



THIRD EDITION

# SOCIAL AND BEHAVIORAL FOUNDATIONS OF PUBLIC HEALTH

EDITED BY JEANNINE COREIL



# Social and Behavioral Foundations of Public Health

Third Edition

Edited by Jeannine Coreil

*University of Louisiana at Lafayette*



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# Preface

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In the years following the last edition of this textbook, the world changed dramatically, with unprecedented global pandemics, increasingly irreversible impacts of climate change, technological breakthroughs, and the explosion of social and other media that are changing how people interact locally and globally. No discipline is more needed nor better positioned to address these pressing issues than public health. As organized responses have grown in scope and complexity, so too has public health training, including significant growth in the number of students entering the field and the founding of new schools and programs. In 2010, there were 44 accredited schools and programs in public health; by 2023, this number had jumped to 67 schools, 149 graduate programs, and 26 stand-alone baccalaureate programs. Interest has grown tremendously in public health as an essential arena of service, research, and practice, despite the comparatively modest investment in public health infrastructure over the same period.

Until recently, HIV/AIDS was considered not only “the most severe epidemic in modern times, but also the greatest public health challenge in history” (Vella et al., 2012). Significant advances in biomedical science, including the wide-spread implementation of life-saving anti-retroviral treatment (ART), as well as behavioral interventions and rights-based policies collectively have led to dramatic declines in incidence and bolstered confidence that viral pandemics could be managed, even in resource-limited settings. Then the COVID-19 pandemic of the 2020s shattered such complacency with unprecedented challenges for the entire world. Experts spoke of “uncharted territory” as leaders grappled with the pressing demands for information, services, and control measures. As the pandemic unfolded, sociobehavioral researchers and public health practitioners, myself included, experienced it both as individuals at risk and as scientists who had studied the sociocultural aspects of infectious diseases for many years. I couldn’t help but observe how the crisis illustrated so many of the principles and concepts covered in this text: societal reactions to disease, the socioeconomic repercussions of epidemics, the politics of public health, the difficulty in achieving widespread behavior change, and the ethical dilemmas of balancing coercive measures with individual freedom. The unparalleled challenges that COVID-19 presented have made this third revision of the textbook more relevant than ever.

More than half of the chapters make reference to the pandemic in relation to diverse topics, including four case studies and various impacts that disease has had on different subpopulations. Chapter 1 presents a case study of vaccine acceptance through history, highlighting the political dimensions of vaccine refusal and the tendency for conspiracy theories to emerge in times of crisis. The second case study, presented in Chapter 12, focuses on an intervention using community-based prevention marketing to promote vaccine acceptance within the Latinx community. Chapter 13 describes how “the COVID-19 pandemic demonstrated the important role the news media play in both conveying science-based information as well as misinformation and disinformation,” using a case study of a

training program for California school administrators for reopening during COVID-19. In Chapter 21, the case study describes a community mobilization and social media campaign to promote vaccine uptake among South African youth.

Other chapters highlight the complex repercussions of the pandemic for disadvantaged populations (Chapter 3), including older adults (Chapter 15) and homeless persons (Chapter 16), as well as general principles of social epidemiology. For example, COVID-19 illustrates the “gender health paradox” of high morbidity among women but greater mortality among men seen in many health conditions (Chapter 6). The challenges of changing people’s illness management behavior, such as observing quarantine protocols for COVID-19, are noted in Chapter 7. Parallels are drawn with the bubonic plague pandemic of the Middle Ages in Chapter 8, such as the emergence of “blame narratives” and the severe disruption of societal functions. Finally, the environmental impacts of the pandemic are highlighted in Chapter 20, including the suspension of environmental regulations to ease economic impacts such as food shortages.

The five new chapters in this edition reflect important areas of growth and development in public health, particularly in relation to social and behavioral dimensions: environmental health, public health ethics, communication and media, homelessness, and global health. Each of these topics, along with the other chapters updated from the previous edition, can be examined as a microcosm of the sociobehavioral influences across different levels of the social ecological system. The contributed chapters, all written by new authors, provide a wealth of material and illustrations for the key concepts and principles of social and behavioral sciences applied to public health. Taken together, this third edition provides a comprehensive and forward-looking agenda for addressing the health needs of our precious planet.

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Vella, S., Schwartländer, B., Sow, S. P., Eholie, S. P., & Murphy, R. L (2012). The history of antiretroviral therapy and of its implementation in resource-limited areas of the world. *AIDS*, 26(10), 1231–1241.



# Acknowledgments

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Each step of the way, I felt tremendous gratitude for the help I received in updating this book: guidance through the planning phase, suggestions for contributors to invite, patient answering of my many questions about the publication process, and thoughtful direction for navigating the glitches along the way. I am especially grateful to Amanda Martin, Amy Smith, and the production team at Cognella Academic Publishing for their unwavering support and advice throughout the project, thus helping to fulfill my goal of making the process an enjoyable one. Several colleagues generously read drafts of chapters and made suggestions for improving and updating the content: Deborah Baron, Marti Coulter, Karen Liller, Kokos Markides, Alicia Puglionesi, Abraham Salinas, and Kristin Tellez-Monnery. My research assistant Mateo Chavez slogged through countless digital searches to update content, delighting me constantly with his sunny disposition. In transitioning from the previous publisher, Joshua Perigo at SAGE graciously searched for all the relevant files needed for the new edition. I also appreciate the kind efforts of Mark Rees and DeAnn Kalich for helping to carve out an academic niche for me to work on this book within their department at the University of Louisiana at Lafayette. Lastly, I remain humbly indebted to the 30 contributors who accepted my invitation to write chapters for the textbook. These are leading scholars in their respective fields, the quality of their contributions is outstanding, and I feel honored to include their chapters in the volume.

# Introduction and Overview

**T**he first three chapters set the stage for the remainder of the book by providing a history and overview of the social and behavioral sciences in public health; by tracing the evolutionary stages of human history and their corresponding disease patterns; and by presenting basic concepts in social epidemiology, the area of inquiry in which social science perspectives intersect those of public health.

Chapter 1 reviews the professional development of the field and the emergence of the “new public health” paradigm and introduces the social ecology of health model as the organizing framework of the book. Application of the model to public health problems is illustrated through case studies of eating disorders, HIV/AIDS, and climate change.

In Chapter 2, the basic principles of population dynamics are presented, and the relationship between disease patterns and population size is discussed. Following is a discussion of demographic, epidemiologic, and health transitions in human history. Building on these principles, the relationship between disease and cultural evolution is described by examining changes in nutrition and health across the stages of foraging groups, settled villages, preindustrial cities, industrial cities, and postindustrial society.

Current issues in social epidemiology are reviewed in Chapter 3, with particular attention to the relationship between health and socioeconomic status, race, and ethnicity. Global inequalities in health are also explored by comparing high-income countries with low- to middle-income countries. The concepts of distal, intermediate, and proximate determinants of health are presented in relation to the causal continuum.

# Why Study Social and Behavioral Factors in Public Health?

*Jeannine Coreil*

**A**lthough the social and behavioral sciences are among the newer disciplines to be integrated into public health, the roots of this integration reach deeper than is often recognized. These roots are explored in the opening section of this chapter, which overviews the professional development of the interdisciplinary field of social and behavioral sciences applied to public health. In the new public health paradigm, sociocultural and psychological factors figure importantly in problem analysis, as illustrated in the case study of vaccine acceptance. Next, the overarching framework for the book, the social ecology of health model, is introduced and described in terms of multiple levels of sociobehavioral influence on health problems. The application of the model to understanding and addressing health issues is illustrated through three examples, including eating disorders, HIV/AIDS, and the effects of climate change on cancer.

## History

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Public health has always been concerned with the ways in which social conditions influence the health and well-being of communities and human populations. The disciplines of public health and social science both emerged in the latter part of the 19th century along with the recognition of the needs of the poor and marginalized groups and the association between living conditions and health. However, it was not until the mid-20th century that professionally trained social scientists became actively involved in public health programs, and by the 1980s, accredited schools of public health in the United States were required to provide formal training in the social and behavioral sciences. The most important challenges for improving health in the 21st century involve social, cultural, and behavioral change. Our knowledge about how social and behavioral factors affect health has grown enormously, but achieving the individual and societal changes needed to reach public health goals is no easy task. Political and economic barriers deeply rooted in the social order constrain what is practically feasible. Nevertheless, emerging new approaches to structural change offer possibilities for surmounting these obstacles and producing higher levels of global community health.

Table 1.1 highlights important milestones in the history of social science contributions to public health. In the 19th century, social theorists in Europe called attention to the unequal distribution of infectious disease among the population, with the poor and working classes being the most prone to infection and cited the unhealthy living conditions of crowded urban slums, inadequate diet, and physically taxing labor as contributing to the poor health of the disadvantaged. Many important figures contributed to a broad discourse that framed public health issues as socially produced—some with an overt political agenda, such as Marx and Engels; others with a more epidemiologic approach, such as Snow, Panum, and Farr; some as activist physicians, such as Villermé and Guérin; and still others, such as Virchow and Durkheim, with a more sociological orientation (Janes et al., 1986). Often referred to as 19th-century “social medicine,” this period is significant for establishing the idea that public health is a social science and that social structures and change generate population-level health effects. Moreover, social reform to improve health is also rooted in the early work of advocates such as Virchow and Chadwick. The late 19th century saw the rise of the sanitary movement, with organized efforts to improve standards of hygiene and living and working conditions. However, the turn of the century ushered in the bacteriological era, and attention shifted to the discovery and control of biological pathogens in the early decades of the 20th century.

The growth of social and behavioral science applications in public health was strengthened by the redefinition of health post World War II. In 1948, the newly formed World Health Organization (WHO) characterized health holistically as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity.” Since that time, the WHO and other national and international organizations have affirmed the importance of psychosocial well-being as an integral component of health. This expanded conceptualization of health required the expertise of many disciplines to formulate policies and design programs to improve health conditions around the globe. The scope of health promotion again expanded in 1986 with the adoption of the Ottawa Charter for Health Promotion (WHO, 1995), which identified the fundamental prerequisites for a healthy society, including peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice, and equity. This expanded agenda set the stage for an even broader role for social science in public health. The need for comprehensive, multisector approaches to global health promotion was reaffirmed and further outlined in 2005 through the Bangkok Charter for Health Promotion (WHO, 2007) and in 2008 the WHO commissioned a comprehensive study of the social determinants of health that went even further in targeting upstream inequalities in access to power and resources (including racism and discrimination) as fundamental causes of disease (Solar & Irwin, 2010; WHO, 2008). The social determinants of health (SDOH) framework has been widely adopted and influential in public health research and policy and was prominently incorporated into the Centers for Disease Control and Prevention (CDC) Healthy People 2030 goals (Braveman et al., 2011; U.S. Department of Health and Human Services, 2020). Nevertheless, achieving such fundamental structural changes requires enormous political will, as noted in the 2011 Rio Political Declaration on Social Determinants of Health (WHO, 2011).

TABLE 1.1 Important Milestones in the History of Social Sciences in Public Health

Period	Event	Significance
Greco-Roman and Islamic	Organized efforts to protect the health of vulnerable populations	Emergence of social welfare values in society; use of preventive practices for both physical and mental health
19th century	European social theorists define medicine/public health as “social science”	Social determinants identified as fundamental causes of health and illness; political advocacy for social reform
19th century	Snow and Farr in Britain, Panus in Denmark, and others	Use of social science methods for epidemiological investigation
Late 19th century	Sanitary movement	Organized efforts to improve lifestyle, living, and working conditions of urban poor within industrializing nations
1948	WHO defines health to include mental and social well-being	Set stage for addressing psychosocial factors in health and illness
1950s	Anthropological research on community health	Recognition of cultural factors as barriers to public health interventions; first planned culture change projects to improve health
1955	Medical Sociology section of the American Sociological Association established	Medical sociology attains subdisciplinary status
1958	Publication of the health belief model	Launched the health behavior change paradigm for public health intervention
1964	U.S. Surgeon General's report on smoking and health	Beginning of movement to reduce health behavior risks to public health
1967–1972	Society for Medical Anthropology, organized in 1967, becomes a section of the American Anthropological Association in 1972	Medical anthropology attains subdisciplinary status
1978	Health Psychology Section of American Psychological Association established	The field of health behavior research and intervention is professionally recognized
1978	Alma Ata Conference on Primary Health Care	Set long-term global agenda to develop comprehensive, community-based approaches to promote basic health
1980s	Behavioral and Social Science Council of the U.S. Association of Schools of Public Health established	Formalization of social and behavioral sciences as integral component of public health training programs
1986	Ottawa Charter for Health Promotion	Identified fundamental social prerequisites for ensuring health and well-being
2005	Bangkok Charter for Health Promotion	Reaffirmed social prerequisites and highlighted role of economic development in health promotion
2008	WHO Commission on the Social Determinants of Health	Set agenda for addressing the health impacts of inequities in the distribution of power, money, and resources
2011	Rio Political Declaration on Social Determinants of Health, WHO	Expressed global political commitment for the use of a social determinants of health approach to addressing health inequities

Source: Reprinted, with revisions, from *Social Science Contributions to Public Health: Overview*, by J. Coreil (2017). In S. R. Quah & W. C. Cockerham (Eds.), *The International Encyclopedia of Public Health* (2nd ed., vol. 6, pp. 599–611).



Many observers have noted that the AIDS epidemic, which became global in the 1980s, had a significant impact on the position of social and behavioral research in public health. It was the first modern pandemic that could not be controlled primarily through environmental and technological means, such as sanitation and vaccines. Controlling the spread of HIV required changing social norms and values as well as individual behavior, and social scientists rose to the challenge in large numbers (Benoist & Desclaux, 1995). Anthropologists, sociologists, psychologists, and other social scientists have made important contributions to understanding HIV risk behavior and designing interventions to promote safer sex and reduce transmission from injection drug use. Important conceptual and methodologic advances accompanied this expanded role.

Despite the positive developments outlined, expansion of the role of social science in public health has historically encountered and continues to face obstacles related to the acceptance of disciplinary perspectives and research methods, the organization of departments and curricula for public health education, and the translation of research findings into actionable policy-relevant recommendations (Shelton et al., 2018). In particular, the use of qualitative methods such as in-depth interviews, focus group discussions, participant observation, and other “soft” data-collection techniques are often viewed with skepticism by quantitative researchers for whom numbers and statistics represent the gold standard of “scientific” research. But significant bridging of methodologic differences has occurred with the increasing rigor in qualitative research, the development of mixed-method approaches, and growing appreciation among hard-core empiricists for the value of qualitative data.

The social sciences have also been hampered by limited access to research funding opportunities through the major agencies that set priorities and allocate grants for public health research, such as the National Institutes of Health (NIH), the CDC, and the WHO. These agencies tend to organize programs around specific diseases and populations (as opposed to theoretical issues) and prioritize quantitative research such that social scientific studies struggle to find a competitive niche in the funding arena. Consequently, the disciplines that rely more on qualitative research, such as history and anthropology, have achieved less prominence in public health than the more quantitative social sciences such as sociology and psychology. We hope to counterbalance the underrepresentation of history and anthropology in public health through the content of this textbook.

Finally, it should be noted that the social and behavioral sciences have long fought a turf battle with health education and health promotion within schools of public health. The tension points appear in the naming of departments and degree programs and in identifying the core competencies required for public health education. In many schools, “health behavior” has come to subsume the vast field of psychosocial factors in health, with an inherent bias toward individual behavior and relative inattention to macro-level sociocultural processes. However, the growing recognition of the importance of social determinants of health is opening new opportunities for integrating all of the social sciences in public health.

## The 1950s: Seminal Developments

The post–World War II era ushered in a period of tremendous growth and development for the social and behavioral sciences in public health. There were two main thrusts in this groundbreaking era, one focused on health modernization in developing countries and the other on population-based screening

for medical conditions. It was an era of great optimism about the potential for social engineering of health development and the application of social science methods to understanding and improving the health of populations (Paul, 1956).

In the international arena, anthropologists began working on projects aimed at improving the health and diet of Indigenous populations in the 1930s and 1940s (Firth, 1934; Malinowski, 1945; Richards, 1939). Beginning in 1950, a number of anthropologists were appointed to key positions in international health organizations, including the WHO; the Rockefeller Foundation; and the Institute for Inter-American Affairs, the forerunner of the U.S. Agency for International Development (USAID).

The appointment of anthropologists to institutional posts paralleled the rapid expansion of public health programs worldwide as modern medicine was introduced on a large scale in many areas. The primary role of anthropologists was seen as that of identifying significant cultural barriers to the acceptance of new public health programs. (Coreil, 1990, p. 5)

Many of the important development projects of this era are described in the classic volume edited by Benjamin Paul (1955), *Health, Culture and Community*. These studies defined culture as a barrier to desirable health practice and introduced the role of the social scientist as a culture broker whose expertise can be applied to facilitate directed change. In particular, the focus was on diffusion of health technology to solve problems of “underdevelopment” by overcoming resistance to change grounded in traditional values, institutions, and practices. The conceptualization of culture as a barrier to good health became firmly rooted in social science thinking throughout the latter half of the 20th century, and it persists to the current day in various reformulations, such as “cultural awareness” and “cultural diversity.” However, critics have also faulted this perspective as reflecting ethnocentric and neocolonial ideas of progress through culture change (see Chapter 10).

Concurrent to these developments, the 1950s brought forth focused attention on mobilizing large numbers of people to take part in various public health campaigns in industrialized countries. Here again, officials encountered resistance to citizen participation and turned to social science expertise for solutions. In this case, social psychologists took the lead in developing approaches to analyze the problem and formulate interventions based on emergent models of individual behavior change. The seminal framework that emerged was the health belief model. Drawing on cognitive and behavioral theories of human behavior, the model conceptualized health practices as motivated by value expectancies, or subjective assessments of the personal benefits of particular outcomes and the expectations that certain actions will achieve desired goals (Janz et al., 2002). Developed in the context of a campaign to screen the adult U.S. population for tuberculosis (TB) through voluntary chest X-rays offered in mobile clinics, the model was advanced to help explain why, despite the availability of free and convenient screening opportunities, participation remained low. The model posits that the decision to take action to protect one’s health is determined by four factors: (a) whether people consider themselves susceptible to the condition, (b) whether the condition is perceived as having serious personal consequences, (c) whether a specific action is expected to reduce the risk of getting the condition or the consequences of it, and (d) whether the perceived benefits of the action outweigh the subjective costs or barriers to taking action. This rational cost-benefit model dominated health behavior change programs for several decades, with various elaborations and modifications over time, and set the stage for the development of other

cognitive behavioral models of health practice. Various behavior change models based on principles of motivation and learning theory were elaborated in subsequent decades and came to occupy a central position in health-promotion interventions (see Chapter 4).

## Maturation of the Field

Social science contributions to public health were bolstered significantly by the development of more sophisticated conceptual models and methods of research and data analysis, including both quantitative and qualitative techniques. The maturation of the field is reflected in the scope and influence of scholarly articles published in the multidisciplinary journal *Social Science & Medicine*, which first appeared in 1966 and currently boasts a large international readership and a high-impact rating among scientific journals. In the 1980s, significant developments occurred through the involvement of social scientists in international health activities related to child survival programs, HIV/AIDS, and tropical diseases. These activities were promoted and funded through intergovernmental agencies such as the United Nations Children's Fund (UNICEF), WHO, and TDR (the interagency, collaborative Special Program for Research and Training in Tropical Diseases), as well as through bilateral development agencies such as USAID, the Canadian International Development Agency, and their European counterparts. Established in 1975, TDR in particular has played an important role in advancing social science research on tropical diseases, through programs that train developing country scientists and support research focused on sociocultural factors and health. A noteworthy strength of its programs has been the promotion of gender-focused research.

## Shift From Infectious to Chronic Disease

Over the course of the 20th century, the public health enterprise underwent significant transformation as a result of a radical shift in focus from infectious diseases to chronic conditions as the major threats to population health in industrialized societies. Tied to demographic, environmental, and social change, this transformation, also known as the *epidemiologic transition* (see Chapter 2), required profound alterations in how public health problems were addressed. Chronic conditions such as heart disease, cancer, diabetes, mental illness, and health problems of older persons replaced TB, pneumonia, childhood diarrhea, and other infections as the leading causes of morbidity and mortality in industrial countries (although TB, malaria, and, later, AIDS remained the major killers in developing countries). As chronic diseases and disability became the focus of public health interventions, the role of social and behavioral factors became increasingly important for disease prevention and control. Multilevel models that emphasized the social and political environment reemerged to replace the traditional medical model grounded in the germ theory of disease as well as the traditional public health model emphasizing host-agent-environment interactions. Anthropology, sociology, political science, demography, gerontology, and other social sciences made important contributions to this reframing of public health. With their focus on broad social processes and macro-level determinants, the social sciences helped redefine the public health agenda as one integrally concerned with policy, economics, social organization, and cultural dynamics across diverse institutions. This shift built on advances in the professional development of these disciplines, theoretical and methodological contributions, and political advocacy on the part of diverse communities.

## Primary, Secondary, and Tertiary Prevention

One of the ways in which public health is often contrasted with clinical medicine is the degree to which it focuses on the *prevention* of disease and disability, while medical practice emphasizes the *treatment* of health problems after they occur. It is commonplace in public health to further differentiate between *primary*, *secondary*, and *tertiary* prevention. In primary prevention, the focus is on activities that forestall the development of pathological conditions. For example, preventing the onset of heart disease through healthy lifestyle behavior would fall in this category. Secondary prevention, on the other hand, refers to detection of disease or its precursors at an early stage to take ameliorative action that can thwart full development or enable measures to keep the problem in check. Regular screening for detectable conditions such as hypertension, breast and colorectal cancer, diabetes, and sexually transmitted infections falls in this category. Finally, tertiary prevention includes interventions at later stages of disease to prevent secondary complications, sustain optimal disease management, and ensure the best quality of life. Treatment for hypertension, diabetes, depression, osteoporosis, lymphedema, and other chronic conditions illustrates the third category of prevention. Social and behavioral factors figure importantly in all three types of prevention; however, over the decades, interest has grown, particularly in their potential contribution to primary prevention. Health economists have demonstrated that it is far more cost-effective to prevent conditions before they develop than to provide long-term care for chronic conditions. The cost factor is particularly salient as more people live to an advanced age and governments are mandated to ensure the provision of care. There is also the desire for people to live healthy, productive lives for as long as possible.

Of all the public health disciplines, the social and behavioral sciences can make unique contributions to primary prevention. Influencing lifestyle patterns and the social context in which people live is fundamental to prevention of the major health conditions facing society today. It also poses one of the greatest challenges, because the force of macro-level influences on individual behavior is tremendous. One need only consider the facts of the contemporary way of life—such as sedentary daily routines; people spending many hours of the day in front of computers; increasing reliance on processed and “fast” food; and the tendency toward workaholicism, lack of sleep, and chronic stress—to appreciate the obstacles facing such programs. It is a basic tenet of intervention that it is far easier to modify the more proximate determinants of health, such as individual food choices, than it is to alter the intermediate and distal forces that affect those choices. Changing the organization of society and the core components of culture poses an enormous challenge, yet there is growing recognition that only through alteration of the fundamental causes of disease (e.g., inadequate income and access to health care, unemployment, racial and gender discrimination, lack of social support, stressful work settings, failure to provide educational opportunities) can true primary prevention be realized (Link & Phelan, 1995).

## Professional Development of the Field

At the close of the 20th century, important conferences and publications marked the maturation of the field and recognition of the significance of “higher level” analysis of the social and cultural aspects of health. In 1998, the CDC, in collaboration with the American Psychological Association and other professional social science organizations, sponsored a multidisciplinary conference, *Public Health in the 21st Century: Behavioral and Social Science Contributions*. Two years later, the

NIH organized an agenda-setting conference, *Towards Higher Levels of Analysis: Progress and Promise in Research on Social and Cultural Dimensions of Health* (Schneiderman et al., 2001). A recurrent theme in these meetings was the recognition that, despite impressive advances in understanding the biological and genetic bases for disease, “knowledge about biological and genetic markers is important but limited in predicting who gets sick, who seeks treatment for health problems, and who recovers from illness. The social sciences contribute to filling these gaps in our understanding of health” (NIH, 2001, p. 1). These conferences marked a critical juncture in the development of the field—that is, the accumulation of knowledge about the complex interplay of macro- and micro-level influences on health, as well as new technologies for putting into practice strategies for influencing the impact of those factors.

## The New Public Health

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In the 20th century, the field of public health underwent tremendous change and diversification. In the early part of the century, infectious diseases posed the greatest health challenge for people, whether they lived in industrialized countries or developing nations. Control of communicable diseases was the focus of public health practice, through organized efforts such as provision of safe water and sanitation, immunization services, and monitoring and surveillance of disease outbreaks. After 1930, antibiotic therapy became an essential component of infection control, and it remains an important aspect of public health programs that deal with sexually transmitted diseases and other communicable illnesses. In the second half of the century, however, with the emergence of chronic diseases, injury, substance abuse, and other health problems as the focal public health issues, the dominant paradigm has shifted toward social and behavioral approaches to disease prevention and health promotion. While the more traditional activities of infection control and environmental protection remain important in today’s world, much attention and effort are now focused on changing the social conditions that undermine health as well as the behavioral patterns that put people at risk of illness and injury.

Sometimes referred to as the “new public health,” this emergent paradigm in public health parallels the reconceptualization of individual health within the field of medicine along similar lines (Frenk, 1993; Tulchinsky & Varavikova, 2014). Whereas in the past, the germ theory of disease dominated medical research and practice, we now view individual health as shaped by complex interacting systems of biological, social, and environmental factors. While tremendous advances in biomedical technology have dramatically improved our ability to treat illness and prolong life through the use of sophisticated diagnostic testing, powerful drugs, and advanced surgery, medicine has increasingly recognized the importance of structural factors, cultural context, social organization, and lifestyle choices for individual health. Various labels “social medicine,” “behavioral medicine,” and “medical ecology,” the new medical model shares with public health a broadened framework for analyzing health problems in terms of complex biosocial systems.

A number of developments contributed to the rise of the social ecology paradigm in medicine and public health (Krieger, 1994). One was the shift in epidemiologic patterns from infectious to chronic diseases. This shift was part of a broader, postindustrial transformation of society, involving changing

demographic trends and patterns of morbidity and mortality. People now live longer and healthier lives, and the health problems they do face involve conditions that cannot be “cured” in the traditional sense. The major illnesses affecting industrial populations today, such as heart disease, cancer, and diabetes, can only be controlled through primary prevention or “managed” over the long term to improve quality of life. Prevention and treatment of chronic diseases depends heavily on behavioral practices such as diet, exercise, substance use, and stress reduction. Likewise, behavior and social conditions are the central components of preventive approaches for other leading public health problems such as unintended pregnancy, substance abuse, motor vehicle crashes, and violence. Even with the new and emergent (or resurgent) infectious diseases, such as HIV/AIDS, TB, and sexually transmitted diseases, sociobehavioral factors are widely recognized as critical for their control.

Another important contribution to the social ecology model of public health has been the wealth of scientific discoveries linking biology, behavior, and culture. Nearly all diseases and health conditions are now known to have multifactorial etiologies involving complex interactions of processes located inside and outside people’s bodies. We know, for example, that stress is an underlying component of all illness, including both acute infections and chronic disorders, and that physical and psychological stress can affect one’s ability to fight disease and restore health. In fact, illness is increasingly viewed as a breakdown in the body’s natural defense system, which is highly sensitive to internal emotions and external stressors in the social environment (see Chapter 6). The negative impact of social discord, whether from family relationships, the work setting, or school pressure, can play as important a part in whether someone gets a cold or flu as exposure to specific pathogens. Indeed, some argue that psychosocially mediated immunity is the primary factor in most people’s susceptibility to infection (Kaplan, 1991). It is worth noting that only 50 years ago, researchers were just beginning to investigate the relationship between stress and illness; today, the role of stress in health is well documented, and research has spawned a dynamic field of study called psychoneuroimmunology.

Research on stress and health is closely linked to studies of social support—that is, the way in which our connections to other people have a protective effect on well-being. It has been shown, for instance, that people who interact with a large network of friends and family members get sick less often and recover from illness faster than those who do not. Similarly, people who live alone have higher rates of death and suicide than those who live with others (Syme, 1986). These trends illustrate one kind of mechanism through which the social environment can affect health status. The social environment can also influence health through social structural arrangements, which position people at different places in society and mediate access to resources such as education, income, medical services, status, and prestige (Link & Phelan, 1995). Because people occupy different positions in the socioeconomic structure, disease and mortality are not evenly distributed within a population. The field of study that addresses such variation in health risks is known as social epidemiology. Many advances in understanding social risk factors have occurred in recent decades, leading to redefinitions of health as “socially produced” and increased attention to interventions focused on organizational change (Goodman et al., 1997).

We have also learned a great deal about how cultural factors influence health—for example, the ways in which people think about and behave regarding food, the relative value they place on work and leisure, how health and illness are perceived and managed, and the role of ethnic identity in shaping disease patterns. Approaches to studying cultural influence have broadened to encompass notions of

gender culture, family culture, organizational culture, and corporate culture, all having important lessons for public health research and practice. In Chapter 2, we take a closer look at disease history in relation to long-term cultural evolution, highlighting the relationship between human subsistence strategies and patterns of disease and injury.

Another development that has enlarged the scope of public health is its expansion into new arenas of social welfare, including primary care services; reproductive health; child and family protection; injury prevention; and the health consequences of natural disasters, war, and political violence, to name but a few. Contemporary public health encompasses an enormous diversity of specialized fields, which in turn draw on the knowledge and perspectives of many disciplines. The social and behavioral sciences have become increasingly relevant in this robust endeavor, contributing new conceptual, methodologic, and policy perspectives to the field. Nowadays it is just as likely to find public health professionals talking about consumer satisfaction, political advocacy, and community empowerment as about more traditional issues such as disease surveillance and government regulation. While the “new public health” has been widely endorsed by diverse disciplines and constituencies within the health arena, it is not without critics (Awofeso, 2004; Bunton et al., 1995; Petersen & Lupton, 1996). The latter apply poststructuralist perspectives to highlight the ever-expanding control public health institutions tend to exert on everyday life, through social constructions, the creation of expert knowledge, moral discourse on behavior, interpersonal relations, and other health “risks.”

### CASE STUDY: VACCINE ACCEPTANCE

More than any other health measure, vaccination has come to represent the *sin qua non* of public health interventions around the globe. The development of effective vaccines against the most devastating infectious diseases such as smallpox, polio, and most recently COVID-19, has saved countless millions of lives and elevated vaccination to near iconic status within public health. Yet fear and distrust of vaccines, or vaccine hesitancy, has a long history, and vaccine refusal remains a serious impediment to controlling disease outbreaks, epidemics, and pandemics. A recent study found that about one quarter of a million deaths from COVID-19 in the United States could have been averted by timely vaccination, representing about 60% of all adult COVID-19 deaths since June 2021 and a quarter of the nearly 1 million COVID-19 deaths since the pandemic began (Amin et al., 2022). In many ways, the obstacles surrounding vaccine uptake illustrate the complex array of sociocultural and behavioral factors presented throughout this book. Taking a closer look at these can serve as an introduction to the social and behavioral foundations of public health.

Vaccination has ancient roots in Asia and Africa in the form of variolation, the intentional inoculation of people with infectious matter from a mild case of the disease to elicit an immune reaction that protects the receiver against future infection. There were many centers of development for variolation around the globe, but the history of public health has focused on the transmission of these practices to the West through a few key figures. In 18th-century United States, smallpox epidemics swept the colonies with regularity, devastating communities and killing roughly one third of its victims. Their toll was even higher among Native American groups. The first experiment with variolation in the American colonies is credited to Boston Congregationalist minister Cotton Mather, in 1721, after he learned



about variolation from his African slave Onesimus, who had been inoculated as a child. Mather read reports from other parts of the world about the effectiveness of the procedure and tried to convince the local medical establishment to use it during an ongoing epidemic. His entreaties were rebuffed on the medical grounds that inoculation spread the disease and on religious grounds that it interfered with God's will: "It is not the healthy who need a doctor, but the sick" (Matthew 9:12, NIV). But Mather convinced Dr. Zabdiel Boylston to try the procedure, which he did on his son and two slaves by scraping their skin and rubbing pus from a smallpox patient on the scratch. All developed mild cases and survived.

Over the ensuing years confidence in variolation grew within the medical community, and in England, another significant development took place, again spearheaded by a lay person. At the time it was widely recognized that people who worked closely with cows, such as milkmaids, often contracted cowpox from their charges, and this seemed to confer a natural protection against smallpox, a related disease. In 1774, cattle farmer Benjamin Jesty undertook a family experiment in which he inoculated his wife and two sons with the exudate from cowpox pustules. All three survived and developed immunity to smallpox. The success of his procedure further demonstrated that resistance to infectious disease could be achieved through inducing mild cases. But it was not until the end of the 18th century that British physician-scientist Edward Jenner, through careful experiments and record-keeping, proved that inoculation with matter from humans infected with cowpox could protect other humans repeatedly exposed to smallpox. His first papers were rejected by medical journals, so he published his findings in a small booklet in 1798. He named his procedure *vaccination*, from the Latin word for cowpox, *vaccinia*. Over time vaccination gained widespread acceptance in the medical community, although opposition continued in many lay and religious sectors, with groups such as the Anti-Vaccination Society of America forming in the late 19th century. Nevertheless, Jenner's work eventually led to his recognition as the "Father of Immunology" (Riedel, 2005).

Despite the availability of a smallpox vaccine in the late 18th century, it took almost 200 years for the disease to be eradicated from all countries, as officially declared by the WHO in 1980. The eradication goal had been adopted by the World Health Assembly in 1958, with an intensified campaign launching in 1967. The drive faced many obstacles, including logistics, resources, cultural barriers, war, and the sheer magnitude of its scope. Public health workers at times resorted to strong-arm tactics and negotiated cease-fires to achieve compliance. The success of the effort, the first and only worldwide disease eradication campaign, bolstered confidence that technological advances could eliminate or at least subdue infectious diseases across the globe. However, the limitations of relying on technology alone were repeatedly exposed in subsequent attempts to eradicate diseases such as polio and achieve control over other infections such as HIV/AIDS and COVID-19.

Planners often use the 5 A's model of vaccine implementation to clarify where the obstacles lie: access, affordability, awareness, acceptance, and activation (Thomson et al., 2016). Access includes not only the availability of the vaccine itself but also the delivery infrastructure needed to accommodate "hard-to-reach" populations. Affordability extends beyond monetary cost to encompass intangible factors such as the opportunity costs of taking time off work to reach a delivery site. Awareness includes knowledge of the existence of a vaccine as well as information on delivery locations, eligibility, and expectations for side effects and efficacy. Acceptance is best conceptualized as a continuum from having no problems whatsoever with getting vaccinated to hesitancy (mistrust, skepticism) and outright rejection. Finally, activation occurs when someone intentionally seeks out a vaccine, or, in

some cases, is compelled to receive one. A good example of the latter is a parent who is opposed to having their child vaccinated, but nevertheless relents because school policy makes it mandatory.

The debates surrounding vaccination highlight key philosophical, ideological, and political issues inherent in the public health enterprise (Holmberg et al., 2017). How far should governments extend their power to compel citizens to expose their bodies to medical procedures for the common good, and how far do individual rights extend to give people agency in decisions that affect the health of the community? Sometimes articulated as pitting the core values of collectivism versus individualism, the arguments for either side continue to surface in various public health arenas. Often the individual rights stance has been positioned as religious liberty, and legal exemptions based on religious and philosophical beliefs are recognized in most U.S. states. Sometimes the opposition stems not from the vaccine itself, but from substances used in its manufacture. For example, in 2019 a large measles outbreak occurred within a Brooklyn Orthodox Jewish community where some opposed the use of pork products in the vaccine's manufacture (Pager & Mays, 2019). Opponents of abortion have also raised concerns about vaccines manufactured using cell lines originally derived from aborted fetuses (Wadman, 2020).

Too often planners fail to recognize the importance of “soft” factors like beliefs and social constraints in designing and implementing vaccination programs, instead focusing primarily on cost and accessibility. In most countries, vaccines are provided free of charge and locally available at health centers, yet the hidden costs of obtaining them can be formidable. In the 1980s, childhood vaccines (diphtheria, pertussis, tetanus, polio) were introduced in many developing countries, including Haiti, but the uptake was slow in many places. To better understand the reasons mothers were not availing themselves of this *free* health care, my research team conducted focus groups with Haitian mothers and providers. Our findings revealed the importance of “hidden” social and psychological costs of immunization use, including fear and embarrassment from having a child identified as malnourished, the competing demands of income-generating activities for family survival, the burden of having to bring older children along and dress them respectably, and frustration with government programs that only offer preventive services when the more pressing needs are acute care for sick children (Coreil et al., 1994).

Since the dawn of the vaccine age, antigovernment sentiment, distrust of political elites, and conspiracy theories have flourished and fueled debates about the safety, efficacy, and aims of public vaccination programs. Vaccines become a focal point for preexisting skepticism and suspicions related to technological development and institutional intrusion into ordinary lives. “Throughout history, vaccine critics have drawn great inspiration from the political ideologies of their time, and, reciprocally, a wide variety of political actors have added vaccination to the long list of issues on which they choose to focus. ... More generally, vaccination can suffer from every type of tension that can exist between the public and all the types of actors involved in public health decision-making at every level” (Dubé et al., 2021, p. 180–181). For example, a robust antivaccination and antiscience coalition predated the COVID-19 pandemic and enabled both local and national resistance to vaccine mandates and other control measures.

A recurrent theme in opposition to vaccination is apprehension about possible negative effects, especially fear of developing the disease itself. In addition, fears have centered on unanticipated or intentional harm from vaccines. For example, beginning in the 1980s, parents’ groups and fringe researchers promoted the idea that vaccines caused developmental disorders in children; they gained popular attention, and by 2014, about one third of American parents believed that vaccines can cause autism spectrum disorder (Davidson, 2017). In a different arena, 20th-century efforts to

control population growth through family planning and contraception fed into conspiracy theories that vaccines were a secret tool to sterilize people. More recently, fears related to genetic advances and experimentation fueled misinformation about COVID-19 vaccines altering hosts' DNA structure.

A multilevel review of determinants of COVID-19 vaccine hesitancy in the United States identified individual, interpersonal, and societal level factors associated with intention to get vaccinated (Wang & Liu, 2022). Nationally representative studies report acceptance rates ranging from 53.6% to 84.4%. At the individual level, greater hesitancy was found among women, younger respondents, Black and Hispanic persons (see Chapter 12), and individuals of lower socioeconomic status. Political conservatism, religiosity, and susceptibility to vaccine misinformation were also correlated with vaccine hesitancy. At the interpersonal level, having a family member or friend acquire the disease and receiving a recommendation from one's health care provider were associated with positive intention to receive the vaccine. At the societal level, obtaining information and trust in authoritative sources for COVID-19 information had a huge impact on vaccine hesitancy; people who followed and trusted public health officials, scientific experts, and mainstream media were more likely to get vaccinated compared to people who favored and trusted social media and nonmainstream sources.

The political dimensions of vaccination came under intense scrutiny during the COVID-19 pandemic and continue to hamper control efforts. While politics has always wielded influence within the public health arena, the COVID-19 emergency was swept up into unprecedented politicization and polarization across the United States and other Western nations. Vaccination, along with mask wearing, took on the symbolic meaning of expressing loyalty to political ideology and party. For example, one of the strongest predictors of getting the COVID-19 vaccine in the United States has been political party affiliation, with counties having a high percentage of Republican voters showing the lowest vaccination rates (Albrecht, 2022). Throughout the pandemic, public health authorities have lamented the unfortunate hurdles posed by political polarization within the country, with leaders of different political persuasions arguing for individual choice or the collective good.

Given the pivotal role of political factors in pandemic response generally and vaccination in particular (not to mention public health broadly defined), one might expect that political science as a discipline could offer relevant guidance for navigating such troubled waters, but compared to other social science disciplines, there has not been much cross-fertilization between political science and public health. "Public health researchers often criticize political scientists for being too 'theoretical' in their approach. Political scientists, on the other hand, often consider public health researchers as having a 'naive' understanding of political reality" (Gagnon et al., 2017, p. 495). Bridging the gap will require greater recognition of the contested nature of what constitutes scientific evidence to support alternative approaches to public health practice and policy (Fafard & Cassola, 2020). Cross-fertilization can also be furthered through interdisciplinary social science courses in schools of public health that give focused attention to political science theory and research as well as the development of public health-oriented courses within departments of political science (Shroff et al., 2022).

During the COVID-19 pandemic, media spokespersons almost always tended to be medical professionals and political pundits, not social scientists, even when addressing behavioral and socio-cultural issues such as vaccine refusal, polarization within the country, the diffusion of conspiracy theories, and the pervasive culture wars. Social scientists need to take on a more consequential role in speaking out on these important issues.

## Social Ecology of Health Model

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The vaccine acceptance case study highlights a variety of social and behavioral factors that are relevant to a holistic analysis of public health problems. These dimensions were presented without reference to a particular organizing framework; however, in the remainder of this volume we will use the social ecology of health model as an organizing framework for understanding health problems and planning interventions.

A number of formulations of the social-ecological model have been developed. They all have in common the notion of multilevel systems of mutual influence and interaction, moving from the individual level through linkages to larger social networks, including the family, community, social institutions, the state, and global systems. Key concepts include system integration, change, and adaptation over time (Richard et al., 2011). One formulation of the model that has gained prominence is that developed by McLeroy et al. (1988) for application to health promotion. This model is organized around five hierarchical levels of influence: (a) intrapersonal factors, (b) interpersonal processes and relations with primary social groups, (c) institutional factors, (d) community factors, and (e) public policy. It has been widely applied to the study of diverse health topics, including physical activity, drug use, adolescent pregnancy, infant feeding, cancer, and heart disease.

The model we use in this textbook is very similar to that of McLeroy et al. (1988) in that it organizes determinants of health according to five hierarchical levels of influence—that is, intrapersonal, interpersonal, organizational, community, and society. Our visual depiction of the model is adapted from Hanson et al.'s (2005) injury iceberg model, with the tip of the iceberg or triangle representing behavior and successive underlying levels representing social contextual and structural factors (see Figure 1.1). Examples of factors influencing health at the intrapersonal level include biological and psychological factors such as genetics, cognition, and personality. At the interpersonal level, we identify home, family, and peer group influences, while the organizational level might include work and school settings, civic associations, and health care organizations. At the level of community, we can identify factors such as ethnicity, social class, social capital, public facilities, and the built environment. The more macro-level societal factors include policy issues, national ethos and cultural values, infrastructure, economics, and education. Aspects of the physical environment are positioned toward the left side of the pyramid, while social contextual factors are located to the right. Our model also incorporates the notion of proximate, intermediate, and distal determinants of health (see causal continuum, Chapter 3), with the more proximate factors located near the tip of the pyramid, the individual level; intermediate factors corresponding with interpersonal and organizational levels; and distal factors corresponding with community and societal influences. This model can be applied to the analysis of many public health problems, as will be illustrated throughout the book.

Although systems strive toward equilibrium, perfect balance is never achieved because systems are open to internal and external changes and thus constantly require adjustment or adaptation. Because all levels of an ecosystem are integrated, change at any level of the system may require adjustment at other levels. The process of adaptation in response to change is one way of conceptualizing stress, and again it can occur at different levels, including psychological distress, family dysfunction, community