.0 in 1980 to 2.3 in 1991, and the Black–White gap in life expectancy for females increased from 5.6 years in 1980 to 5.8 years in 1991.

Analyses of the health status of poor Black and White populations during this same time period also document worsening health for Blacks at the local level in multiple locations.⁴⁵ For example, between 1980 and 1990, the annual death rate and annual excess deaths for Blacks compared with Whites increased for Black women in Harlem, New York City; the South Side of Chicago, Illinois; the Louisiana Delta; and the “Black belt” of Alabama. At the same time, both the annual death rate and the annual excess number of deaths declined slightly for Black women in central Detroit, Mich, suggesting the need to

understand the determinants of variation at the local level.

UNDERSTANDING RACIAL/ETHNIC DISPARITIES IN HEALTH

Understanding the differential distribution of health outcomes across racial/ethnic, gender, and socioeconomic groups requires greater attention to how historical, social, economic, political, and cultural structures and processes shape health-damaging and health-enhancing factors that are typically measured at the level of the individual. Medical care, geographic location, migration and acculturation, stressors and resources, and racism are promising areas for further unraveling the complex ways in which the social position of minority women is linked to health consequences.

Medical Care

Renewed attention to research and policy is needed to understand the role that medical care can play in reducing racial/ethnic disparities in health and to make a new commitment to improving the quality of care for all Americans. Medical care makes a limited contribution to population differences in health.^{46,47} A US surgeon general’s report concluded that medical care explains only 10% of variation in health status.⁴⁸ However, medical care may have a greater impact on the health status of vulnerable populations, such as racial/ethnic minorities and low-SES groups, than on the population in general.⁴⁹ Medical care may be an especially important health-protective resource in the context of multiple vulnerabilities.

Minority women face many challenges when it comes to medical care, and they often have a greater need for medical care owing to higher levels of morbidity and comorbidity. Many racial/ethnic minority populations have lower levels of access to medical care in the United States than do Whites. Compared with White women, minority women are less likely to be insured, to have employer-based private insurance coverage, and to have insurance coverage through a spouse’s employment, and they are more likely to have public health insurance coverage.⁹ They are also more likely than White

women to receive care in less than optimal organizational settings (such as the emergency room) and to lack continuity in the health care received.

A recent analysis of racial/ethnic differences in access to and use of health services between 1977 and 1996 concluded that the Black–White gap has not narrowed over time and the gap between Hispanics and Whites has widened.⁵⁰ Moreover, this study found that even if income and health insurance coverage were equalized, racial/ethnic differences in ambulatory care would not be eliminated, because one half to three quarters of these disparities are not accounted for by these factors.

The Indian Health Service is a federal agency that provides direct and contract health care services to American Indians who live on or near reservations. The agency has been successful in improving the access of American Indians and Alaska Natives to preventive services such as immunizations and prenatal care,⁵¹ but persisting shortfalls in federal funding and other challenges limits its ability to meet all of the health care needs of its target population.⁵²

A large body of evidence documents pervasive racial/ethnic disparities in the diagnosis and treatment of minority persons once they enter the US health care system. These disparities exist across a broad spectrum of therapeutic interventions, ranging from high-technology procedures to the most elementary forms of diagnostic and treatment interventions, and they persist even when adjusted for health insurance coverage, SES, stage and severity of disease, comorbidity, and type of medical facility.^{53,54} Moreover, they exist in contexts such as Medicare and the Department of Veterans Affairs health system, where differences in economic status and insurance coverage are minimized. Thus it is likely that greater access to more continuous preventive care and timely and appropriate secondary and tertiary care, from concerned providers, can have an important effect on reducing racial/ethnic disparities in health.⁴⁷

Place and Health

Place is a neglected but critical factor affecting the health of populations. A recent analysis of poor Black and White populations

in rural and southern locations and in northern urban areas documented an important interaction among poverty, race, and place.⁴⁵ Although African American men and women in rural and southern locations faced economic conditions that were similar to or worse than those of Black populations in northern urban areas, they enjoyed substantially better health. A similar pattern was evident for Whites. In fact, the health profile of poor Whites in some northern urban areas is comparable to that of more economically disadvantaged Blacks in the South.

For example, the 1990 mortality rate of 428 per 100 000 population for White women in Detroit, Mich, was comparable to mortality rates for Black women in east North Carolina (421 per 100 000) and in the “Black belt” of Alabama (425 per 100 000). Similarly, Puerto Rican residents of New York City have higher coronary heart disease mortality than Puerto Ricans living in Puerto Rico and Puerto Rican-born persons elsewhere in the United States.⁵⁵ At present it is not clear whether the patterning of health by place reflects the deterioration of social services and the health infrastructure in some urban contexts or the presence of resources, such as a less sedentary and stressful lifestyle and greater social cohesion, in rural areas.⁴⁵

Migration and Acculturation

There is also a critical need to enhance our understanding of the ways in which stressors and resources linked to the process of migration and acculturation relate to each other and combine to affect the health of immigrants. While immigrants of all racial/ethnic groups have lower infant and adult mortality than their US-born counterparts,^{56,57} these patterns are complex and not well understood. A good health profile for immigrants may reflect the tendency for immigrants to be selected on the basis of good health or it may reflect a return of at least some ill immigrants to their home countries, but these factors alone do not explain the health profile of immigrants.⁵⁸

Moreover, better health for immigrants does not exist for all outcomes. For example, a study of pregnancy-related mortality between 1991 and 1997 revealed that US-born and foreign-born Black and Hispanic women

and foreign-born Asian women had higher pregnancy-related deaths than White women in the United States.⁵⁹ In addition, Hispanic and Asian immigrant women had higher pregnancy-related mortality rates than their US-born counterparts. Levels of maternal mortality were especially high for Black women; the pregnancy-related mortality risk of both US-born and foreign-born Black women was 4 times as high as that of White women.

Similarly, although Hispanic women have lower levels of infant mortality than White women, women of all Hispanic immigrant groups have a higher risk of low birthweight and prematurity than do Whites.⁶⁰ Analysis of a half century of longitudinal mortality data reveals that for both Mexican immigrants and persons born in the United States of Mexican ancestry, there is a general convergence over time with the health pattern of the White population.⁶¹ Similarly, the advantage in coronary heart disease mortality for Puerto Ricans on the mainland appears to be declining over time.⁵⁵

Clearly, the associations between migration, acculturation, and health are complex. Migration studies of the Chinese and Japanese show that rates of some cancers (e.g., colon cancer) increase when these populations migrate to the United States, while rates of other cancers (e.g., liver and cervical cancer) decline.⁶² There is clearly a need to carefully and systematically delineate the harmful and protective factors resident in both immigrant and host cultures and to identify the conditions under which these factors combine over time, across generations, and in particular geographic contexts to affect health.

Stressors and Resources

More generally, we need more comprehensive characterization of the stressors and resources that may have consequences for health.⁶³ This will require a greater emphasis on a life-course approach that seeks to understand the ways in which resources and adversity accumulate over the lifetime to affect adult health. It will also require greater attention to stressors that are linked to the status of women in society. This includes examination of the physical and mental health consequences of exposure to physical, sexual,

and emotional abuse in childhood and adolescence and to the fear of violent victimization and actual experiences of victimization, both within and outside the home, over the lifespan.^{64,65}

At present, we do not clearly understand how the conditions, contexts, burdens, and demands of the multiple-gendered roles that women occupy in society lead to the accumulation of particular configurations of risks and resources that affect their health status.¹² Analyses of state-level data in the United States reveal that higher levels of political and economic status for women are associated with lower morbidity and mortality.⁶⁶

The lower rates of morbidity and mortality that women of all minority groups experience for selected health outcomes highlight the need to understand health-enhancing resources resident within each population that may cushion some of the negative effects of exposure to social and economic adversity. Strong family ties, an extended family system, and religious involvement and participation may reduce some of the negative effects of stress in the lives of minority women. For example, religious involvement and participation can provide supportive social relationships, tangible economic resources, comfort in times of trouble, motivation and support for engaging in healthy behaviors, and belief systems that provide meaning and understanding.^{67–71} However, researchers and practitioners should recognize that social relationships and religious involvement can provide both stress and support, and the negative as well as the positive aspects of these potential resources should be assessed.

Racism

Future research on minority women must also give greater attention to the ways in which racism can affect their health. Institutional discrimination plays an important role in restricting economic opportunity for minority women and thus, indirectly, is a key determinant of adult socioeconomic status.³⁴ Racial residential segregation, a key institutional mechanism of racism, may play a critical role in shaping the adverse health consequences linked to residential location.

In addition, a growing body of research suggests that subjective experiences of

discrimination are an important factor in the lives of minority women that may adversely affect physical and mental health.⁷²⁻⁷⁵ Some research suggests that such experiences of discrimination make an incremental contribution to explaining racial differences in health status after SES is considered.^{76,77} However, the study of racism and health is still in its infancy, and research is needed that will comprehensively assess racism at its multiple levels of operation and rigorously identify the mechanisms and processes by which it can affect health.⁷⁸⁻⁸³

CONCLUSION

Like many researchers in this field, in this article I have consistently used White women as the group against which to compare the health experience of minority women in the United States. In race-conscious societies, such comparisons yield useful data, but their limits should be explicitly acknowledged, since the health status of White women is not an optimal benchmark. For example, the infant mortality rate for non-Hispanic Whites was 6.1 per 1000 live births in 1996. Nineteen countries had infant mortality rates for that year that were lower than that of US Whites. Similarly, in 1995, women in 15 countries had longer life expectancies than 79.6 years, which was the life expectancy for White women in the United States.³

Thus, despite leading the world in absolute and per capita spending on medical care, the United States does not provide readily achievable levels of health status to even its most advantaged citizens. There is a need for a renewed commitment not only to eliminating racial/ethnic disparities in health care but also to improving the access of all Americans to continuous and comprehensive preventive care.

However, interventions in health care alone will neither eliminate social inequalities in health nor facilitate optimal levels of population health.^{47,84} The health of minority women is to an important extent a product of their location in larger historical, geographic, sociocultural, economic, and political contexts. Thus, policies that target and change existing social arrangements can improve the living circumstances and health of minority women.

For example, almost half of all minority children are growing up in poverty.⁸⁵ Living in a single-parent household is a strong determinant of exposure to poverty in the United States, but this association is not inevitable. Twenty-one percent of all children in Sweden are in single-parent families, compared with 19% in the United States.⁸⁶ However, 55% of American children in single-parent households are growing up poor, compared with 7% of Swedish children in single-parent households.⁸⁶ Social policies in Sweden provide a safety net for vulnerable children.

Improving population health and eliminating racial/ethnic and socioeconomic inequalities in health will require a redefinition of health policy to include all societal policies that directly or indirectly affect health and a new commitment to policy changes in a range of areas, including income, education, employment, housing, transportation, and agriculture.^{87,88}

Attention to identifying and addressing the fundamental social determinants of health should not obscure the importance of identifying the specific physiological mechanisms and pathways that link social exposures to health and illness. Research is needed to identify how biological factors linked to sex and social factors linked to gender combine with experiences linked to specific racial and ethnic statuses to create particular biological risks and realities. Promising models for understanding and studying these complex processes have been proposed.^{83,89}

Finally, some have suggested that the time has come to abandon the assessment of race in public health research and surveillance.⁹⁰ However, the data reviewed here indicate that racial/ethnic status remains an important predictor of variations in both the living circumstances and the health of American women. It is necessary not only to continue collecting racial/ethnic data but also to assess these social status categories in their full diversity, with greater attention to assessing the specific factors linked to race/ethnicity that might affect health and appropriately interpreting racial/ethnic data.^{76,91-93}

Practitioners should also consider the heterogeneity of each racial and ethnic population and design interventions that are culturally appropriate and that seek to alter not

only health beliefs and behaviors but also the living and working conditions in which these beliefs and behaviors are embedded.^{94,95} The ultimate goal of such efforts should be to identify the fundamental determinants of disparities in health and the key intervention strategies that are necessary to eliminate racial/ethnic inequalities. ■

About the Author

Requests for reprints should be sent to David R. Williams, PhD, MPH, Department of Sociology and Survey Research Center, Institute for Social Research, University of Michigan, PO Box 1248, Ann Arbor, MI 48106-1248 (e-mail: wldavid@umich.edu).

This article was accepted December 23, 2001.

Acknowledgments

Preparation of this paper was supported by grants MH59575 and MH57425 from the National Institute of Mental Health and the John D. and Catherine T. MacArthur Foundation Research Network on Socioeconomic Status and Health.

I am grateful to Scott Wyatt for research assistance, Kathleen Boyle for preparing the manuscript, and the anonymous reviewers for helpful comments.

References

1. Krieger N, Rowley DL, Herman AA, Avery B, Phillips MT. Racism, sexism, and social class: implications for studies of health, disease, and well-being. *Am J Prev Med.* 1993;9(suppl 6):82-122.
2. Lillie-Blanton M, Martinez RM, Taylor AK, Robinson BG. Latina and African American women: continuing disparities in health. *Int J Health Serv.* 1993;23:555-584.
3. *Health, United States, 2000, With Adolescent Health Chartbook.* Hyattsville, Md: National Center for Health Statistics; 2000.
4. *Trends in Indian Health.* Rockville, Md: Indian Health Service; 1997.
5. Hahn RA. The state of federal health statistics on racial and ethnic groups. *JAMA.* 1992;267:268-271.
6. Frost F, Tollestrup K, Ross A, Sabotta E, Kimball E. Correctness of racial coding of American Indians and Alaska Natives on the Washington State death certificate. *Am J Prev Med.* 1994;10:290-294.
7. Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. *Epidemiology.* 1992;3:181-184.
8. Hunter CP, Redmond CK, Chen VW, et al. Breast cancer: factors associated with stage at diagnosis in Black and White women. *J Natl Cancer Inst.* 1993;85:1129-1137.
9. *Women of Color Health Data Book: Adolescents to Seniors.* Bethesda, Md: Office of Research on Women's Health; 1998. NIH publication 98-4247.
10. Powers DR, Wallin JD. End-stage renal disease in specific ethnic and racial groups: risk factors and benefits of antihypertensive therapy. *Arch Intern Med.* 1998;158:793-800.
11. Howard BV, Lee ET, Cowan LD, et al. Rising tide

- of cardiovascular disease in American Indians: the strong heart study. *Circulation*. 1999;99:2389–2395.
12. Walsh DC, Sorensen G, Leonard L. Gender, health, and cigarette smoking. In: Amick BC III, Levine S, Tarlov AR, Walsh DC, eds. *Society and Health*. New York, NY: Oxford University Press; 1995:131–171.
13. Miller BA, Kolonel LN, Bernstein L, et al. *Racial/Ethnic Patterns of Cancer in the United States, 1988–1992*. Bethesda, Md: National Cancer Institute; 1996. NIH publication 96-4101.
14. Fruchter RG, Wright C, Habenstreit B, Remy JC, Boyce JG, Imperato PJ. Screening for cervical and breast cancer among Caribbean immigrants. *J Community Health*. 1985;10:121–135.
15. David RJ, Collins JW Jr. Differing birth weight among infants of U.S.-born Blacks, African-born Blacks, and U.S.-born Whites. *N Engl J Med*. 1997;337:1209–1214.
16. Williams DR. Race, stress and mental health: findings from the Commonwealth Minority Health Survey. In: Hogue C, Hargraves M, Scott-Collins K, eds. *Minority Health in America: Findings and Policy Implications From the Commonwealth Fund Minority Health Survey*. Baltimore, Md: Johns Hopkins University Press; 2000:209–243.
17. Sorlie PD, Backlund E, Johnson NJ, Rogot E. Mortality by Hispanic status in the United States. *JAMA*. 1993;270:2464–2468.
18. Krieger N. Shades of difference: theoretical underpinnings of the medical controversy on black/white differences in the United States, 1830–1870. *Int J Health Serv*. 1987;17:259–278.
19. American Association of Physical Anthropology. AAPA statement on biological aspects of race. *Am J Phys Anthropol*. 1996;101:569–570.
20. Lewontin RC. *Human Diversity*. New York, NY: Scientific American Books; 1982.
21. Cooper RS, David R. The biological concept of race and its application to public health and epidemiology. *J Health Polit Policy Law*. 1986;11:97–116.
22. Williams DR. Race and health: basic questions, emerging directions. *Ann Epidemiol*. 1997;7:322–333.
23. Cooper RS, Freeman VL. Limitations in the use of race in the study of disease causation. *J Natl Med Assoc*. 1999;91:379–383.
24. Sorlie P, Rogot E, Anderson R, Backlund E. Black-white mortality differences by family income. *Lancet*. 1992;340:346–350.
25. Navarro V. Race or class versus race and class: mortality differentials in the United States. *Lancet*. 1990;336:1238–1240.
26. Williams DR. Race, SES, and health: the added effects of racism and discrimination. *Ann N Y Acad Sci*. 1999;896:173–188.
27. Williams DR, Collins C. U.S. socioeconomic and racial differences in health: patterns and explanations. *Annu Rev Sociol*. 1995;21:349–386.
28. Kaufman JS, Cooper RS, McGee DL. Socioeconomic status and health in blacks and whites: the problem of residual confounding and the resiliency of race. *Epidemiology*. 1997;8:621–628.
29. Krieger N, Williams DR, Moss N. Measuring social class in US public health research: concepts, methodologies, and guidelines. *Annu Rev Public Health*. 1997;18:341–378.
30. Sorel JE, Ragland DR, Syme SL, Davis WB. Educational status and blood pressure: the Second National Health and Nutrition Examination Survey, 1976–1980, and the Hispanic Health and Nutrition Examination Survey, 1982–1984. *Am J Epidemiol*. 1992;135:1339–1348.
31. Vega WA, Amaro H. Latino outlook: Good health, uncertain prognosis. *Annu Rev Public Health*. 1994;15:39–67.
32. Kumanyika S. Obesity in black women. *Epidemiol Rev*. 1987;9:31–50.
33. Massey DS, Denton NA. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, Mass: Harvard University Press; 1993.
34. Williams DR, Collins C. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep*. In press.
35. Williams DR. Black-white differences in blood pressure: the role of social factors. *Ethn Dis*. 1992;2:126–141.
36. Davern ME, Fisher PJ. *Household Net Worth and Asset Ownership: 1995*. Washington, DC: US Bureau of the Census; 2001. Current Population Reports, Household Economic Studies Series P70–71.
37. *Changing America: Indicators of Social and Economic Well-Being by Race and Hispanic Origin*. Washington, DC: Council of Economic Advisers for the President's Initiative on Race; 1998.
38. *Income by Educational Attainment for Persons 18 Years Old and Over, by Age, Sex, Race, and Hispanic Origin: March 1996*. Washington, DC: US Bureau of the Census; 1997.
39. Bauman K. *Direct Measures of Poverty as Indicators of Economic Need: Evidence From the Survey of Income and Program Participation*. Washington, DC: US Bureau of the Census; November 1998. Population Division Technical Working Paper No. 30.
40. *Economic Report of the President, 1998, With the Annual Report of the Council of Economic Advisers*. Washington, DC: Office of the President; 1998.
41. Cooper R, Steinhauer M, Schatzkin A, Miller W. Improved mortality among U.S. blacks, 1968–1978: the role of antiracist struggle. *Int J Health Serv*. 1981;11:511–522.
42. Mandinger M. Health service funding cuts and the declining health of the poor. *N Engl J Med*. 1985;313:44–47.
43. Lurie N, Ward NB, Shapiro MF, Brook RH. Termination from Medi-Cal—does it affect health? *N Engl J Med*. 1984;311:480–484.
44. *Excess Deaths and Other Mortality Measures for the Black Population: 1979–81 and 1991*. Hyattsville, Md: National Center for Health Statistics; 1994.
45. Geronimus AT, Bound J, Waidmann TA. Poverty, time, and place: variation in excess mortality across selected U.S. populations, 1980–1990. *Epidemiol Community Health*. 1999;53:325–334.
46. Adler NE, Boyce T, Chesney MA, Folkman S, Syme SL. Socioeconomic inequalities in health: no easy solution. *JAMA*. 1993;269:3140–3145.
47. House JS, Williams DR. Understanding and reducing socioeconomic and racial/ethnic disparities in health. In: Smedley BD, Syme SL, eds. *Promoting Health: Intervention Strategies From Social and Behavioral Research*. Washington DC: National Academy Press; 2000:81–124.
48. *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. Washington, DC: US Dept of Health, Education, and Welfare; 1979.
49. Williams DR. Socioeconomic differentials in health: a review and redirection. *Soc Psychol Q*. 1990;53:81–99.
50. Weinick RM, Zuvekas SH, Cohen JW. Racial and ethnic differences in access to and use of health care services, 1977 to 1996. *Med Care Res Rev*. 2000;57(suppl 1):36–54.
51. Rhoades ER, D'Angelo AJ, Hurlburt WB. The Indian Health Service record of achievement. *Public Health Rep*. 1987;102:356–360.
52. Noren J, Kindig D, Sprenger A. Challenges to Native American health care. *Public Health Rep*. 1998;113:22–33.
53. Mayberry RM, Mili F, Ofili E. Racial and ethnic differences in access to medical care. *Med Care Res Rev*. 2000;57(suppl 1):108–145.
54. Kressin NR, Petersen LA. Racial differences in the use of invasive cardiovascular procedures: review of the literature and prescription for future research. *Ann Intern Med*. 2001;135:352–366.
55. Rosenwaike I, Hempstead K. Mortality among three Puerto Rican populations: residents of Puerto Rico and migrants in New York City and in the balance of the United States, 1979–81. *Int Migration Rev*. 1990;24:684–702.
56. Singh GK, Yu SM. Adverse pregnancy outcomes: differences between US- and foreign-born women in major US racial and ethnic groups. *Am J Public Health*. 1996;86:837–843.
57. Hummer RA, Rogers RG, Nam CB, LeClere FB. Race/ethnicity, nativity, and U.S. adult mortality. *Soc Sci Q*. 1999;80:136–153.
58. Abraido-Lanza AF, Dohrenwend BP, Ng-Mak DS, Turner JB. The Latino mortality paradox: a test of the “salmon bias” and healthy migrant hypotheses. *Am J Public Health*. 1999;88:1543–1548.
59. Centers for Disease Control. Pregnancy-related deaths among Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native women—United States, 1991–1997. *MMWR Morb Mortal Wkly Rep*. 2001;50:361–364.
60. Frisbie WP, Forbes D, Hummer RA. Hispanic pregnancy outcomes: additional evidence. *Soc Sci Q*. 1998;79:149–169.
61. Bradshaw BS, Frisbie WP. Mortality of Mexican Americans and Mexican immigrants: comparisons with Mexico. In: Weeks JR, Ham-Chande R, eds. *Demographic Dynamics of the U.S.–Mexico Border*. El Paso: Texas Western Press; 1992:125–150.
62. Jenkins CNH, Kagawa-Singer M. Cancer. In: Zane NWS, Takeuchi DT, Young KNJ, eds. *Confronting Critical Health Issues of Asian and Pacific Islander Americans*. Thousand Oaks, Calif: Sage; 1994:105–147.
63. Taylor SE, Repetti RL, Seeman T. Health psychology: what is an unhealthy environment and how does it get under the skin? *Annu Rev Psychol*. 1997;48:411–447.

64. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *Am J Prev Med*. 1998;14:245–258.
65. Wyatt GE. The relationship between child sexual abuse and adolescent sexual functioning in Afro-American and white American women. *Ann N Y Acad Sci*. 1988;528:111–122.
66. Kawachi I, Kennedy BP, Gupta V, Prothrow-Stith D. Women's status and the health of women and men: a view from the States. *Soc Sci Med*. 1999;48:21–32.
67. Idler EL. Religious involvement and the health of the elderly: some hypotheses and an initial test. *Soc Forces*. 1987;66:226–238.
68. Griffith EE, Young JL, Smith DL. An analysis of the therapeutic elements in a black church service. *Hosp Community Psychiatry*. 1984;35:464–469.
69. Chatters LM. Religion and health: public health research and practice. *Annu Rev Public Health*. 2000;21:335–367.
70. Wallace JM, Forman TA. Religion's role in promoting health and reducing risk among American youth. *Health Educ Behav*. 1998;25:721–741.
71. Williams DR, Griffith EE, Young J, Collins C, Dodson J. Structure and provision of services in New Haven black churches. *Cultural Diversity Ethn Minority Psychol*. 1999;5:118–133.
72. Amaro H, Russo NF, Johnson J. Family and work predictors of psychological well-being among Hispanic women professionals. *Psychol Women Q*. 1987;11:505–521.
73. Krieger N. Racial and gender discrimination: risk factors for high blood pressure? *Soc Sci Med*. 1990;30:1273–1281.
74. Noh S, Beiser M, Kaspar V, Hou F, Rummens J. Perceived racial discrimination, depression, and coping: a study of Southeast Asian refugees in Canada. *J Health Soc Behav*. 1999;40:193–207.
75. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *J Health Soc Behav*. 1999;40:208–230.
76. Williams DR, Yu Y, Jackson J, Anderson N. Racial differences in physical and mental health: socioeconomic status, stress, and discrimination. *J Health Psychol*. 1997;2:335–351.
77. Ren XS, Amick B, Williams DR. Racial/ethnic disparities in health: the interplay between discrimination and socioeconomic status. *Ethn Dis*. 1999;9:151–165.
78. Krieger N. Embodying inequality: a review of concepts, measures, and methods for studying health consequences of discrimination. *Int J Health Serv*. 1999;29:295–352.
79. Williams DR, Williams-Morris R. Racism and mental health: the African American experience. *Ethn Health*. 2000;5:243–268.
80. Williams DR, Neighbors H. Racism, discrimination and hypertension: evidence and needed research. *Ethn Dis*. 2001;11:800–816.
81. Harrell FE, Merritt MM, Kalu J. Racism, stress and disease. In: Jones RL, ed. *African American Mental Health*. Hampton, Va: Cobb & Henry Publishers; 1998:247–280.
82. Jones CP. Levels of racism: a theoretic framework and a gardener's tale. *Am J Public Health*. 2000;90:1212–1215.
83. Clark R, Anderson NB, Clark VR, Williams DR. Racism as a stressor for African Americans: a biopsychosocial model. *Am Psychol*. 1999;54:805–816.
84. Kaplan G, Everson SA, Lynch JW. The contribution of social and behavioral research to an understanding of the distribution of disease: a multilevel approach. In: Smedley BD, Syme SL, eds. *Promoting Health: Intervention Strategies from Social and Behavioral Research*. Washington DC: National Academy Press; 2001:37–79.
85. Pamuk E, Makuk D, Heck K, Reuben C. *Health, United States, 1998 With Socioeconomic Status and Health Chartbook*. Hyattsville, Md: National Center for Health Statistics; 1998.
86. UNICEF. *A League Table of Child Poverty in Rich Nations*. Florence, Italy: Innocenti Research Center; 2000.
87. Acheson SD. *Independent Inquiry Into Inequalities in Health Report*. London, England: The Stationery Office; 1998.
88. Newman KS. After Acheson: lessons for American policy on inequality and health. In: Auerbach JS, Krimgold BK, eds. *Income, Socioeconomic Status, and Health: Exploring the Relationships*. Washington, DC: National Policy Association; 2001.
89. McEwen BS. Protective and damaging effects of stress mediators. *N Engl J Med*. 1998;338:171–179.
90. Fullilove MT. Abandoning "race" as a variable in public health research—an idea whose time has come. *Am J Public Health*. 1998;88:1297–1298.
91. Zambrana RE, Carter-Pokras O. Health data issues for Hispanics: implications for public health research. *J Health Care Poor Underserved*. 2001;12:20–34.
92. Burhansstipanov L, Satter DE. Office of Management and Budget racial categories and implications for American Indians and Alaska Natives. *Am J Public Health*. 2000;90:1720–1723.
93. Srinivasan S, Guillermo T. Toward improved health: disaggregating Asian American and Native Hawaiian/Pacific Islander data. *Am J Public Health*. 2000;90:1731–1734.
94. Syme SL. Drug treatment of mild hypertension: social and psychological considerations. *Ann N Y Acad Sci*. 1978;304:99–106.
95. Syme SL. The social environment and health. *Daedalus*. 1994;123:79–86.