

The Importance of Community Development For Health and Well-Being

S. Leonard Syme and Miranda L. Ritterman

School of Public Health

University of California, Berkeley

A New Perspective On Health Promotion And Disease Prevention

Few topics are more important to health than community development. At first, this assertion seems a wild exaggeration when considered in relation to other important contributors to health, such as high-quality medical care, healthy behavior, and good genetic stock. However, substantial evidence reveals that environmental and community forces also are important determinants of health. This observation is critical for those involved in the development of affordable housing and enhanced community facilities for people living in low-income neighborhoods. The evidence now shows that no matter how elegantly wrought a physical solution, no matter how efficiently designed a park, no matter how safe and sanitary a building, unless the people living in those neighborhoods can in some way participate in the creation and management of these facilities, the results will not be as beneficial as we might hope. It turns out that, for maximum benefit, physical improvements must be accompanied by improvements in the social fabric of the community.

The French sociologist Emile Durkheim in 1897 conducted one of the earliest, and now classic, studies on the importance of the role that community social forces play in the health of the individual (Durkheim, 1951). In his work on suicide, Durkheim noted that, in conventional thinking, the causes of suicide must be found within the individual: a person's personal demons, failures, aspirations, and dashed hopes. Yet Durkheim noted that suicide rates were dramatically higher among certain groups and communities and that these differences persisted over time even as individuals entered and left those communities. To explain this difference among group rates, Durkheim argued that convention falters and one must refer to community factors. He reasoned that if different groups have different suicide rates, something about the social organization of the groups may play a role in encouraging or deterring individuals from committing suicide. This social force would not explain why particular individuals committed suicide, but it would explain why suicide rates were higher or lower in certain groups. Durkheim's research led him to conclude that the major factor affecting suicide rates was the degree of social integration of groups. Today we use terms such as "social capital" to refer to this concept that Durkheim introduced over a hundred years ago.

Many years later, another classic study led to the same conclusion. In that study, Haan, Kaplan, and Camacho showed that people living in a federally designated poverty area in

Alameda County, California, experienced higher age-, race-, and sex-adjusted mortality rates over a nine-year follow-up period compared to people living in a nonpoverty area (Haan, Kaplan, & Camacho, 1987). That finding in itself was not surprising. What was surprising is that these differences in mortality rates persisted even after considering a wide range of demographic, behavioral, social, psychological, medical insurance, and other health characteristics. Haan and colleagues concluded that qualities of the social environment contributed to higher or lower mortality rates independently of individual factors. These findings, generated in 1987, have held fast nationally since then (Kaplan, Pamuk, Lynch, Cohen, & Balfour, 1996; Kennedy, Kawachi, & Prothrow-Stith, 1996; Lynch, Smith, Kaplan, & House, 2000).

The issue of medical care deserves to be considered in more detail in light of current debates concerning community development and health. Many people feel that the major inequities we observe in health among different groups in our society could be substantially reduced if everyone had equal access to good-quality, affordable medical care. It is difficult to challenge this seemingly obvious contention. Nevertheless, the distinguished scholar Thomas McKeown did just that. He wrote an influential book in 1976 showing that the dramatic decline since 1900 in overall mortality in both Britain and the United States could not be explained by the introduction and use of medical interventions (McKeown, 1976). Indeed, he said, many medical measures against disease (both chemotherapeutic and prophylactic) were introduced several decades after a marked decline in mortality from those diseases had already occurred. In the following year, McKinlay and McKinlay wrote a paper citing five diseases that indeed did benefit from medical intervention: influenza, pneumonia, diphtheria, whooping cough, and poliomyelitis (McKinlay & McKinlay, 1977). They noted, however, that even if the entire decline in these diseases was attributable to medical measures, at best they accounted for only 3.5 percent of the total decline in mortality. In assessing these statistics, McKeown argued that most of the decline in mortality since the second half of the nineteenth century was due to improvements in hygiene and to rising standards of living, especially improved nutrition (McKeown, 1979). Since many of the diseases were primarily infectious in origin, he argued that altering environmental conditions could have an important impact on the occurrence of these diseases.

With the decline of many infectious diseases today, noninfectious diseases such as heart disease, cancer, and diabetes have become the major source of morbidity and mortality in our society. It is easy to think of environmental conditions as being more important than medical care in the production of many infectious diseases, but it is not as easy to think of noninfectious diseases in the same way. We tend to think of noninfectious diseases as caused by personal behavior choices and therefore think that good-quality individual medical care is more important than some generalized environmental intervention in the prevention and treatment of these diseases.

This individual medical-care approach to disease prevention shaped the health policies of the British government at the end of World War II. At the time, there was widespread acknowledgment that major health inequalities existed in Great Britain and the govern-

ment made a commitment to reduce these differences by providing first-rate medical care to everyone regardless of ability to pay. The National Health Service (NHS) was an ambitious and expensive program designed specifically to reduce these inequalities in health. In 1980, 32 years after the NHS was organized, an expert committee chaired by Sir Douglas Black found that providing good medical care to everyone, free of cost, had improved the overall health of the country in terms of improved mortality rates. But it also found that providing such care had no effect at all on widespread health inequalities. The committee concluded instead that the main cause of these inequalities was poverty, and that to tackle these inequalities the gap between persons in the upper class and lower class would need to be narrowed. In 1998, 50 years after the establishment of the NHS, another committee, this one chaired by Sir Donald Acheson, concurred with this finding (Acheson, 1998). Canada had reached the same conclusion (Evans, Barer, & Marmor, 1994). Medical care is obviously important for all of us, but it will not solve inequalities in health.

This point was emphasized in the Report of the World Health Organization Commission on Social Determinants of Health, which was published in 2008 (World Health Organization, 2008). In 2009, Secretary General Ban-Ki Moon summarized one of the major findings from this report in his address to the UN Economic and Social Council:

Deep inequities in health outcomes—the unfair and avoidable differences in health status seen within and between countries—persist. For example, differences in life expectancy between the richest and poorest countries exceed 40 years. The lifetime risk of maternal death in Ireland is 1 in 47,600; in Afghanistan it is 1 in 8. Even within a given country, inequities can be great. Maternal mortality is three to four times higher among the poor compared to the rich in Indonesia. Although some of the inequities in health outcomes are due to differences in access to health services, the majority is attributable to the conditions in which people are born, grow, live, work, and age. In turn, poor and unequal living conditions are largely the result of poor social policies and programs, unfair economic arrangements, and politics driven by narrow interests.

Secretary General Moon's emphasis on governmental policies, economic, structural, and institutional arrangements, and narrow political interests highlights one of the main deficiencies in the current public health model. The model that dominates most public health work today first identifies the risk factors of a disease and then develops interventions to reduce them. There are three problems with this model. First, we have not done a good job in identifying disease risk factors and it is doubtful that more and better-designed research will improve this situation. An entirely new approach is needed. Heart disease provides a clear case of the problem we face. Coronary heart disease is the number-one cause of death in the United States and rigorous research has been done for over 50 years to identify the risk

factors involved (Kaplan & Keil, 1993; Nieto, 1999; Syme, 1996). Many of the risk factors have now been identified, including cigarette smoking (Samet, 1990), high lipid levels (Gordon et al., 1989), hypertension (MacMahon et al., 1990), obesity (Hubert, Feinleib, McNamara, & Castelli, 1983), physical inactivity (Jennings et al., 1986), and diabetes (Stamler, Vaccaro, Neaton, & Wentworth, 1993). Taken together, all the risk factors that have been identified account for less than half of the heart disease that occurs in the United States (Chang, Hahn, Teutsch, & Hutwagner, 2001).

While the risk factors that have been identified obviously are important, it is disappointing, and surprising, that they do not explain 50 percent of disease that does occur. It is unlikely that important risk factors have been missed because they would have to be very powerful indeed to account for this other 50 percent. The problem we see for coronary heart disease is similar to the problems we have for many other diseases as well.

The second problem with the model is that even when disease risk factors are identified, it is often difficult to get people to change their behaviors to lower their risk. Many excellent intervention studies have been done with high-risk individuals to help them lower their risk and these studies, almost without exception, have failed to accomplish their goal (Minkler, 1999). A few years ago, one of us chaired a committee at the Institute of Medicine of the U.S. National Academy of Science to examine the success of our intervention programs. The 500-page report concluded that while some people do follow our advice, overwhelmingly most do not. This is especially disappointing because while some individuals do not do well in our intervention programs, many make these changes on their own without our help.

One reason for our failure is that public health workers are determined to focus on problems that interest them as researchers and not on the problems of concern to individuals. An illustration of this difficulty is provided by a smoking cessation project we directed in the city of Richmond, California, a few miles north of Berkeley. The project was intended to change the way smoking was perceived in Richmond. It was designed as a community project in which every neighborhood would have a block captain. We would also involve the business community, the schools, and community groups. Our intent was to change the climate in Richmond with regard to smoking and to challenge public attitudes toward the acceptance and attractiveness of smoking.

We obtained a substantial grant for this project from the National Cancer Institute after it did a lengthy and detailed project site visit. The conclusion of the review committee was that the proposed design and research team met the most rigorous and demanding standards of excellence. The project that was subsequently implemented was executed in an exemplary manner for five years. At the end of the five years, we compared the results we achieved in smoking cessation in Richmond to the results observed in our two comparison communities: Oakland and San Francisco. To our dismay, we observed no differences in smoking cessation rates.

This failure is not unique. Most intervention projects of this kind have failed to achieve intended results. Naively, we thought we had done a better job than others. On reflection,

we came to the following conclusions: Richmond is a poor city with high rates of unemployment, crime, and drug use. It also has heavy levels of air pollution from nearby oil refineries. At the time, there were few health facilities. And our research team descended on this troubled community with a brilliant plan to do a smoking cessation project! It is doubtful that smoking was high on the priority list of people in this community, but our team paid little attention to that. Even if we had asked the citizens of Richmond about their priorities, it is unlikely that we would have taken them seriously because, after all, we at the university were the experts.

The general problem we face is that specialists in such fields as health, city planning, and finance have a solid level of expertise to share with people regarding their life situation. We have well-researched messages to convey. But people have lives to lead and have concerns that may or may not be in accord with those imagined by the experts. A wide gap often exists between our expertise and the concerns of the communities or groups that we target.

The third problem with the current model is the most challenging. Even if many individuals were successful in changing their behavior to lower their disease risk, new people would continue to enter the at-risk population at an unaffected rate because we have not dealt with the fundamental social forces in the community that caused the problem in the first place. Our current model is firmly focused on individuals. We continue to study individuals and their diseases and their risk factors even though it is clear that their problems are for the most part a consequence of these larger environmental, community, and social forces.

Even in the face of these fundamental and overriding social forces, it remains difficult to convince researchers about their importance. We emphasize this point in an introductory class we give in the Graduate School of Public Health at Berkeley. We tell students a fictitious story about a curvy road in the mountains where, at one point, cars fall off a cliff at a high rate. The cars crashing at the bottom of the mountain cause severe physical injuries. The head and spinal-cord injuries that occur are serious and require skilled medical attention. Unfortunately, the medical care at the bottom of the mountain is rudimentary and not appropriate for the degree of care that is needed. Thus, the injured must be transported long distances by helicopter or ambulance to get help.

We then propose that a state-of-the-art health promotion and injury prevention program be developed for this road. First, a hazard assessment and barrier program will be developed that will prohibit certain groups from driving on this road. Certain elderly or people with vision and physical problems will be directed to an alternative road. Those drivers who are permitted to proceed will have to submit to a behavioral intervention: a safe-driving course. In addition, an environmental intervention will be developed: car manufacturers will be required to reinforce and strengthen cars before they can use the road. Finally, a state-of-the-art medical facility will be built at the bottom of the cliff. This new facility will have a top-notch medical staff of neurosurgeons, orthopedists, and other specialists. In our model, all economic barriers for care will be removed so that everyone has universal access and everyone will receive culturally appropriate medical treatment with language translation

help when necessary. In short, everything will be done that is now being recommended in first-rate health promotion and disease prevention programs.

One student in the class will eventually raise his or her hand and quietly ask, “How about fixing the road?” That student is then attacked by the professor, who responds by asking how they can permit the diversion of funds from critically injured and bleeding people to do a highway construction project. Eventually, another student will tentatively suggest that if we do not accomplish the highway work, people will continue to fall off the road. Everyone in the class eventually agrees that a truly effective health promotion program must take account of the fundamental forces that caused the problem in the first place: fix the road. This hard-won resolution is difficult to achieve because our attention is inevitably drawn to the injured individuals and it is difficult to talk about some vague prevention programs that will be of potential value in the future.

Prevention is a difficult concept to deal with when we are confronted with sick and dying people. Focusing on the environment is challenging when the presumptive causes of illness seem immediately apparent (cigarette smoking, obesity, physical inactivity), while environmental causes may lie below our threshold of perception and may seem remote and less urgent. It may be difficult to think seriously about environmental forces, but we really have no choice if our goal is to improve the health of communities and the nation.

It is all well and good to suggest that researchers pay attention to prevention in the context of environmental, community, and social forces, but it is not as easy to specify what precisely it is about these forces that can be intervened upon to make a difference for health. To this point, we have not even attempted to define these terms. In using these terms, we have attempted to emphasize a perspective that contrasts with the dominant approach now used in the health field, an approach focused almost exclusively on the individual. Our use of these terms is intended to describe many different conditions and influences under which any person or living thing grows and develops. These terms have been used to describe many phenomena, including the air we breathe, the water we drink, the geographic regions and buildings in which we live, the groups to which we belong, and the climatic conditions that we experience. While one can distinguish between the human-made environment, the natural environment, and the social and cultural environment, none of these aspects exists independently of the others. The environment is the result of the continuing interaction between natural and human-made spatial forms, social processes, and the relationships between individuals and groups. In spite of the fact that we are dealing with a complex and interconnected set of influences, it nevertheless would be useful to provide at least one example of what could be accomplished by focusing on the environment.

Developing A Model Focused On Environments

Research on the link between social class and health provides a convenient example for a new model. Since the beginning of recorded history, individuals in a low social-class position have higher rates of virtually every health condition that we know about (Antonovsky, 1967;

Haan, Kaplan, & Syme, 1989; Marmot, Shipley, & Rose, 1984; Marmot et al., 1991). This observation holds whether one classifies individuals in terms of income, wealth, occupation, prestige, residence, or education (Adler et al., 1994). This observation is also seen whether or not one relies on objective or self-reports of social-class position (Singh-Manoux, Adler, & Marmot, 2003; Singh-Manoux, Marmot, & Adler, 2005). More relevant for the purposes of this paper, there is a patterned regularity to these rates: these differences in health by social class persist over the years even as individuals come and go from the population (Kaplan, 1996). The social circumstance of being in a lower social position generates a higher rate of many diseases and conditions over and above individual characteristics.

What is it about a lower social-class position that results in worse health? Is it money, or lower levels of education, or inadequate nutrition, or inaccessible medical care, or unhealthy or unsafe jobs, or contaminated or crowded housing? It is of course impossible to separate these influences since they are inextricably interrelated. One consequence of this complexity is that health researchers have not seen social class as a sensible target for intervention efforts. Since one cannot with confidence target one or another facet of social class for intervention, it is too complicated a phenomenon and not one worth fussing about. The predominant view has been that, short of revolution, social classes will always be with us because nothing can be done to eliminate them; thus, it is more useful to work on topics that are amenable to intervention, such as diet, smoking, and physical activity. As noted earlier, these personal-level targets of intervention have not yielded good results and, even if they did, these interventions would have little effect in stemming the flow of new individuals into the at-risk population. The result of all this research is that until recently a major social determinant of disease has been ignored as a focus for intervention.

The breakthrough in this difficult dilemma came about through the work of Marmot in his study of 17,530 civil servants in the Whitehall section of London (Marmot, Rose, Shipley, & Hamilton, 1978). Marmot observed a fourfold difference in rates of coronary heart disease between those at the top and those at the bottom of the occupational hierarchy. When he adjusted these findings by accounting for such important coronary heart disease risk factors as smoking, hypertension, and high serum cholesterol values, the difference in rates between those at the top and those at the bottom fell to 2.6. Of course this is still a major and important difference. This finding was what would have been expected. What was not expected was that he observed a gradient of disease from the top to the bottom of the civil-service occupational hierarchy. Thus, he found that workers at step 2 of the hierarchy, one step from the top, professionals and executives, doctors and lawyers, had rates of disease twice as high as those above them, the directors of the civil service agencies. And the rates of coronary heart disease progressively increased as one went down the hierarchy.

These findings are important because they force us to think about determinants of disease beyond simply looking at poverty, since civil servants at higher levels are not poor, nor do they have poor education, poor nutrition, poor housing, or unsafe jobs. Marmot argued that something else must be influencing health even near the top of the social-class

hierarchy. Subsequent research has revealed that the gradient exists not only for coronary heart disease but also for every disease studied in this British civil-service cohort (Marmot et al., 1991; Singh-Manoux et al., 2005). Later it was also found that this gradient exists beyond the British civil service. It has now been observed for virtually every disease in every industrialized country in the world (Wilkinson & Marmot, 2003; Adler, Boyce, Chesney, Cohen, Folkman, Kahn, and Syme, 1994).

One major hypothesis that has been suggested to explain this phenomenon involves the concepts of participation and control. The lower an individual is in the hierarchy, the less opportunity there is to control one's destiny, to influence the events that impinge on one's life (Syme, 1989). Importantly, we now have evidence that having less control over one's destiny actually influences biological processes that make us more vulnerable to a wide range of different diseases (Bosma, Marmot, Hemingway, Nicholson, Brunner, & Stansfeld, 1997; Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981; Karasek & Theorell, 1990; Stansfeld, Fuhrer, Shipley, & Marmot, 1999). This is a revolutionary idea in the health field. Almost all the research and training that is done in the health field is oriented toward one or another disease. The National Institutes of Health sponsors the overwhelming majority of research and training in the United States and it is organized primarily around a variety of clinical diseases. Its emphasis reinforces a narrow focus on issues of concern to individuals. This way of dividing things up is helpful in the study and treatment of individual diseases, but it is not at all useful in understanding population health. Infectious disease epidemiologists have established a more useful way of studying disease by categorizing diseases as being waterborne, food-borne, airborne, and vector-borne. These categories were not useful in the treatment of individual patients, but they were exactly what was needed for the prevention of disease. They told us where the disease was coming from and where prevention efforts should be directed. We have no similar classification scheme for the noninfectious diseases of concern today.

Such research leads us to entertain the idea that when people are not able to participate in influencing the life events they care about, they are more susceptible to a wide range of disease risk factors. However, we must determine why disease-specific risk factors only sometimes result in disease. These risk factors take a toll on people only when they are vulnerable to them, only when their immune systems are compromised by stress due to a lack of empowerment. These notions are only hypothetical at this point, but the empirical evidence we have to date suggests they are reasonable ideas.

Summary and Conclusions

The question, then, is how to design an environment that accounts for all of this information. In the mid-nineteenth century, city planning and development policies were primarily intended to mitigate the most unpleasant effects of industrialization and urbanization: the dirt, dilapidation, overcrowding, and unsanitary conditions in industrial cities. Although this approach still makes some sense, it seems inappropriate to continue uncritically and extend

these policies as priorities for the twenty-first century because they do not take into account at least three new circumstances. First, sanitary programs in the nineteenth century were primarily directed toward, and had a major impact on, the infectious diseases that decimated populations at the time. These diseases are no longer the main causes of morbidity and mortality in industrialized nations. The main causes of disease today include conditions not directly related to sanitation, such as coronary heart disease, stroke, cancer, mental illness, accidents, and suicide. Second, the development of modern industrialized communities has generated a range of new disease-producing agents that also are not related directly to sanitation, such as toxic chemicals and waste, increased levels of ionizing radiation, vehicle exhaust, and other new synthetic products that pollute air, water, and food. Third, we have new evidence that was not available earlier indicating that disease occurs more frequently among those with fewer meaningful social relationships and among those in lower social-class positions (Berkman, 1984; Berkman & Kawachi, 2000; Cohen & Syme, 1985).

The significance of supportive social relationships in maintaining health was another major contribution Durkheim made in his study of suicide (Durkheim, 1951). Seventy years later, John Cassel noted that the lack of “meaningful social contacts” resulted in higher rates of tuberculosis, schizophrenia, alcoholism, accidents, and suicide (Cassel, 1974). Since those early studies, overwhelming evidence from around the world has accumulated showing that individuals with weak social ties have higher rates of virtually every disease that has been studied, independently of other disease risk factors (Berkman & Kawachi, 2000).

What does this finding have to do with the way in which we design our cities and neighborhoods? It turns out that some of the major causes of the breakdown of social relations include technological change, population mobility, explosive population growth, the fact that work is now done far from home, and the destruction of existing communities. These changes have combined to make it more difficult for individuals to maintain bonds that tie them to family, community, kinship networks, and geographic locations. These developments often lead to interrupted social ties, which are clearly associated with increased rates of disease and ill-health (Berkman, Glass, Brissette, & Seeman, 2000). The importance of interventions that mitigate the fraying of meaningful social relationships is clear.

The issues of participation and control are also affected by the way we design our living environment. Turner, for example, has argued that when “people control major decisions and are free to make their own contributions to the design, construction, and management of their housing, both the process and the environment produced stimulate individual and social well-being. When people have no control over this process, when they have no responsibility for key decisions in the housing process, their housing may instead become a barrier to personal fulfillment” (Turner, 1976). Turner cites the well-known examples of housing projects in Saint Louis in which the conditions of several projects were approaching an irreparable state. When management was taken over by the tenants, occupancy increased, elevators worked, grounds were well kept, and crime and vandalism decreased. Not everyone agrees that tenant management always leads to such improvements in environmental

quality, but clearly there are cases in the United States and in other countries in which tenant control has resulted not only in better living conditions but also in raising self-esteem and morale and improving health.

The participation and control of individuals in the significant events that shape their lives may be even more important than the objective circumstances in which they find themselves. The impact of the most demanding situation may be softened if one has chosen to be in that situation and if one has options for dealing with the demands. Those lower down in the social hierarchy often have less opportunity to participate in the planning and execution of activities that affect them. They are asked for their opinion less frequently, they have less chance to decide on important matters, and they are less often able either to prevent undesirable events from occurring or to cause good things to take place.

To summarize: Our efforts to promote health and prevent disease must be directed not only to individuals but also to the environments within which people live. If we fail to consider the environment, we will not be able to stem the continuing flow of new individuals into the at-risk and diseased population. To develop appropriate environmental programs, we must therefore focus on those fundamental environmental forces that have an impact on health. Social class is one such fundamental force. Research on the social-class gradient suggests the importance for health of individuals being able to control their destinies and of being able to participate in the social factors that influence their lives (Syme, 2004). Community development programs that fail to take into account the issues of control and participation will not be as effective as they should be.

We really have little choice but to confront these difficult and challenging problems. The baby-boomer generation will begin entering the over-65 year old population in 2011. Shortly after that, the number of older people in our population will double. Our medical care system is strained; the impact on medical care of this doubling of the older population is almost beyond belief. We must dramatically improve our programs to prevent disease and promote health earlier in life so that those individuals entering the over-65 population are healthier than they are now. The best and most reasonable way to accomplish this objective is through the development of healthier environments.

REFERENCES

1980. Inequalities in health: Report of a research working group. *Health Visit*, 53(11): 458.
- Acheson, D. 1998. Inequalities in health: Report on inequalities in health did give priority for steps to be tackled. *BMJ*, 317(7173): 1659.
- Adler, N. E., Boyce, T., Chesney, M. A., Cohen, S., Folkman, S., Kahn, R. L., & Syme, S. L. 1994. Socioeconomic status and health: The challenge of the gradient. *Am Psychol*, 49(1): 15–24.
- Antonovsky, A. 1967. Social class, life expectancy, and overall mortality. *Milbank Mem Fund Q Health Soc*, 45(2): 31–73.
- Berkman, L. F. 1984. Assessing the physical health effects of social networks and social support. *Ann Rev Public Health*, 5: 413–32.

- Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. 2000. From social integration to health: Durkheim in the new millennium. *Soc Sci Med*, 51(6): 843–57.
- Berkman, L. F., & Kawachi, I. o. 2000. *Social Epidemiology*. New York: Oxford University Press.
- Bosma, H., Marmot, M. G., Hemingway, H., Nicholson, A. C., Brunner, E., & Stansfeld, S. A. 1997. Low job control and risk of coronary heart disease in Whitehall II (prospective cohort) study. *BMJ*, 314(7080): 558–65.
- Cassel, J. 1974. An epidemiological perspective of psychosocial factors in disease etiology. *Am J Public Health*, 64(11): 1040–43.
- Chang, M., Hahn, R. A., Teutsch, S. M., & Hutwagner, L. C. 2001. Multiple risk factors and population attributable risk for ischemic heart disease mortality in the United States, 1971–1992. *J Clin Epidemiol*, 54(6): 634–44.
- Cohen, S., & Syme, S. L. 1985. *Social Support and Health*. Orlando, Fla.: Academic Press.
- Durkheim, E. 1951. *Suicide: A Study in Sociology*. Glencoe, Ill.: Free Press.
- Evans, R. G., Barer, M. L., & Marmor, T. R. 1994. *Why Are Some People Healthy and Others Not? The determinants of Health of Populations*. New York: A. de Gruyter.
- Gordon, D. J., Probstfield, J. L., Garrison, R. J., Neaton, J. D., Castelli, W. P., Knoke, J. D., Jacobs, D. R., Jr., Bangdiwala, S., & Tyroler, H. A. 1989. High-density lipoprotein cholesterol and cardiovascular disease: Four prospective American studies. *Circulation*, 79(1): 8–15.
- Haan, M., Kaplan, G. A., & Camacho, T. 1987. Poverty and health: Prospective evidence from the Alameda County Study. *Am J Epidemiol*, 125(6): 989–98.
- Haan, M., Kaplan, G. A., & Syme, S. L. 1989. Socioeconomic status and health: Old observations and new thoughts. In J. P. Bunker, D. S. Gombay, & B. H. Kehrer (eds.), *Pathways to Health*, 76–135. Menlo Park, Calif.: The Henry J. Kaiser Family Foundation.
- Hubert, H. B., Feinleib, M., McNamara, P. M., & Castelli, W. P. 1983. Obesity as an independent risk factor for cardiovascular disease: A 26-year follow-up of participants in the Framingham Heart Study. *Circulation*, 67(5): 968–77.
- Jennings, G., Nelson, L., Nestel, P., Esler, M., Korner, P., Burton, D., & Bazelmans, J. 1986. The effects of changes in physical activity on major cardiovascular risk factors, hemodynamics, sympathetic function, and glucose utilization in man: A controlled study of four levels of activity. *Circulation*, 73(1): 30–40.
- Kaplan, G. A., & Keil, J. E. 1993. Socioeconomic factors and cardiovascular disease: A review of the literature. *Circulation*, 88(4 pt. 1): 1973–98.
- Kaplan, G. A. 1996. People and places: Contrasting perspectives on the association between social class and health. *Int J Health Serv*, 26(3): 507–19.
- Kaplan, G. A., Pamuk, E. R., Lynch, J. W., Cohen, R. D., & Balfour, J. L. 1996. Inequality in income and mortality in the United States: Analysis of mortality and potential pathways. *BMJ*, 312(7037): 999–1003.
- Karasek, R., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. 1981. Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men. *Am J Public Health*, 71(7): 694–705.
- Karasek, R., & Theorell, T. 1990. *Health Work: Stress, Productivity and the Reconstruction of Working Life*. New York: Basic Books.

- Kennedy, B. P., Kawachi, I., & Prothrow-Stith, D. 1996. Income distribution and mortality: Cross sectional ecological study of the Robin Hood index in the United States. *BMJ*, 312(7037): 1004–7.
- Lynch, J. W., Smith, G. D., Kaplan, G. A., & House, J. S. 2000. Income inequality and mortality: Importance to health of individual income, psychosocial environment, or material conditions. *BMJ*, 320(7243): 1200–1204.
- MacMahon, S., Peto, R., Cutler, J., Collins, R., Sorlie, P., Neaton, J., Abbott, R., Godwin, J., Dyer, A., & Stamler, J. 1990. Blood pressure, stroke, and coronary heart disease. Part 1, Prolonged differences in blood pressure: prospective observational studies corrected for the regression dilution bias. *Lancet*, 335(8692): 765–74.
- Marmot, M., & Winkelstein, W., Jr. 1975. Epidemiologic observations on intervention trials for prevention of coronary heart disease. *Am J Epidemiol*, 101(3): 177–81.
- Marmot, M. G., Rose, G., Shipley, M., & Hamilton, P. J. 1978. Employment grade and coronary heart disease in British civil servants. *J Epidemiol Community Health*, 32(4): 244–49.
- Marmot, M. G., Shipley, M. J., & Rose, G. 1984. Inequalities in death: Specific explanations of a general pattern? *Lancet*, 1(8384): 1003–6.
- Marmot, M. G., Smith, G. D., Stansfeld, S., Patel, C., North, F., Head, J., White, I., Brunner, E., & Feeney, A. 1991. Health inequalities among British civil servants: The Whitehall II study. *Lancet*, 337(8754): 1387–93.
- McKeown, T. 1976. *The Modern Rise of Population*. London: Edward Arnold.
- McKeown, T. 1979. *The Role of Medicine: Dream, Mirage, or Nemesis?* (2d ed.). Princeton: Princeton University Press.
- McKinlay, J. B., & McKinlay, S. M. 1977. The questionable contribution of medical measures to the decline of mortality in the United States in the twentieth century. *Milbank Mem Fund Q Health Soc*, 55(3): 405–28.
- Minkler, M. 1999. Personal responsibility for health? A review of the arguments and the evidence at century's end. *Health Educ Behav*, 26(1): 121–40.
- Nieto, F. J. 1999. Cardiovascular disease and risk factor epidemiology: A look back at the epidemic of the 20th century. *Am J Public Health*, 89(3): 292–94.
- North, F. M., Syme, S. L., Feeney, A., Shipley, M., & Marmot, M. 1996. Psychosocial work environment and sickness absence among British civil servants: The Whitehall II study. *Am J Public Health*, 86(3): 332–40.
- Samet, J. M. 1990. The 1990 Report of the Surgeon General: The health benefits of smoking cessation. *Am Rev Respir Dis*, 142(5): 993–94.
- Singh-Manoux, A., Adler, N. E., & Marmot, M. G. 2003. Subjective social status: Its determinants and its association with measures of ill-health in the Whitehall II study. *Soc Sci Med*, 56(6): 1321–33.
- Singh-Manoux, A., Marmot, M. G., & Adler, N. E. 2005. Does subjective social status predict health and change in health status better than objective status? *Psychosom Med*, 67(6): 855–61.
- Stamler, J., Vaccaro, O., Neaton, J. D., & Wentworth, D. 1993. Diabetes, other risk factors, and 12-yr cardiovascular mortality for men screened in the Multiple Risk Factor Intervention Trial. *Diabetes Care*, 16(2): 434–44.
- Stansfeld, S. A., Fuhrer, R., Shipley, M. J., & Marmot, M. G. 1999. Work characteristics predict psychiatric disorder: Prospective results from the Whitehall II Study. *Occup Environ Med*, 56(5): 302–7.

Syme, S. L. 1989. Control and health: A personal perspective. In A. Steptoe & A. Appels (eds.), *Stress, Personal Control, and Health*. New York: Wiley.

Syme, S. L. 1996. Rethinking disease: Where do we go from here? *Ann Epidemiol*, 6(5): 463–68.

Syme, S. L. 2004. Social determinants of health: The community as an empowered partner. *Prev Chronic Dis*, 1(1): A02.

Turner, J. F. C. 1976. *Housing by People: Towards Autonomy in building Environments*. London: Marion Boyars.

Wilkinson, R., & Marmot, M. 2003. *Social Determinants of Health: The Solid Facts* (2d ed.). Geneva: World Health Organization.

World Health Organization. 2008. *CSDH final report: Closing the gap in a generation: Health equity through action on the social determinants of health*. In WHO (ed.), *Commission on Social Determinants of Health*. Geneva: World Health Organization.