The Social Determinants of Health: It's Time to Consider the Causes of the Causes

Paula Braveman, MD, MPH[a]
Laura Gottlieb, MD, MPH[b]

ABSTRACT

During the past two decades, the public health community's attention has been drawn increasingly to the social determinants of health (SDH)—the factors apart from medical care that can be influenced by social policies and shape health in powerful ways. We use "medical care" rather than "health care" to refer to clinical services, to avoid potential confusion between "health" and "health care." The World Health Organization's Commission on the Social Determinants of Health has defined SDH as "the conditions in which people are born, grow, live, work and age" and "the fundamental drivers of these conditions." The term "social determinants" often evokes factors such as health-related features of neighborhoods (e.g., walkability, recreational areas, and accessibility of healthful foods), which can influence health-related behaviors. Evidence has accumulated, however, pointing to socioeconomic factors such as income, wealth, and education as the fundamental causes of a wide range of health outcomes. This article broadly reviews some of the knowledge accumulated to date that highlights the importance of social—and particularly socioeconomic—factors in shaping health, and plausible pathways and biological mechanisms that may explain their effects. We also discuss challenges to advancing this knowledge and how they might be overcome.

[a]University of California, San Francisco, School of Medicine, Department of Family and Community Medicine, Center on Social Disparities in Health, San Francisco, CA

[b]University of California, San Francisco, School of Medicine, Department of Family and Community Medicine, Center for Health and Community, San Francisco, CA

Address correspondence to: Paula Braveman, MD, MPH, University of California, San Francisco, School of Medicine, Department of Family and Community Medicine, Center on Social Disparities in Health, PO Box 0943, 3333 California St., Ste. 365, San Francisco, CA 94118-0943; tel. 415-476-6839; fax 415-476-5219; e-mail <braveman@fcm.ucsf.edu>.

A large and compelling body of evidence has accumulated, particularly during the last two decades, that reveals a powerful role for social factors—apart from medical care—in shaping health across a wide range of health indicators, settings, and populations.[1–16] This evidence does not deny that medical care influences health; rather, it indicates that medical care is not the only influence on health and suggests that the effects of medical care may be more limited than commonly thought, particularly in determining who becomes sick or injured in the first place.[4,6,7,17,18] The relationships between social factors and health, however, are not simple, and there are active controversies regarding the strength of the evidence supporting a causal role of some social factors. Meanwhile, researchers increasingly are calling into question the appropriateness of traditional criteria for assessing the evidence.[17,19–22]

The limits of medical care are illustrated by the work of the Scottish physician, Thomas McKeown, who studied death records for England and Wales from the mid-19th century through the early 1960s. He found that mortality from multiple causes had fallen precipitously and steadily decades before the availability of modern medical-care modalities such as antibiotics and intensive care units. McKeown attributed the dramatic increases in life expectancy since the 19th century primarily to improved living conditions, including nutrition, sanitation, and clean water.[23] While advances in medical care also may have contributed,[23–26] most authors believe that nonmedical factors, including conditions within the purview of traditional public health, were probably more important;[24] public health nursing, including its role in advocacy, may have played an important role in improved living standards.[27] Another example of the limits of medical care is the widening of mortality disparities between social classes in the United Kingdom in the decades following the creation of the National Health Service in 1948, which made medical care universally accessible.[28] Using more recent data, Martinson found that although health overall was better in the United Kingdom than in the United States, which lacks universal coverage, disparities in health by income were similar in the two countries.[29] Large inequalities in health according to social class have been documented repeatedly across different European countries, again despite more universal access to medical care.[30–32]

Another often-cited example of the limits of medical care is the fact that, although spending on medical care in the U.S. is far higher than in any other nation, the U.S. has consistently ranked at or near the bottom among affluent nations on key measures of health, such as life expectancy and infant mortality; furthermore, the country's relative ranking has fallen over time.[33,34] A recent report from the National Research Council and Institute of Medicine has documented that the U.S. health disadvantage in both morbidity and mortality applies across most health indicators and all age groups except those older than 75 years of age; it applies to affluent as well as poor Americans, and to non-Latino white people when examined separately.[35] Other U.S. examples include the observation that, while expansions of Medicaid maternity care around 1990 resulted in increased receipt of prenatal care by African American women,[36,37] racial disparities in the key birth outcomes of low birthweight and preterm delivery were not reduced.[38] Although important for maternal health, traditional clinical prenatal care generally has not been shown to improve outcomes in newborns.[39–44]

THE IMPACTS OF SOCIOECONOMIC AND OTHER SOCIAL FACTORS ON MOST HEALTH OUTCOMES

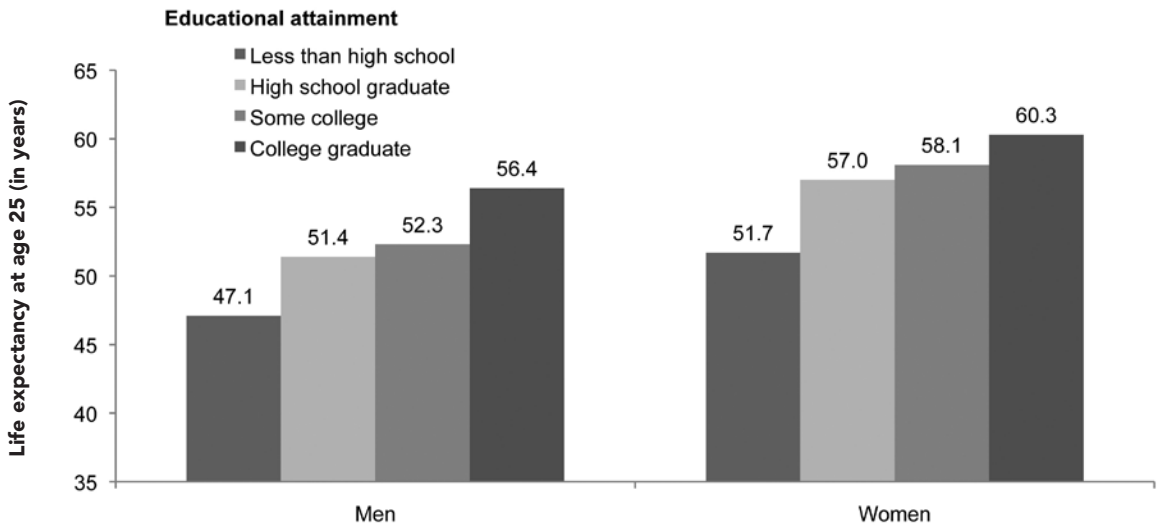
A number of studies have attempted to assess the impact of social factors on health. A review by McGinnis et al. estimated that medical care was responsible for only 10%–15% of preventable mortality in the U.S.;[45] while Mackenbach's studies suggest that this percentage may be an underestimate, they affirm the overwhelming importance of social factors.[25,26] McGinnis and Foege concluded that half of all deaths in the U.S. involve behavioral causes;[18] other evidence has shown that health-related behaviors are strongly shaped by social factors, including income, education, and employment.[46,47] Jemal et al., studying 2001 U.S. death data, concluded that "potentially avoidable factors associated with lower educational status account for almost half of all deaths among working-age adults in the U.S."[48] Galea and colleagues conducted a meta-analysis, concluding that the number of U.S. deaths in 2000 attributable to low education, racial segregation, and low social support was comparable with the number of deaths attributable to myocardial infarction, cerebrovascular disease, and lung cancer, respectively.[49]

The health impact of social factors also is supported by the strong and widely observed associations between a wide range of health indicators and measures of individuals' socioeconomic resources or social position, typically income, educational attainment, or rank in an occupational hierarchy. In U.S. as well as European data, this association often follows a stepwise gradient pattern, with health improving incrementally as social position rises. This stepwise gradient pattern was first noted in the United Kingdom.[28,50] Although research

on the socioeconomic gradient has been more limited in the U.S., the results of U.S. studies have mirrored the European findings. Figures 1–5 illustrate a few examples using U.S. data, with social position reflected by income or by educational attainment. Using national data, the National Center for Health Statistics' "Health, United States, 1998" documented socioeconomic gradients in the majority of numerous health indicators measured across different life stages.[51] Braveman and colleagues confirmed those findings using recent U.S. data.[52] Both Pamuk et al.[51] and Braveman et al.[52] found that socioeconomic gradient patterns predominated when examining non-Latino black and white groups but were less consistent among Latino people. Minkler and colleagues found dramatic socioeconomic gradients in functional limitations among people aged 65–74 years. This finding is particularly remarkable because income gradients generally tend to flatten in old age.[53] As illustrated in Figure 5, and in both Pamuk et al.[51] and Braveman et al.,[52] these socioeconomic gradients in health have been observed not only in the U.S. population overall, but within different racial/ethnic groups, demonstrating that the socioeconomic differences are not explained by underlying racial/ethnic differences. Indeed, most studies that have examined racial/ethnic differences in health after adjusting for socioeconomic factors have found that the racial/ethnic differences disappeared or were substantially reduced.[54–56] This does not imply that the only differences in experiences between racial/ethnic groups are socioeconomic; for example, racial discrimination could harm the health of individuals of all socioeconomic levels by acting as a pervasive stressor in social interactions, even in the absence of anyone's conscious intent to discriminate.[57,58] Furthermore, the black-white disparity in birth outcomes is largest among highly educated women.[59] Living in a society with a strong legacy of racial discrimination could damage health through psychobiologic pathways, even without overtly discriminatory incidents.[60–62]

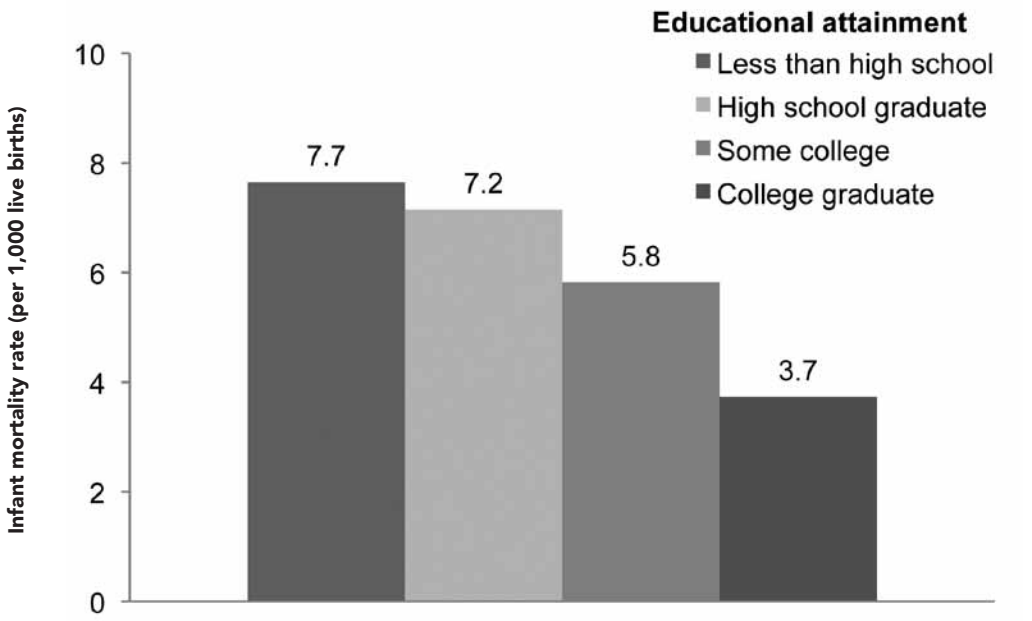
How do widespread and persistent socioeconomic gradients in health add to evidence that social factors are important influences on health? Strong links between poverty and health have been observed for centuries.[63–65] Observing a graded relationship (as opposed to a simple threshold, for instance at the poverty line) of socioeconomic factors with many different health indicators suggests a possible dose-response relationship, adding to the likelihood that socioeconomic factors—or factors closely associated with them—play a causal role. Although the effects of abject poverty on health are rarely disputed, not everyone concurs about the effects of income and education on health across the socioeconomic spectrum. Some have argued that income-health or education-health relationships reflect reverse causation (i.e., sickness leading to income loss and/or lower educational achievement).[66] Although ill health often results in lost income, and a child's poor

Figure 1. Life expectancy in the U.S. at age 25, by education and gender, 2006[a]



[a]Source: Department of Health and Human Services (US), National Center for Health Statistics. Health, United States 2011: with special feature on socioeconomic status and health. Life expectancy at age 25, by sex and education level [cited 2012 Nov 29]. Available from: URL: http://www.cdc.gov/nchs/data/hus/2011/fig32.pdf. Reported in: Braveman P, Egerter S. Overcoming obstacles to health in 2013 and beyond: report for the Robert Wood Johnson Foundation Commission to Build a Healthier America. Princeton (NJ): Robert Wood Johnson Foundation; 2013.

Figure 2. Infant mortality rate in the U.S., by mother's education, 2009[a]



[a]Source: Mathews TJ, MacDorman MF. Infant mortality statistics from the 2009 period linked birth/infant death dataset. Natl Vital Stat Rep 2013;61:1-28. Also available from: URL: http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_08.pdf [cited 2013 Feb 14]. Reported in: Braveman P, Egerter S. Overcoming obstacles to health in 2013 and beyond: report for the Robert Wood Johnson Foundation Commission to Build a Healthier America. Princeton (NJ): Robert Wood Johnson Foundation; 2013.

health could limit educational achievement, evidence from longitudinal and cross-sectional studies indicate that these do not account for the strong, pervasive relationships observed.[67] Links between education and health, furthermore, cannot be explained by reverse causation because once attained, educational attainment is never reduced.

The aforementioned evidence reflects associations that by themselves do not establish causation. However, the observational examples cited as illustrations are backed up by extensive literature employing a range of techniques (e.g., multiple regression, instrumental variables, matched case-control designs, and propensity score matching) to reduce bias and confounding due to unmeasured variables.[3,4,7,17,19] This knowledge base is also enriched by natural experiments,[3,36,68,69] quasi-experiments,[70] and some, albeit limited, randomized controlled experiments.[71–74] The overwhelming weight of evidence demonstrates the powerful effects of socioeconomic and related social factors on health, even when definitive knowledge of specific mechanisms and effective interventions is limited. Accumulated knowledge also reveals, however, that the effects of any given social (including socioeconomic) factor are often contingent on a host of other factors.[17,75] The third section of this article discusses challenges in studying the effects of socioeconomic factors that are relatively "upstream" (i.e., closer to underlying or fundamental causes)[76] from their health effects located "downstream" (i.e., near where health effects are observed).

MULTIPLE MECHANISMS EXPLAIN IMPACTS OF SOCIOECONOMIC AND OTHER SOCIAL FACTORS ON HEALTH

Despite countless unanswered questions, knowledge of the pathways and biological mechanisms connecting social factors with health has increased exponentially during the past 25 years. Mounting evidence supports causal relationships between many social—including socioeconomic—factors and many health outcomes, not only through direct relationships but also through more complex pathways often involving biopsychosocial processes.[77]

Some aspects of socioeconomic factors are connected to health via responses to relatively direct and rapid-acting exposures. For instance, lead ingestion in substandard housing contributes to low cognitive function and stunted physical development in exposed children;[78,79] pollution and allergens, also more common in disadvantaged neighborhoods, can exacerbate asthma.[80,81] Socioeconomic and other social factors also

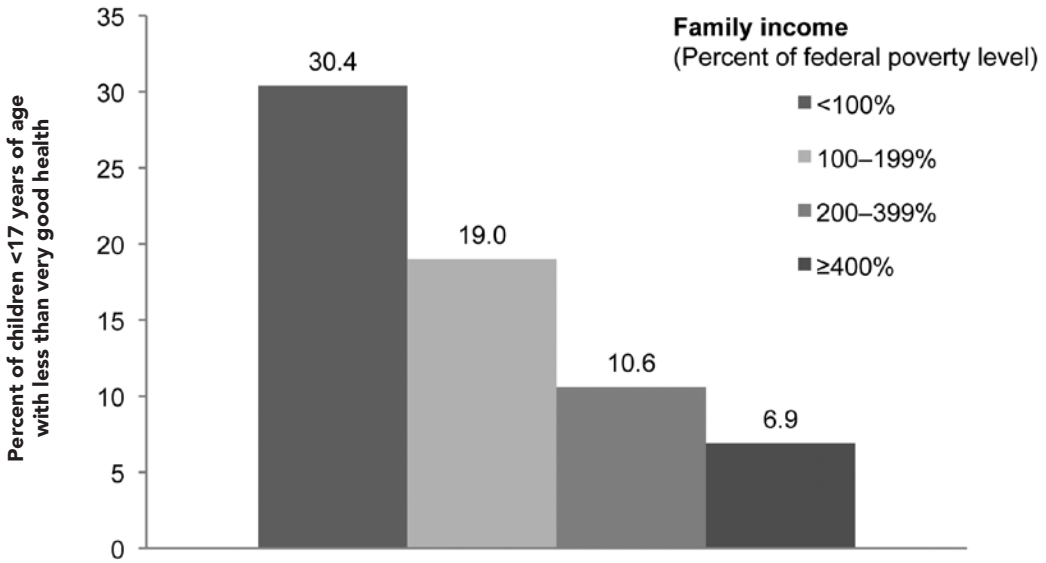
may contribute to worse health through pathways that play out over relatively short time frames (e.g., months to a few years) but are somewhat more indirect. Factors affecting the social acceptability of risky health behaviors are a case in point. For instance, exposure to violence can increase the likelihood that young people will perpetrate gun violence;[82] and the availability of alcohol in disadvantaged neighborhoods can influence its use among young people, affecting rates of alcohol-related traumatic injury.[83] Socioeconomic factors can influence sleep, which can be affected by work, home, and neighborhood environments, and which can have short-term health effects.[84,85] Working conditions can shape health-related behaviors, which, in turn, may impact others; for example, workers without sick leave are more likely to go to work when ill, increasing the likelihood of disease spread to coworkers or customers.[86]

In addition to these relatively rapid health impacts, the effects of socioeconomic and other social factors on health-related behaviors can influence disease outcomes that only manifest much later in life. Neighborhood socioeconomic disadvantage and higher concentration of convenience stores have been linked to tobacco use, even after adjusting for several individual-level characteristics, such as educational attainment and household income.[87] Lower availability of fresh produce, combined with concentrated fast-food outlets and few recreational opportunities, can lead to poorer nutrition and less physical activity.[88,89] The health consequences of the chronic diseases related to these conditions generally will not appear for decades.

The strong and pervasive relationships between socioeconomic factors and physical health outcomes can reflect even more complex and long causal pathways, which may or may not involve health behaviors as key mediators or moderators. Evans and Schamberg showed that the association between duration of childhood poverty and adult cognitive function appears to be explained not only by poverty-related material deficits, but also partly by chronic childhood stress.[90] Cutler et al. described widening mortality disparities by educational achievement that are not explained by behavioral risk factors such as tobacco use or obesity.[91] Children growing up in socioeconomically disadvantaged neighborhoods face greater direct physical challenges to health status and health-promoting behaviors; they also often experience emotional and psychological stressors, such as family conflict and instability arising from chronically inadequate resources. Adjusting for depression, anxiety, and other negative emotional states, however, has not completely explained the effects of social factors on health.[92]

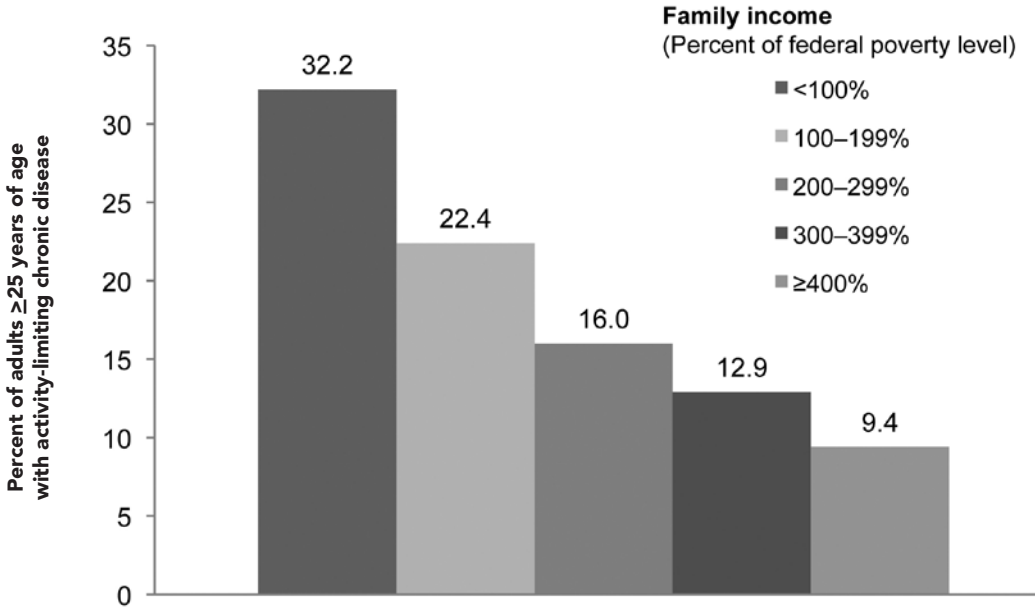
Several recent reviews[93–98] have described the biological "wear-and-tear" resulting from chronic exposure to social and environmental stressors, commonly

Figure 3. U.S. children aged <17 years with less than very good health, by family income, 2011–2012[a]



[a]Source: National Survey of Children's Health. NSCH 2011/2012. Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health [cited 2013 May 10]. Available from: URL: http://www.childhealthdata.org/browse/survey/results?q=2456&r=1&g=458. Reported in: Braveman P, Egerter S. Overcoming obstacles to health in 2013 and beyond: report for the Robert Wood Johnson Foundation Commission to Build a Healthier America. Princeton (NJ): Robert Wood Johnson Foundation; 2013.

Figure 4. Percent of U.S. adults aged ≥25 years with activity-limiting chronic disease, by family income, 1988–1998[a]



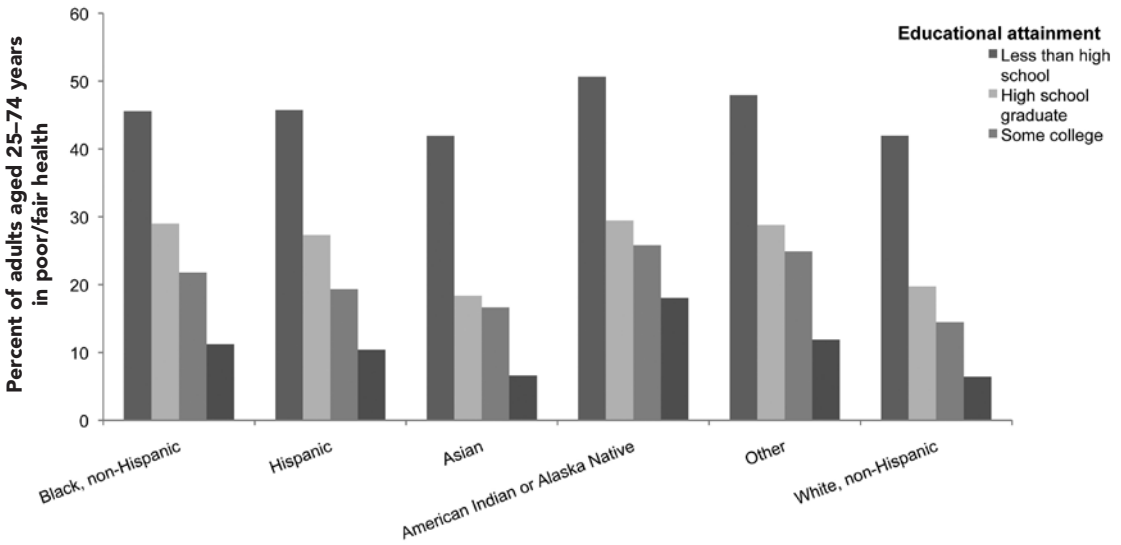
[a]Source: Analyses by Braveman, Egerter, Cubbin, Pamuk, and Johnson of data from the National Longitudinal Mortality Study, 1988–1998, first reported in: Braveman P, Egerter S. Overcoming obstacles to health: report from the Robert Wood Johnson Foundation to the Commission to Build a Healthier America. Princeton (NJ): Robert Wood Johnson Foundation; 2008.

referred to as allostatic load.[99] Allostatic load is a multicomponent construct that reflects physiologic changes across different biological regulatory systems in response to chronic social and environmental stress. Examples include observations that stress can induce pro-inflammatory responses, including production of IL-6[100] and C-reactive protein,[101] and that lower income and educational achievement contribute to higher blood pressure and unfavorable cholesterol profiles.[102] Physiological regulatory systems thought to be affected by social and environmental stressors have included the hypothalamic-pituitary-adrenal axis; sympathetic (autonomic) nervous system; and immune/inflammatory, cardiovascular, and metabolic systems.[93,95] These systems overlap peripherally and in the brain.

Another area of rapidly evolving knowledge involves the role of socioeconomic and other social factors in epigenetic processes that regulate whether genes are expressed or suppressed.[103] Evidence from primate studies suggests that social status can affect the regulation of genes controlling physiologic functions (e.g., immune functioning).[104] In addition, educational attainment,[105,106] occupational class (e.g., manual vs. non-manual work),[107] work schedules,[108] perceived stress,[109,110] and intimate partner violence[111] have all been linked with changes in telomere length.[112] Telomeres are DNA-protein complexes capping the ends of chromosomes, protecting them against damage. Telomere shortening is considered a marker of cellular aging[113] that is controlled by both genetic and epigenetic factors. Multiple biological mechanisms appear to be involved in causal pathways from social factors to health outcomes. For example, an allostatic load index combining information on multiple biomarkers of health risk appears to explain more of the impact of education on mortality than any single biological indicator alone.[114] Associations between psychosocial processes and physiology are further complicated by the effects of timing, such as when and for how long a stressor is experienced in an individual's lifespan.[115,116] Early-life socioeconomic disadvantage has been repeatedly associated with vulnerability to a range of adolescent and adult diseases,[117] independent of adolescent or adult socioeconomic status/position.[118–121] Overall, there appear to be both cumulative effects of socioeconomic and related social stressors across the lifespan, manifesting in chronic disease in later adulthood, and heightened effects of experiences occurring at particularly sensitive periods in life (e.g., before age 5). The physiologic effects of chronic stress is an area of active biological, psychological, and social research that seeks to explain the impact of many social factors on health outcomes.

Despite considerable evidence indicating important

Figure 5. Socioeconomic gradients in poor/fair health among adults aged 25–74 years within racial/ethnic groups in the U.S., 2008–2010[a]



[a]Source: Analyses by Cubbin of Behavioral Risk Factor Surveillance System survey data, 2008–2010, reported in: Braveman P, Egerter S. Overcoming obstacles to health in 2013 and beyond: report for the Robert Wood Johnson Foundation Commission to Build a Healthier America. Princeton (NJ): Robert Wood Johnson Foundation; 2013.

effects of social factors on health, however, not every individual exposed to socioeconomic or other adversity develops disease. Protective social factors, such as social support, self-esteem, and self-efficacy, may mitigate the deleterious effects of adverse social conditions.[92,95] Income and education have not predicted health as consistently among Latino immigrants in the U.S. as among other groups; hypothesized explanations have included protective factors such as social support or attitudes and norms that confer resilience.[122,123] Similarly, low income may have less impact on the health of individuals in settings in which basic needs—including food, housing, education, and/or medical care—are met by the state or family.[124] This may be due partly to access to needed goods and services through routes other than income, and also to an alleviation of insecurity about meeting basic needs. Income may have less health impact where there is less social stigma associated with having limited economic means. Genetics also may play a role in an individual's vulnerability or resilience to socioeconomic adversity: different individuals' biological responses to the same socioenvironmental trigger can vary markedly according to specific genetic polymorphisms.[125] At the same time, as noted, research has demonstrated that socioeconomic and related social factors can alter whether a deleterious (or protective) gene is expressed or suppressed.

The graded relationships repeatedly observed (and illustrated in Figures 1–5) between socioeconomic factors and diverse health outcomes may reflect gradients in resources and exposures associated with socioeconomic factors. They also may reflect the impact of subjective social status (i.e., where one perceives oneself as fitting relative to others in a social hierarchy determined by wealth, influence, and prestige).[126] A growing body of research in multiple disciplines—including psychology, neurology, immunology, education, child development, demography, economics, sociology, and epidemiology—examines the interplay of socioeconomic factors, psychological and other mediating factors, and biology. Evidence has clearly demonstrated that relationships between socioeconomic factors and health are complex, dynamic, and interactive; that they may involve multiple mechanisms including epigenetic processes that alter gene expression; and that, at times, they may only manifest decades after exposure.

CHALLENGES OF STUDYING HOW SOCIOECONOMIC AND OTHER UPSTREAM SOCIAL FACTORS AFFECT HEALTH

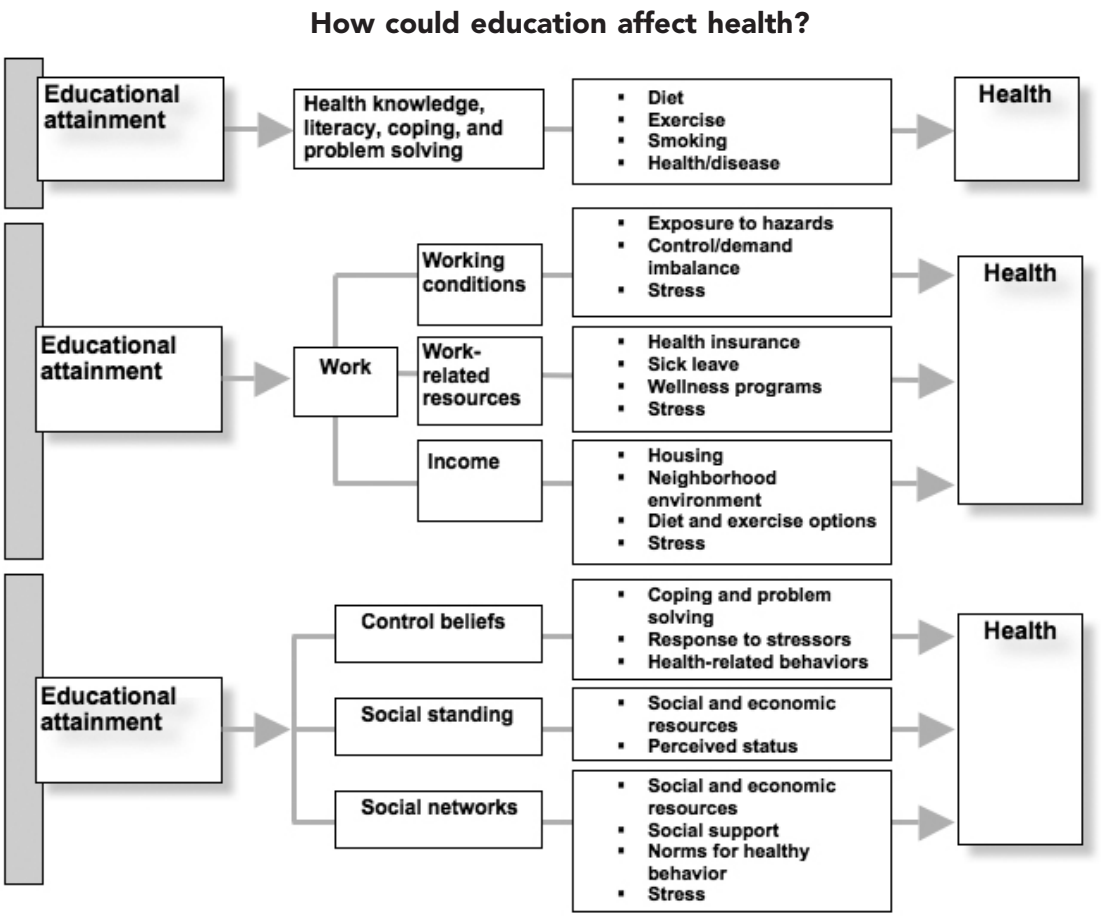
While great advances in documenting and understanding the social, including socioeconomic, determinants of health have been made, unanswered questions about the mechanisms underlying their effects on health are at least as plentiful as the answers we have to date. All

rigorous research is challenging, but research on the upstream social determinants of health (SDH) faces particular challenges, based in part on the complexity of the causal pathways and the long time periods during which they often play out.[17,127–131] Some of these barriers are illustrated by the following example.

Figure 6 presents very simply three general pathways through which education can influence many health outcomes, reflecting links that have been described in the literature. While there is not necessarily a consensus about each step depicted here, all are plausible in light of current knowledge, including biological knowledge.[132] The first pathway is widely accepted: education increases knowledge and skills and, thus, can facilitate healthier behaviors. The second pathway also is biologically plausible. However, while its left-sided branches (i.e., education leading to better, higher-paid work) are not disputed, subsequent links from income to health through various pathways, such as work-related benefits, neighborhood opportunities, and stress, are not typically considered as education effects. The third pathway depicts health effects of education through psychobiological processes such as control beliefs, subjective social status, and social networks, again based on existing literature.[123] Figure 6 illustrates two of the most daunting challenges facing research on the socioeconomic and other upstream determinants of health:

1. Complex, multifactorial causal pathways do not lend themselves to testing with randomized experiments. This diagram is greatly oversimplified: the pathways appear linear, and the diagram does not include the multitude of arrows representing how the factors depicted may interact with each other and with other variables not depicted, such as genetic and epigenetic factors. Despite the oversimplification, it illustrates how

Figure 6. Pathways through which education can affect health[a]



[a]Source: Egerter S, Braveman P, Sadegh-Nobari T, Grossman-Kahn R, Dekker M. Education matters for health. Exploring the social determinants of health: issue brief no. 6. Princeton (NJ): Robert Wood Johnson Foundation; 2011.

upstream socioeconomic determinants such as income, wealth, and education could exert their effects over complicated multifactorial pathways.[133] At each juncture, there are opportunities for confounding and interactions. A glance at this diagram should make it clear that this intricate series of causal relationships does not lend itself to testing with randomized controlled trials. Nevertheless, it may be possible to study small pieces of the causal web with randomized experiments, making incremental contributions to understanding the overall pathways.[17] Innovative approaches to modeling complex, dynamic systems are being developed to address these challenges; however, it is uncertain whether these systems will live up to expectations.[134]

2. There are long time lags for health effects to manifest. The links between social factors and health often play out over decades or generations; for example, chronic disease often takes multiple decades to develop. Although we may be able to use intermediate biomarkers (such as C-reactive protein or IL-6) or certain behaviors as proxies for health outcomes, it could be two decades or more after the relevant exposures (e.g., childhood adversity) before even these intermediate markers manifest. Few studies are able to follow participants for more than a few years. The long time lag between independent and dependent variables represents both a scientific and a political challenge. Funders and politicians want results within timeframes for which they can take credit. The Office of Management and Budget generally requires a five-year-or-less time window for assessing policy impact.

Another barrier to understanding the effects of social factors on health is the difficulty of obtaining information across multiple sectors (e.g., as education, planning, housing, labor, and health) and even across multiple programs within a given sector. Access to cross-sectoral information could improve our understanding[54] and ability to intervene effectively. However, cross-sectoral collaborations face multiple barriers, including differing priorities, funding streams, and timelines across agencies; overcoming these barriers will require a major shift in financial and political incentives.[135] Some institutions, nevertheless, have begun to encourage these collaborations. For example, the U.S. Department of Housing and Urban Development has developed a health council to incorporate health considerations into federal housing policy.[136] The Robert Wood Johnson Foundation (RWJF) Commission to Build a Healthier America has issued recommendations for several nonmedical care initiatives to improve health overall while reducing health disparities, including a strong emphasis on high-quality early child-care programs.[137] The Federal Reserve Bank has recently collaborated with RWJF to convene a series of national and regional forums to discuss intersections between community development and health improvement

CONCLUSIONS

Despite challenges, controversies, and unanswered questions, the tremendous advances in knowledge that have occurred in the past 25 years leave little room for doubt that social factors are powerful determinants of health. The consistency and reproducibility of strong associations between social (including socioeconomic) factors and a multitude of health outcomes in diverse settings and populations have been well documented, and the biological plausibility of the influence of social factors on health has been established. It is not surprising that exceptional examples of health indicators, settings, and subgroups in which health does not necessarily improve with greater social advantage can be found. There may be thresholds above which a higher degree of a given social factor (e.g., income) no longer yields better health. Exceptions would also be expected as the effects of any given factor are contingent upon the presence of myriad other factors—social, economic, psychological, environmental, genetic, and epigenetic. Considering the long, complex causal pathways leading from social factors—particularly upstream ones such as income and education—to health, with opportunities for countless interactions at each step, it is indeed remarkable that there are so few exceptions to the general rule.

The relative importance of social vs. genetic factors is often debated. The emerging awareness of gene-environment interactions, however, has drastically altered nature-vs.-nurture debates. Social and genetic causes of disease can no longer be seen as mutually exclusive. We now know that adverse genetic endowment is not necessarily unalterable, that a "bad" (or "good") gene may be expressed only in the presence of triggers in the social or physical environment, and that these environments potentially can be modified by social policies.

Despite gaps in current knowledge, the case for needing to address upstream socioeconomic factors is strong, and enough is known to inform interventions, which must be rigorously evaluated.[17] Given that SDH—including socioeconomic conditions such as income, wealth, and education—are by definition

outside the realm of standard medical care, what is the relevance to public health practitioners and medical care providers? Many public health practitioners have little experience in sectors outside public health-care delivery. Medical care providers, including nurses, physicians, and others, undergo intensive training in medicine, not in social work, and we believe in the power of medical care to heal, alleviate suffering, and save lives. Nevertheless, the knowledge indicating a crucial role for socioeconomic and related social factors in shaping health has become so compelling that it cannot be ignored insofar as public health and health-care personnel are committed to health.

Current knowledge suggests ways to collaborate with others to improve health outcomes for socially disadvantaged populations.[138] At a minimum, appreciation of some of the social factors that influence health-related behaviors and health status itself can help clinical providers develop more effective treatment plans.[139] Clinical and public health practitioners can strengthen routine procedures to assess and respond to social needs through referrals and/or on-site social and legal services.[140–142] Public health workers and clinicians also can develop health-promotion strategies that reach beyond individual clinical and social services to communities, to influence living and working conditions that are generally the strongest determinants of whether people are healthy or become sick in the first place.[143] They can participate in or promote research adding to the understanding of the mechanisms by which social factors influence health, and test which strategies appear most effective and efficient. Finally, clinicians and public health practitioners can be key resources for local, state, and national policy makers on the crucial issue of health equity for all Americans, including those facing the greatest social obstacles.

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