VIEWPOINT

Social Determinants of Health
Caveats and Nuances

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Belief in the importance of the social determinants of health is gaining wide acceptance; this useful development will undoubtedly contribute to better public policy and clinical practice.[1] Although the general concept is not contested, several caveats and nuances should be considered.

First, statements such as "social determinants explain half the variation in health" are neither correct nor incorrect; they are incomplete. Assessments of the relative importance of different determinants depend critically on the health variation to be explained. For instance, if the goal was to explain the sharp increase in life expectancy at birth in the United States during World War II, 0.5% per annum from 1940 to 1945, health determinants could be divided roughly into 3 categories: social (eg, income, education, neighborhood), biological (genes), and medical care (quantity and quality, including state of science and technology). Significant biological changes over such a short period as World War II did not contribute to increase in life expectancy. Absent any major scientific or technological change and the diversion of approximately half of

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all practicing physicians to military service during the war, medical care would be an unlikely explanation. That leaves social determinants such as unusual increases in income, decreases in unemployment, and positive shifts in the national psyche inspired by war as the most likely explanations.

Another example of variation is the rapid decline in cardiovascular and cerebrovascular mortality between 1970 and 1980. Again, the period is too short for biological change to have played a role. Some social changes such as a decrease in smoking among men likely contributed. However, smoking among women did not decrease, but vascular mortality among women declined at the same rate as among men. The most likely explanation is medical care, especially more aggressive and effective control of blood pressure. Before the Veterans Administration multisite studies of 1967 and 1970, a systolic blood pressure of 100 mm Hg plus the patient's age was considered normal and did not require treatment.[2,3] As noted in the fourth Joint National Committee,[4] by extending the Veterans Administration practices to other patient populations,

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gains in hypertension control contributed to a 50% decline in coronary artery disease mortality.[4]

A third example is low infant mortality among Mexican Americans, with a rate slightly less than the rate among non-Hispanic whites.[5] That this could be explained by more or better-quality medical care is unlikely. The percentage of people without health insurance is above average for Mexican Americans, who often live in medically underserved areas. Similarly, the social conditions for Mexican Americans, as reflected in income and education, are worse than for non-Hispanic whites. That leaves a biological explanation as the likely explanation.

When discussing the relative importance of social determinants and medical care for health outcomes, a critical distinction must be made between cross-sectional variation in health at a point in time and changes in health outcomes over time. In studies across states, cities, and other geographical regions, differences in the quantity of medical care are easily controlled for, and the frontier of medical science and technology is, for all practical purposes, similar everywhere. For such cross-sectional variation, the social determinants, such as income, education, and neighborhood and health behaviors such as cigarette smoking, usually provide more explanatory power than differences in medical care. By contrast, variation in health outcomes over time in the United States at present is usually explained more by advances in medical science and technology. In recent decades, some social determinants such as a decline in cigarette smoking have contributed to better health outcomes, but some, such as an increase in the prevalence of obesity and the fragmentation of families, have had the reverse effect. Social determinants, as a group, probably explain little of the increase in life expectancy.

In understanding the relative importance of social determinants or medical care in increasing life expectancy over time, it is vital to specify where and when. In the United States in the early decades of the 20th century, before the discovery and diffusion of antibiotics, life expectancy increased rapidly, primarily because of improved sanitation, cleaner drinking water, and improving living standards. Medical care did not have a significant role in the rate of increase of life expectancy from 1900 to 1930 of 3.1 years per decade. By contrast, the increase in life expectancy in the most recent 30 years of 1.5 years per decade was attributable less to social determinants than to better control of high blood pressure and cholesterol levels, substantial advances in

perinatal interventions, and superior diagnostic and therapeutic interventions for patients with trauma.

A large number of social variables—income, education, housing, nutrition, occupation, and others—are correlated with life expectancy, and most are highly correlated with each other. This multicollinearity increases the difficulty of allocating scarce resources to derive the most health benefit. The answer may depend on the particular health problem being addressed. For example, if the goal is to close the gap in life expectancy between black and white populations, the most effective interventions may be different from those for closing the gap between rural and urban populations.

Chetty et al[6] have documented a substantial correlation between income and life expectancy derived from millions of individual observations, but they decline to conclude that this proves a causal mechanism from income to life expectancy. An alternative inference is a causal mechanism from health (life expectancy) to income. Moreover, it is possible that the causal connection runs one way at certain socioeconomic levels and reverses at another.

Years of schooling completed has a strong negative correlation with the probability of smoking, which is highly correlated with life expectancy. But a study of the probability of smoking at age 17 years (when all individuals in the study had approximately the same amount of schooling) revealed an equally high negative correlation between the probability of smoking and years of schooling the individual would have completed by age 24 years.[7] This is evidence against the hypothesis that additional years of schooling is the cause of the differential in the probability of smoking.

Some health outcomes may vary as the result of interactions between 2 or more determinants. Research on such interactions between the genes of individuals and interventions of medical care are proceeding at a rapid pace. But the possibility of interaction with social determinants should also be considered. For example, for a given diagnosis, the appropriate choice between treatment with surgery or medication might depend on the social condition of the patient. Similarly, the best policy choice of public health interventions might depend on the social determinants of the target population.

The increasing recognition by the health care community of the importance of social determinants of health along with biological and medical care is welcomed. The embrace of these insights, however, should be accompanied by an awareness that the relative importance of different determinants depends on the variation in health to be explained. Application of these insights to public health and clinical policies will improve as more is learned about the causal mechanisms between determinants and health, of interactions between determinants, and the size as well as the direction of effects on health.

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