Environmental Factors, Income Inequity, and Health Disparity: Emerging Research and Policy Implications for Black Americans

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INTRODUCTION

Life expectancy and overall health has improved in recent years for a large number of Americans, due in part to advances in medical technology and an increased focus on preventive medicine (Kinsella, 2000; Mills, Wakeman & Fea, 2001). Yet not all Americans are benefitting equally. For example, the life expectancy for black Americans is five to eight years less than for whites. Furthermore, the socioeconomic status (SES) of blacks is also less than for whites, and SES is associated with early mortality (Howard et al., 2000). Health disparities continue to be a major public health concern in our country. For too many racial and ethnic minorities in the United States, good health is still elusive.

A tenet of social epidemiology is that patterns of disease and death are shaped by social, economic, political and cultural factors. This has been powerfully expressed in different ways at different times (Link & Phelan, 2000). For example, Rudolf Virchow (1848), one of the founders of social medicine, declared "medicine is a social science and politics nothing but medicine on a grand scale" (quoted in Link & Phelan, 2000:33). Contemporary researchers also have addressed the social construction of disease, suggesting that "societies in part create disease they experience and further, they materially shape the way in which diseases are to be experienced" (Susser et al., 1985:17).

The purpose of the present study was to selectively review the literature on environmental conditions, income inequality, and health disparities among black Americans. To do this, we had three specific objectives. *First*, to identify select factors that define (and control) health outcomes among minority populations. *Second*, to characterize several environmental research projects investigating health disparities. *Third*, to suggest practical and policy implications for closing the health gap.

BACKGROUND

Several studies provide compelling demonstrations of the relationship between envi-

ronmental conditions and health, such as the effects of incineration on health (Allsopp, Costner & Johnston, 2000), cockroach allergens and asthma (Arruda et al., 2001), environmental awareness and health (Preston, Warren & Stewart, 2000), or the role of social environment on health (Williams, 1998; Link & Phelan, 1995). Still, the increased life expectancy we have observed over the past 100 years, from about 46 years in 1900, to around 79 years today is one of the most obvious pieces of evidence of the importance of environment on health outcomes (see Antonovsky, 1967). It would be unreasonable to attribute dramatic changes like this to genetic factors alone inasmuch as these changes in life expectancy have been too rapid. Rather, what this historical extension of life expectancy in the United States suggests is that environmental conditions must be powerful determinants of health conditions. Thus, as we proceed in this effort to understand why some demographic groups experience longer and healthier lives than others, we do so with a firm knowledge that environmental changes have had an enormous impact on the health of populations.

The link between income inequality and the health of a population has been previously examined (e.g., Raphael, 2000; Pickett & Pearl, 2001; Mellor & Milyo, 2001; Marmot, 2001; LeClere & Soobader, 2000). One notable study along these lines is Wilkinson's (1992) comparative analysis of data from nine industrialized nations. His findings indicate that life expectancy at birth is much lower in countries that provide a disproportionate share of the income distribution to the top 30 percent of the population, and smaller income shares to the 70 percent of the population that is least well off. In these countries, life expectancy for the population as a whole is compromised. Much of the same association between income inequality and life expectancy exists in the United States (Kennedy et al., 1966; Kaplan et al., 1996).

Overall, the affluent citizens of the United States enjoy better health compared to their minority and poorer counterparts. The most striking health disparities involve shorter life expectancy among the poor, as well as higher rates of cancer, birth defects, infant mortality, asthma, diabetes, and cardiovascular disease. Although health care access might account for some of this disparity, the differences in environmental and occupational exposures are also thought to play a role (Meehan et al., 2000; Frazier, 2000). Members of minority and poorer communities are more likely to live in polluted environments and to work in hazardous occupations. There may also be a disproportionate placement of pollution-intensive industries and hazardous waste sites in low-income and minority communities (Clarke & Gerlak, 1998; Pinderhughes, 1996; Higgins, 1993).

In a review of the literature on socioeconomic status and health, Feinstein (1993) argues that causation for health disparity has not been thoroughly addressed. His chief and conclusive criticism is that the literature has, with a few notable exceptions, been unwilling to explore deeper structural explanations of health inequalities. Nev-

ertheless, researchers are seeking to determine the trajectories and pathways that might account for this association. One idea is that income inequality has an adverse effect on social capital, destroying connections between people and their trust in one another. For example, Kawachi et al. (1997) reported that the percentage of Americans who agreed that "most people would try to take advantage of you if they got the chance" was strongly related to income inequality and to mortality rates. Interestingly, once social trust was controlled, income inequality was unrelated to mortality. These findings suggest a strong mediating role for social trust in the association between inequality and mortality.

INTERPRETATIONS AND USE OF SOCIOECONOMIC STATUS

Despite a large and growing literature on the relationship between socioeconomic status (SES) and health (e.g., Liu et al., 2001; Boardman & Robert, 2000; Van Horn, Bellis & Snyder, 2001; Howard et al., 2000), we still do not have a good understanding of how the relationship between SES and health is affected over time. Nonetheless, SES continues to grab the attention of social research efforts. The reliance of social science on socioeconomic status that only includes income inequity to explain health disparities and subsequently negative health outcome ignores the validity of individual social, political and historical experiences. Yet these experiences form the core of social problems and in turn, also provide the context of social research (e.g., C.W. Mills, 1959). Socioeconomic status is not easily defined, and often it falls victim to various conceptualizations including individual, community and regional contexts. To advance the objectives of this paper, our definition of SES includes individual, and community factors such as the physical environment (e.g., exposure to environment of an unhealthy community), social environment (e.g., social isolation, lack of tangible support), and service environment (e.g., availability, accessibility, distance/travel time, utilization of services) (Robert & Li, 2001).

From our perspective, SES is best understood in relation to the ways in which it inhibits or facilitates access to social structures that deliver health care (Hayward, 1999; Smith, 1998; Tennestedt & Chang, 1998; House, Lepowski et al., 1994). For example**,** Blendon et al. (1995) note that in the data collected by the Harvard School of Public Health and the National Research Opinion Center, African Americans were partially less successful than their white counterparts in obtaining health care because many African Americans did not have health insurance. Health insurance coverage is typically associated with benefits attached to steady and often unionized employment. Moreover, in these inner city areas health care facilities have relocated to areas outside of the inner city or are underfunded, understaffed and overcrowded (Lado, 1994; Watson, 1993; Brooks et al., 1991; Schweller, 1997). Most prior research on SES and health has not adequately considered the effect of community or regional SES, as moderators of individual SES.

RESEARCH ON HEALTH DISPARITY

At the close of the 20th Century, a number of federal government strategies were developed and implemented to improve the health of minority populations and help close these unacceptable health gaps. These strategies included a coordinated effort to eliminate racial and ethnic health gaps in six key areas of health by the year 2010: infant mortality, diabetes, cardiovascular disease, cancer screening and management, HIV/AIDS, and child and adult immunizations (see the Department of Health and Human Performance). Since the focus of this paper was on the relationship between environmental factors and health disparities, the studies outlined below reflect our concentration on research funded by the National Institute on Environmental Health Sciences (NIEHS), as identified on their web page (http://www.niehs.nih.gov/), using a key word search on health disparities.

Lead Abatement Studies

In several studies, minority and disadvantaged children are monitored for the prevalence of high blood lead. Low blood lead levels are correlated with significant reductions in kidney function as measured by serum creatine concentration. The findings indicate that lead abatement and treatment programs might serve as new preventive strategies for kidney damage, as well as a number of other diseases prevalent in urban and inner city environments where lead exposures are frequently high.

Biomarkers of Lung Cancer

African Americans share a disproportionate burden of lung cancer incidence and mortality. This outcome may represent interactions of environmental and genetic influences (NIEHS). Therefore, the identification of genetic markers of risk has great potential for cancer control. The objective of one NIEHS-funded project is to refine and validate molecular biomarkers of human exposures to environmental pollutants such as aromatic and heterocyclic amines. Using these biomarkers in studies will help define the roles of heterocyclic amines in the risk of colon cancer and aromatic amines in the risk of bladder cancer in smokers and nonsmokers in different racial and ethnic groups.

Women's Health Disparities

Systemic Lupus Erythematosus (SLE). This autoimmune disease can cause severe damage to the kidneys, joints, and other tissues. Ninety percent of SLE patients are women, and compared to whites, African Americans are three to four times more likely to develop the disease. Moreover, compared to whites, the mortality rate among African American patients with SLE is higher. Reasons for the African Ameri-

can excess risk are not known. The Carolina Lupus Study offers the opportunity to examine occupational and environmental risk factors in a previously understudied population. These efforts may help illuminate etiologic pathways and develop prevention strategies for susceptible populations. Environmental exposures under study include silica dust, ultraviolet light, solvents, heavy metals, and pesticides. The study participants are 90 percent women and 55 percent African American.

Uterine Fibroids. Uterine fibroids is a common medical condition among African American women, and is the leading indicator for hysterectomy among pre-menopausal women in the United States. Based on hysterectomy statistics, African American women appear to be at 3- to 9-fold higher risk than white women. To better define the cause of this health disparity, the NIEHS and the ORMH have initiated a study of uterine fibroids among 35- to 49-year-old members of a large pre-paid health plan in Washington, D.C. The study has enrolled 285 black and 123 white women. In this group, 73% of black women had uterine fibroids, compared to 48 percent of white women. These data indicate that the differences in hysterectomy rates are not just a result of diagnostic/treatment bias. There are real differences in uterine fibroid risk between blacks and whites and the NIEHS hopes to help define some of the environmental triggers for uterine fibroid development.

Breast Cancer. African American women appear to be at greater risk of developing more aggressive forms of cancer, and are more likely to die from this disease than are white breast cancer victims. The reasons are most likely to be multifactorial, but environmental exposures might play a significant role. In a recently published study supported by the NIEHS, findings indicate that women with higher blood levels of the organochlorine pesticide, dieldrin, had twice the risk of later breast cancer development than women with lower levels of this pesticide. Since many people of color engage in farm work, they and their families would be expected to have higher exposures to endocrine-disrupting compounds such as dieldrin and, consequently, would be at higher risk for breast cancer development.

AGING AND PERSPECTIVES FOR EXAMINING HEALTH DISPARITY

Closing the health gaps in the United States is a demographic imperative, given the anticipated growth in the population of minority elders as the baby boom cohort enters the ranks of “older adulthood.” Along with this population shift there are concerns about long-term health. While poor health and disability are not always inevitable with the aging process, the likelihood of decreasing health is greatest among older citizens. For African Americans establishing patterns of successful aging is closely linked to early intervention. A recent study using the data from the National Survey of Mid-Life Development in the United States (MIDUS) illustrates the need for early intervention. The analysis notes that markers of senescence or

normal aging, especially among black women occur earlier than among white women. Therefore, in this instance early intervention improves the opportunity for longer periods in which the quality of life is not degraded by health (Hayward, 1999).

Successful Aging

As noted in the MacArthur Foundation's Research Studies on Successful Aging, the process of senescence and the rate at which it occurs are not solely related to genetics. Rather, lifestyle, social environment and social structure affect the process of normal aging (Rowe & Kahn, 1998; Elder, 1994; Riley, 1986; Featherman & Lerner, 1985). Other research points to the fact that, especially for racial and ethnic minorities, the aging process in general and successful aging in particular is adversely impacted not only by the biological process but also by the structural inequalities of socioeconomic status (O'Rand, 1996; Markides & Black, 1996; House et al., 1994). These inequalities further imply that the likelihood of successful aging among the disadvantaged is diminished. Acknowledgment of historical structural barriers, and the sociohistorical context of black Americans' physical health becomes critical when examining the life cycle of health disparity experienced by people of color as they age (MacKinney Edmonds, 1990). The U.S. Department of Health and Human Services Task Force on Black and Minority Health suggests that minority health is influenced by specific social characteristics. Among these characteristics, the Task Force lists demographic profile, nutritional and dietary practices, environmental and occupational exposures, and stress and coping patterns as challenges to the physical well-being of blacks and other ethnic minorities.

CONCLUSION

There is compelling evidence that race and ethnicity correlate with persistent, and often increasing, health disparities among U.S. populations. The demographic changes that are anticipated over the next decade magnify the importance of addressing disparities in health status. Groups currently experiencing poorer health status are expected to grow as a proportion of the total U.S. population; therefore, the future health of America as a whole will be influenced substantially by our success in improving the health of these racial and ethnic minorities. The elimination of health disparities will require an ongoing national effort involving both the public and private sectors, along with individuals and communities. If we are to better understand the relationships between health status and different racial and ethnic minority backgrounds, it is imperative that communities are brought into the strategies to identify culturally-competent and culturally-relevant implementation strategies. Early intervention is an integral component that is needed if we are to eliminate racial and ethnic disparities in health. Therefore, focus should be given to enhanced efforts to prevent disease, increase health literacy, promote health, and deliver appro-

priate health care to African Americans.

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