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The Social Determinants of Chronic Disease

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Abstract

This review article addresses the concept of the social determinants of health (SDH), selected theories, and its application in studies of chronic disease. Once ignored or regarded only as distant or secondary influences on health and disease, social determinants have been increasingly acknowledged as fundamental causes of health afflictions. For the purposes of this discussion, SDH refers to SDH variables directly relevant to chronic diseases and, in some circumstances, obesity, in the research agenda of the Mid-South Transdisciplinary Collaborative Center for Health Disparities Research. The health effects of SDH are initially discussed with respect to smoking and the social gradient in mortality. Next, four leading SDH theories—life course, fundamental cause, social capital, and health lifestyle theory—are reviewed with supporting studies. The article concludes with an examination of neighborhood disadvantage, social networks, and perceived discrimination in SDH research.

INTRODUCTION

This review article addresses the concept of the social determinants of health (SDH), its theoretic basis, and its application in selected studies demonstrating a causal link with chronic diseases. According to WHO, the social determinants of health are “the conditions in which people are born, grow, work, live, and age, and the set of forces and systems shaping the conditions of daily life.”¹ WHO finds that SDH encompass a wide array of subjects that include not only social behavior but topics as far ranging as health equity, global ecology, the global economy, and similar broadly defined areas.²

For the purposes of this discussion, however, SDH refers to SDH variables directly relevant to chronic diseases and, in some circumstances, obesity, in the research agenda of the Mid-South Transdisciplinary Collaborative Center for Health Disparities Research. The Mid-South region of the U.S. has the highest incidence of obesity, diabetes, heart disease, and cancer in the country.³ SDH in this context include social practices and conditions (such as lifestyles, living and work situations, neighborhood characteristics, poverty, environmental pollution, etc.); SES (income, education, and occupation); stressful circumstances; and racial

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discrimination, along with economic (e.g., unemployment, business recessions), political (e.g., government policies, programs, and public insurance benefits), and religious (e.g., piety, proscriptions against smoking and drinking) factors that affect the health of individuals, groups, and communities—either positively or negatively.⁴ Social determinants can have a causal role in fostering illness and disability but conversely can promote prospects for preventing disease and maintaining health.

Once ignored or regarded only as distant or secondary influences on health and disease, social determinants have been increasingly acknowledged as fundamental causes of health afflictions.^{5–7} There is evidence that assigning causation solely to biological anomalies has not been wholly successful in accounting for all of the relevant factors in a disease's pathogenesis and progression, especially in relation to the social behaviors and conditions that caused the person to acquire the disease in the first place.^{2–8} Social factors have thus been found to initiate the onset of health problems and in this way serve as a direct cause for a number of diseases. With respect to infectious diseases, there are numerous examples of social determinants having a key role in the onset and course of both local epidemics and larger pandemics, such as the black plague in the 14th century and Ebola in the 21st century.³

Importantly, the effect of social determinants is not limited to infectious diseases; it extends to chronic diseases as well, including cardiovascular disease, Type 2 diabetes, stroke, cancers, pulmonary diseases, kidney disease, and many other ailments.^{2,4,8,9} Several studies have found that the social context of a person's life determines the risk of exposure, degree of susceptibility, and the course and outcome of a disease—regardless of whether it is infectious, genetic, metabolic, malignant, or degenerative.^{2–17}

Social factors can initiate the onset of the pathology and in this way serve as a direct cause for a number of chronic diseases. Smoking, for example, is associated with more diseases than any other health-related behavior, as seen in its association with more than 21 chronic diseases, including at least 12 types of cancer, six types of cardiovascular disease, diabetes, chronic obstructive pulmonary disease, pneumonia including influenza, and others.^{8,18} It might seem that the causal factors are all biological in that it is the tar in smoke from tobacco that causes cancer, impairs blood circulation, and instigates other health problems. Yet, smoking cigarettes and inhaling tar is a learned experience that typically begins socially in the company of someone else instructing the novice.¹⁹ Though perhaps not all smokers begin smoking under another person's tutelage, it appears that almost all do. Growing up in a household where one or both parents smoke, having a spouse who smokes, and regularly socializing with smokers are all social situations producing an environment promoting smoking on the part of an individual. Thus, it is through social interaction that smoking-prone social environments are created that begin the path to lung cancer and various other tobacco-related diseases.

Smokers also show a characteristic social pattern that indicates tobacco use is not a random, individual decision completely independent of social influences. Rather, some people, especially those from socially disadvantaged circumstances, collectively express poor health habits like smoking and have greater exposure to the types of social situations that promote

this behavior.^{8,19,20} Smoking patterns, however, are not just about social situations that lead to smoking; they are also about socioeconomic factors that work against cessation (e.g., debt, stress, unemployment).

The result is that smoking today is unusual among people at the higher and middle levels of society and is concentrated among those toward the bottom of the social ladder. Individuals in higher socioeconomic groups were the first to adopt smoking in the early 20th century and other social classes followed, but growing publicity about the harmful effects of cigarettes in the 1960s led to a shift in smoking patterns over time as better educated and more-affluent groups began avoiding the practice.^{19,20}

According to the National Research Council and the Institute of Medicine, the most important social factors determining health are income, accumulated wealth, education, occupational characteristics, and social inequality based on race and ethnic group membership.¹⁰ These variables have direct effects on both unhealthy and healthy lifestyles, high- or low-risk health behavior, and on living conditions, food security, levels of stresses and strains, social disadvantages over the life course, environmental factors that influence biological outcomes through gene expression, and other connections to chronic diseases.

One of the strongest examples of the effect of social determinants of health is found in the Whitehall studies of Marmot et al.^{21,22} This research, involving several thousand British male civil government employees, uncovered a distinct social gradient in longevity in which—regardless of the cause of death—those with the highest occupational rank had the lowest percentage of deaths, which increased in a step-wise fashion the lower an individual's position in the rank structure of the organization. Those at the bottom were three times more likely to die than those at the top, especially from cardiovascular disease. Of interest was the fact that all the jobs were stable, white collar, provided security, were hazard free, and in a socialized system of free health care. There was a suggestion that if a virus was killing as many civil servants as the professional hierarchy seemed to be, the Whitehall buildings should be evacuated and closed.²³

Marmot and colleagues²² conducted a second study to confirm their results that included women and found the same pattern. As in the first study, each occupational category had higher mortality than the one above it in the social hierarchy until the top was reached. An interesting aspect of this research was verification of a social gradient linked to differences in hierarchy rather than hardship. When the social gradient in mortality is extended from the Whitehall studies to society generally, the pattern is the same: The upper class has the lowest mortality, the upper middle class the next lowest, and so on down the social scale until the lower class is reached who have the highest mortality. It is not just that people at the top of society live longer on average than those at the bottom, but also that the different classes have shorter lives than those above them and longer lives than those below them. Group differences are depicted as outweighing individual differences in producing health outcomes, but such differences are not caused just by a person's material circumstances. Rather, a host of other factors were identified as contributing to the gradient, namely, self-esteem, status differences, self-direction in work, control over one's environment, social capital, and sense of social support—all variables that decline in strength as one descends the social ladder.

There are numerous other examples of social factors acting as a powerful determinant of health outcomes, as seen in studies of end-stage renal disease,²⁴ breast cancer,²⁵ childhood obesity,²⁶ coronary heart disease,²⁷ and cardiometabolic health.²⁸ Research on the social determinants of health has evolved into an increasingly larger field of investigation, as seen in Table 1 listing the number of papers indexed in PubMed (MEDLINE) using the term social determinants. In 2006, only 88 such papers were published, compared with 1,024 in 2015 and 688 in just the first 7 months of 2016.

SELECTED SOCIAL DETERMINANTS OF HEALTH THEORIES

In addition to an expansion of social determinants research, there has been a corresponding effort to formulate theoretic perspectives explaining the dynamics of the relationship of such determinants with health and disease. Although there are several theoretic approaches that guide SDH research, four of the most commonly used psychosocial models in medical sociology were selected to briefly discuss in this section. These theories—life course, fundamental cause, social capital, and health lifestyle theory—were chosen because they are illustrative of both the social causes of health and the social factors shaping the distribution of these causes.³

Life Course Theory

Life course theory advances the proposition that people go through a sequence of age-based stages and social roles within particular social structures over the course of their lives.²⁹ This perspective suggests that socioeconomic disadvantages originating in childhood accumulate over the life course to disadvantage health in old age, whereas socioeconomic advantages over a person's life-time lead to relatively good health when elderly. It considers both the early origins of diseases whose symptoms are not obvious until later in life and the social processes that promote susceptibility to illness or avoidance of such afflictions. Life course theory takes the social and material environment, income inequality, stress, nutrition, lifestyles, gene-environment interaction, public safety, and various other factors into account as flexible pathways determining health outcomes over time.

Fundamental Cause Theory

Another major theoretic approach to the role of social factors in disease causation is fundamental cause theory developed by Link and Phelan.^{5,6} In order for a social variable to qualify as a fundamental cause of disease and mortality, Link and Phelan hypothesize that it must:

1. influence multiple diseases;
2. affect these diseases through multiple pathways of risk;
3. be reproduced over time; and
4. involve access to resources that can be used to avoid risks or minimize the consequences of disease if it occurs.

For example, SES influences multiple diseases in multiple ways, and the association has endured for centuries as people in higher social strata increasingly live longer and have

better health the further one goes up the class gradient. Link and Phelan et al. note that the level of socioeconomic resources a person has or does not have, namely money, education, status, power, and social connections, either helps protect one's health or promotes sickness and premature mortality.⁷ Race and gender, along with stressful life events and stress process variables such as social support are also important, as is a sense of control over one's life because people with such control typically feel good about themselves, cope with stress better, and have the capability and living situations to adopt healthy lifestyles.

Phelan and colleagues³⁰ confirmed their thesis that SES is a fundamental cause of mortality by finding a strong relationship between SES and deaths from preventable causes and a weaker relationship between SES and deaths from less preventable causes (e.g., arrhythmias and certain cancers, such as brain, liver, or prostate). People with higher SES had significantly higher probabilities of survival from preventable causes of death because they were able to use their greater resources to that end. Conversely, these resources were not as helpful when the causes of death were less preventable. Enhanced access to and effective use of resources (e.g., money, knowledge) served as the social mechanism allowing them to obtain greater longevity. Such resources also shape broader contexts affecting health such as employment, neighborhood conditions, and social networks.

When fundamental cause theory is reduced to its most basic proposition, it is the assertion that resources consisting of money, knowledge, power, prestige, and social connections are vital to maintaining a health advantage.⁷ An absence or shortage of these resources causes poor health outcomes and earlier deaths. People with resources have less risk of exposure to preventable diseases; when disease occurs, they are better able to achieve positive outcomes by employing their resources. Those lacking such resources not only have greater exposure to risk and more likelihood of the risk being realized but also a diminished capacity for preventing negative consequences. This is seen in studies of SES and use of statin drugs to reduce cholesterol levels,³¹ control of blood sugar levels by diabetics,³² and kidney transplants.³³

Social Capital

Social capital is a term for the benefits that accrue to individuals through their participation in cohesive groups or social networks.³⁴ These benefits come in the form of social relationships that can be used to support the individual in times of need, as well as provide access to group resources.^{34–36} Social capital differs from other forms of capital, such as economic capital (financial resources) and human capital (properties of the individual). As a community-level resource, social capital represents the social investments people make through their group/network memberships, including online groups and cybernetworks. The more invested in a group or network, the more people benefit from a sense of belonging, shared norms, reciprocity, and trust.

As a concept, social capital has both subjective (cognitive) and objective (structural) components. Its subjective element is the positive feeling stemming from belonging to a community that offers social support and promotes a sense of well-being. The objective component is the actual provision of assistance when in need, such as advice, looking out for one another, help when sick, law enforcement, options for emergency financial support, and

the establishment of community medical and social welfare services. The notion of social capital, consequently, is that of resources embedded in a neighborhood or community structure beyond the level of the individual that the person can draw on to improve his or her life situation, including health.

Social capital affects health in multiple ways: through a direct extension of resources to an individual via reciprocity exchange (e.g., caregiving, transportation to medical appointments, financial assistance to access medical services), through its effect on health-related behaviors (e.g., tobacco and alcohol use, diet, exercise), or by its impact on other social determinants, such as education or employment. Social capital also affects health by mitigating the threat of stress-inducing circumstances.

An important mechanism through which social capital influences health is through the capability of cohesive groups to undertake health-promoting collective action or to enforce social norms and prevent unhealthy behavior. Referred to as “collective efficacy,”³⁷ this cohesion allows group members to collectively pursue health benefits, such as passing a non-smoking ordinance in their town, lobbying for the placement of bike lanes and farmers markets, or working to prevent drug abuse. Finally, social capital influences health through the diffusion of important health-related information or health-promoting innovations within the network.³⁷

Several studies show the effects of social capital on health, both for individual- and population-level outcomes. For example, social capital is important for self-management of chronic disease regardless of socioeconomic background³⁸ and fosters adherence in care regimens involving diabetes,³⁹ chronic obstructive pulmonary disease,⁴⁰ hemodialysis,⁴¹ and use of long-term metered-dose inhalers.⁴² Moreover, living in a neighborhood with high collective efficacy has been correlated with better self-reported physical health⁴³; additionally, participation in voluntary organizations has been associated with a better BMI and emotional health,⁴⁴ whereas social cohesion has been linked to improved depressive symptoms⁴⁵ and positive health-related behaviors.⁴⁶ Neighborhood social capital has also been linked to neighborhood mortality rates after adjusting for neighborhood material deprivation⁴⁷ and explains a significant portion of mortality across the U.S. after controlling for median income and poverty rates.⁴⁸

Although the majority of public health literature has given preference to the social cohesion-based perspective,⁴⁹ the network-based approach emphasizes aspects of social capital that are critical for health.⁵⁰ For example, it recognizes the potential for inequality in social capital, as some social networks are more powerful than others. It also allows the possibility for a negative effect of social capital, when the social network is a source of unhealthy influence.

Health Lifestyle Theory

Health lifestyle theory maintains that lifestyles tend to cluster in particular patterns reflecting distinct differences by SES, gender, and other social variables.^{8,51,52} These patterns are shaped from the top down by social structural influences and living conditions that determine the choices available and the social codes (social rules that tell the chooser in

particular social groups/ classes what is appropriate or inappropriate) for choosing.⁵³ Social structures can therefore channel health lifestyle choices down specific pathways as opposed to others that could be selected. People may have options, but generally choose along class lines and in accordance with other structural influences relevant to them.⁵⁴ This theory is based on the premise that health lifestyles are not the uncoordinated behaviors of disconnected individuals, but are personal routines that merge into an aggregate form characteristic of specific groups and classes that act back on individuals to influence a continuance of their practices.

Health lifestyle theory^{8,51,52} states that structural variables, namely class circumstances; age, gender, and race/ ethnicity; collectivities (social networks associated with kinship, religion, politics, the workplace, and others); and living conditions (e.g., quality of housing, access to basic utilities, neighborhood facilities, public safety) provide the social context for socialization and experience that influence life choices. These structural variables also collectively constitute a person's life chances (the chances one has in life to achieve one's goals, needs, and desires). Choices and chances interact and commission the formation of dispositions to act (a habitus), leading to practices (action), involving alcohol use, smoking, dietary habits, and other health-related actions. Health practices constitute patterns of health lifestyles, whose re-enactment results in their reproduction (or modification) through feedback to the habitus.

The habitus is a term for an individual's dispositions to act in ways that are practical and usually consistent with the socially approved norms and behavioral pathways of the larger social order or some class or group therein.^{51,52} Health lifestyle theory has been used to show how SES influences body weight,⁵⁵ identify symptoms prompting patient-initiated physician consultations,⁵⁶ and explain premature female mortality.⁵⁷

OTHER SOCIAL DETERMINANTS OF HEALTH APPLICATIONS

Although it is beyond the scope of this paper to explore the entire literature of SDH research, the authors additionally review three major areas of current SDH research to illustrate their relevance as social determinants: neighborhood disadvantage, social networks, and perceived discrimination.

Neighborhood Disadvantage

Neighborhood disadvantage refers to deteriorated living conditions at the neighborhood level as well as other unfavorable indicators, such as residential instability, high rates of female-headed households, indigent populations, and low levels of perceived collective efficacy and cohesion.^{44,58} It is the characteristics of neighborhoods themselves that extend beyond the individual qualities of the people who live there that have been shown to affect levels of health and mortality. These characteristics involve much more than the quality of housing, water, air and the like in such neighborhoods, but also include fear, crime, a lack of personal safety, lack of heat on cold days or air conditioning on hot days, trash and litter on streets and alleys, rundown buildings, graffiti, visible alcohol and drug use on streets, lack of shops, restaurants, and other amenities, and concentrated poverty. Such conditions promote

depression and demoralization and function as multiple social mechanisms harmful to physical and mental health.⁵⁹

Importantly, neighborhood disadvantage has been shown to be a determinant of health independent of individual-level SES variables for a variety of factors, including drug use,⁶⁰ self-reported health, physical functioning, and the presence of chronic health conditions, such as high blood pressure, arthritis, and asthma,⁵⁹ along with lessened ability to obtain health care generally.⁶¹ Obesity also has a connection to neighborhood disadvantage as it has been found that people in such neighborhoods have significantly higher levels of obesity, and greater neighborhood obesity, in turn, signified that other people living there were also at greater risk for being obese.⁶²

Social Networks

A social network refers to the social relationships a person has during day-to-day interaction, which serve as the normal avenue for the exchange of opinion, information, and affection. Typically, the social network is composed of family, relatives, and friends that comprise the individual's immediate social world, although the concept of a social network can be expanded to include increasingly larger units of society. The influence of the social network on health can be either good or bad, depending on the network's norms, values, and cultural background. That is, social networks can be protective toward an individual's health⁶³ or, conversely, influence individuals to engage in risk behavior.⁶⁴ The role of the social network is to suggest, advise, influence, or coerce an individual into taking or not taking particular courses of action. This is seen in studies of obesity and smoking by Christakis and Fowler^{65,66} based on data from the Framingham Heart Study. They found that obese people were highly likely to have social networks of family and friends who were similarly obese people with shared outlooks and that smoking behavior likewise spreads through ties in groups of interconnected people. The nature of personal ties within a social network is therefore important for a person's weight, while people who stopped smoking successfully were embedded in social networks that stopped smoking together. Those who still smoked and remained in the network were more likely to be found at the periphery of the group, rather than the center. The findings suggested that decisions to cease smoking were not made solely by isolated individuals but reflected collective choices made by groups of people connected to each other.

Perceived Discrimination

Perceived discrimination has been found to be a prominent SDH for members of racial, ethnic, gender, or other minority groups.^{67,68} Perceived discrimination predicts a number of negative health outcomes, including increased hypertension⁶⁹ and worse women's health,⁷⁰ child health,⁷¹ birth outcomes,⁷² self-reported health,⁷³ heart disease,⁷⁴ and other chronic health conditions.⁷⁵ These adverse outcomes are typically attributed to two types of mechanisms. The first is chronically elevated stress (i.e., allostatic load) from exposure to discrimination, which compromises the ability of the body to fight disease and leads to dysregulation of multiple body systems.

The second is the reduced ability of individuals who experience discrimination to engage with institutions that provide health-benefiting resources and to deploy these resources to protect and improve their own health and the health of their family members. People who report discrimination in health care are more likely to postpone medical tests and treatment⁷⁶ and underutilize preventive care and health services.^{77,78} They have higher levels of medical mistrust and are less likely to follow physicians' recommendations.⁷⁷ Patients who report discrimination also report poorer communication with their healthcare providers, worse quality of health services,^{75,76} and lower satisfaction with care.⁷⁷ Findings relying on measures beyond patient reports, such as chart reviews, administrative data, and clinical vignettes, generally corroborate that the quality of care delivered to patients from minority and underrepresented groups tends to be lower, regardless of the measure used, the setting in which care takes place, or the patient's health, insurance status, and socioeconomic background.⁷⁸

CONCLUSIONS

It is already clear from research on SDH that the debate over whether or not social factors are fundamental causes of health and disease is essentially over. A large body of research currently shows that society can make you sick or promote your health; the next step is to refine the causes and consequences of this phenomenon. To that end, the methodologic approaches and research findings of the Mid-South Transdisciplinary Collaborative Center for Health Disparities Research will be discussed in the articles to follow in this special issue. Their focus is on SDH with respect to obesity and obesity-related chronic diseases.

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Table 1Papers Indexed in PubMed (Medline) Using the Term “Social Determinants,” 2006–2016^a

Year	Number of papers
2006	88
2007	112
2008	129
2009	203
2010	265
2011	329
2012	364
2013	635
2014	942
2015	1,024
2016 (Jan–July)	688 (Jan–July count)

^aSource: www.ncbi.nlm.nih.gov/pubmed, accessed August 16, 2016.

All article types. The term may appear in any field.

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