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Annotation: Race, Ethnicity, and Health Outcomes—Unraveling the Mediating Role of Socioeconomic Status

In the past several decades, population-based research has evaluated the impact of a wide range of biological, behavioral, environmental, and other potential risk factors on adverse health outcomes. When one sorts through this vast collection of studies, the relationship of low socioeconomic status and poor health rises to the top of the findings over and over again, across different disease outcomes, in different age groups, and in different areas of the world. The strength and consistency of this relationship has been remarkable, particularly because it has been difficult to fully explain it, even

Editor's Note. See related article by Kington and Smith (p 805) in this issue.

after taking into account important confounders such as health habits and access to care. It is also perhaps remarkable that socioeconomic differences, which can have a larger impact on mortality than major risk factors such as cigarette smoking,[1] are not the focus of a great deal more research and public concern.

Differences in rates of disease in ethnic and racial subgroups of the population have been well documented. Because many African Americans and Hispanics in the United States are economically disadvantaged, researchers who find higher rates of particular diseases in these subgroups often evaluate whether they can be explained by socioeconomic differences. The results of these investigations have been mixed,[2] with some racial differences in disease rates not explained by socioeconomic differences. However, the interrelationship between race and socioeconomic status may be too complex to unravel with traditional adjustments for current income and education. In this issue of the Journal, Kington and Smith describe how, in the Health and Retirement Survey, methods were developed to comprehensively assess total wealth in addition to income.[3] They then go on to demonstrate that even with these more refined adjustment techniques, there remains an excess rate of diabetes and hypertension in Blacks and a slightly higher prevalence of diabetes in Hispanics.

When race and ethnicity continue to be related to disease status even after adjusting for socioeconomic status, behavioral risk factors, and other variables, one could surmise that genetic predisposition to disease may vary between racial and ethnic groups. Although this is clearly the case for certain diseases such as sickle cell anemia, it is important to point out that for many of the chronic diseases of aging, assumptions about genetic explanations for race differences, for example with hypertension, have not been proven.[4] Other nonbiologic explanations for the excesses in disease prevalence in racial and ethnic minorities include such difficult-to-measure factors as chronic social stressors that reflect the lifelong impact of discrimination.[5]

In addition to specific diseases, global outcomes such as all-cause mortality and disability have been assessed for their relationship to race, ethnicity, and socioeconomic status. As in research on disease occurrence, not all studies that assess the race/mortality relationship find that it can be explained by socioeconomic differences.[2,6] Results are also conflicting in studies that assess the relationship of race and ethnicity with disability.

Kington and Smith[3] demonstrate that poorer functioning in African Americans and Hispanics with different chronic diseases was completely explained by indicators of education, income, and wealth. Although the cross-sectional nature of this study limits our ability to draw inferences about the causal pathway, the results are compatible with other prospective studies, including a study in a biracial older population which estimated active life expectancy, a measure of life free of disability in activities of daily living which is influenced by both survival and change in functional status.[7] Analyses from the nationally representative Longitudinal Study on Aging also found that race was not a predictor of incident disability after adjustment for socioeconomic status.[8] However, active life expectancy calculations made from these same data showed a residual effect of race after stratification for educational status,[9] and results from the Alameda County Study indicated that race was an important predictor of disability over a 19-year follow-up even after adjusting for income.[10]

A major strength of the Health and Retirement Survey is that it provides data to make direct comparisons of Hispanics with non-Hispanic Whites. In the analyses by Kington and Smith, these two groups have a similar profile of self-reported disease, with Hispanics having a higher age- and sex-adjusted rate of diabetes and a lower rate of heart disease, but no difference in hypertension and arthritis.[3] Disability rates show a clear disadvantage for Hispanics, however, with significantly higher disability scores in women and in those with hypertension, heart disease, and arthritis. Adjusting for socioeconomic status eliminates these differences. It thus appears that in populations with similar rates of disease, socioeconomic status may play an important role in modifying the impact of disease and could potentially influence such factors as disease severity and use of treatments that reduce the functional consequences of disease.

Future research addressing the impact of race, ethnicity, and socioeconomic status on health status will be necessary to clarify the complex interaction of these factors. For example, it is not clear why the relationship between race and outcomes such as mortality, morbidity, and disability is explained by socioeconomic differences in some studies and not in others. There are surely better ways to evaluate an individual's socioeconomic position in society than simply determining income and education level. The wealth assessment done in the Health and Retirement Survey is an example of improved methodology, especially for older populations, in whom income is often not a good measure of lifetime economic status. The elucidation in this study of the nonlinear relationship between socioeconomic status and health outcomes is also an important contribution. The finding that the effect of a dollar of income on functional status is much greater in the poor than in the affluent implies that research in this area may be strongly influenced by what population is being studied.

With the current focus of epidemiologic research moving in the direction of identifying risk factors at the individual level, the broader public health issue of socioeconomic status has been underemphasized relative to the magnitude of its impact on health.[11] Low socioeconomic status is generally not considered among the modifiable risk factors in health-related interventions and is often overlooked in planning preventive strategies. The message of the Kington and Smith paper is a clear reminder that socioeconomic status plays a strong role not only in the association of race and ethnicity with disease, but it also accounts for much of the association of race and ethnicity with disability. □

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Comment: Environmental Racism and Public Health

Equity and justice have emerged as central issues in environmental health policy in this decade,[1] although the debate is far from new. This change in agenda has been prompted, in part, by hundreds of grassroots organizations and community action groups that have focused attention on the environmental problems facing disadvantaged communities.

The environmental movement of the 1960s and 1970s was dominated by the White middle class.[2] It succeeded in building an impressive political base for environmental reform and regulatory relief. However, it failed to address charges that poor and minority communities are dumping grounds for environmental hazards.

The environmental justice movement of the 1980s and 1990s initially focused on claims that race and poverty are involved in the siting of undesirable facilities.[3] Today, the charge has broadened to include all issues of environmental degradation. Communities are demanding stronger participation in decisions that affect their health and homes.

In February 1994, President Clinton signed Executive Order 12 898, which requires all federal agencies to develop comprehensive strategies for achieving environmental justice. As a result, increased agency staff and more research funds have been allocated to address local environmental concerns. The US Environmental Protection Agency (EPA) created the Office of Environmental Equity to coordinate agency activities and provide technical assistance. Dr Kenneth Olden, the director of the National Institute of Environmental Health Sciences, has made his agency more responsive to the needs of environmentally degraded communities.

"Environmental racism" is a charge leveled by many communities of color, as they draw the lines in defense of their embattled environments. Sexton et al.[4] prefer the terms "environmental equity" or "environmental justice" to "environmental racism." These concepts extend concern to "the underlying principle that fairness and equity are inherent in society's efforts to protect the health of all citizens from the adverse effects of environmental agents."[4(p686)] Greenberg[5] further distinguishes between two forms of equity. Outcome equity requires balanced spatial and temporal distribution of benefits and burdens. Process equity requires application of equitable environmental, health, physical, legal, economic, and political criteria to arrive at environmental policy.

These distinctions, while useful, are inadequate to protect the public's health, especially for the most vulnerable among us. They also fail to recognize that racism pervades US society and that environmental protection is not immune.

In this issue of the Journal, Mapel et al.[6] document "environmental (in)justice" against Native American miners in at least three ways. First, the authors demonstrate a disparate burden of nonmalignant respiratory disease among them. Second, Mapel et al. observe ethnic differences in the spirometric criteria used to predict lung function, differences not being taken into account in the current standards. And third, they find prevailing compensation procedures for mining-related disease to be biased against Native Americans.

Here, it seems clear, deliberate discrimination on the basis of race has contributed to an undue burden of respiratory disease among Native American uranium miners. "Dog holes," as the earliest mines were known, were infamous for their lack of ventilation and poor working conditions. Local men were recruited to work in the mines, which were often located on Native American reservations.[7]

Environmental racism has parallels in other public health spheres and needs to be confronted. Prominent public health professionals have recently been maligned by Dr. Satel for proposing social solutions to public health problems. In particular, the fire has been directed against initiatives to advance the health of minorities and other disadvantaged groups.[8,9] These attacks, either disingenuous or ill informed, fail to recognize the historic understanding that societies shape patterns of disease.[10–12]

To discount racism as a potential contributor to disparities in health by race and ethnicity is to ignore well-established social history, not to mention the experience of many afflicted persons. Denial serves to perpetuate inequity. It also forecloses studies of racism focusing specifically on ill health and premature mortality.

Sorting out the health effects of racism is no simple task. The relationships between race, ethnicity, social class, segregation, discrimination, and patterns of disease are complex.[13–15] The research problems are thorny and difficult to assess, especially in data collected for other purposes. These difficulties have not and should not keep rigorous, compassionate, and creative public health researchers from trying.[16–20] Indeed, the gaps in rates of morbidity and mortality between African Americans and White Americans (which not only persist[21,22] but grow wider[23]) demand that we do no less. Public health has a fundamental role in preventing disease and a secure and legitimate role in helping to formulate policies and initiate programs toward that end. Engagement should be no less vigorous than on any other health initiative.

The core of the problem surely lies in the racial segregation that continues to afflict most urban and other communities in the United States. A number of reports support the commonplace observation that disadvantaged locales bear a disproportionate share of environmental hazards.[3,24,25] A widely cited, if hotly con-

Editor's Note. See related article by Mapel et al. (p 833) in this issue.