



HEALTH PSYCHOLOGY

An Introduction
to Behavior
and Health

Tenth Edition



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An Introduction
to Behavior
and Health

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PREFACE

Health is a far different phenomenon today than it was just a century ago. Most serious diseases and disorders now result from people's behavior. People smoke, eat unhealthily, do not exercise, or cope ineffectively with the stresses of modern life. As you will learn in this book, psychology—the science of behavior—is increasingly relevant to understanding physical health. *Health psychology* is the scientific study of behaviors relating to health enhancement, disease prevention, safety, and rehabilitation.

The first edition of this book, published in the 1980s, was one of the first undergraduate texts to cover the then-emerging field of health psychology. Now, in this tenth edition, *Health Psychology: An Introduction to Behavior and Health* remains a preeminent undergraduate textbook in health psychology.

The Tenth Edition

This tenth edition retains the core aspects that have kept this book a leader throughout the decades: (1) a balance between the science and applications of the field of health psychology and (2) a clear and engaging review of classic and cutting-edge research on behavior and health.

The tenth edition of *Health Psychology: An Introduction to Behavior and Health* has five parts. Part 1, which includes the first four chapters, lays a solid foundation in research and theory for understanding subsequent chapters and approaches the field by considering the overarching issues involved in seeking medical care and adhering to health care regimens. Part 2 deals with stress, pain, and managing these conditions through conventional and alternative medicine. Part 3 discusses heart disease, cancer, and other chronic diseases. Part 4 includes chapters on tobacco use, alcohol, eating and weight, and physical activity. Part 5 looks toward future challenges in health psychology and addresses how to apply health knowledge to one's life to become healthier.

What's New?

The tenth edition reorganizes several chapters to better emphasize the theoretical underpinnings of health behavior. For example, Chapter 4 focuses on adherence to healthy behavior and presents both classic and contemporary theories of health behavior, including recent research on the “intention–behavior gap.” Readers of the tenth edition will benefit from the most up-to-date review of health behavior theories—and their applications—on the market. They will also be able to hone in on key concepts and topics highlighted in the Learning Objectives placed at the beginning of each chapter.

The tenth edition also features new boxes on important and timely topics such as

- The Covid-19 Pandemic
- Why is there a controversy about childhood vaccinations?
- Do online social networks influence your health?
- How much of your risk for stroke is due to behavior? (Answer: nearly *all*)
- Does drug use cause brain damage?
- Can sleep deprivation lead to obesity?
- Can exercise help you learn?

Other new or reorganized topics within the chapters include:

- Several Real-World Profiles, including the COVID-19 pandemic, pain patients, T. R. Reid, Emilia Clarke, and Nick Jonas.
- Illustration of the evolving nature of health research in Chapter 2, through examples of studies on the link between diet and colon cancer.
- New research on the role of **stigma** in influencing people's decision to seek medical care, in Chapter 3.
- The role of **optimism** and **positive mood** in coping with stress, in Chapter 5.
- **Mindfulness** as a useful technique for managing stress (Chapter 5), managing pain (Chapter 7), and as a promising therapy for binge eating disorder (Chapter 14).

- Stress and its influence on the length of **telomeres**, in Chapter 6.
- **Marriage** as a key factor in predicting survival following cancer diagnosis, in Chapter 10.
- The use of **dignity therapy** to address psychosocial issues faced by terminal patients, in Chapter 11.
- The use of **smartphone “apps” and fitness trackers** in promoting physical activity, in Chapter 15.

What Has Been Retained?

In this revision, we retained the most popular features that made this text a leader over the past two decades. These features include (1) “Real-World Profiles” for each chapter, (2) chapter-opening questions; (3) a “Check Your Health Risks” box in most chapters; (4) one or more “Would You Believe . . .?” boxes in each chapter; and (5) a “Becoming Healthier” feature in many chapters. These features stimulate critical thinking, engage readers in the topic, and provide valuable tips to enhance personal well-being.

Real-World Profiles Millions of people—including celebrities—deal with the issues we describe in this book. To highlight the human side of health psychology, we open each chapter with a profile of a person in the real world. Many of these profiles are of famous people, whose health issues may not always be well known. Their cases provide intriguing examples, such as Barack Obama’s attempt to quit smoking, Lance Armstrong’s delays in seeking treatment for cancer, Steve Jobs’s fight with cancer, Halle Berry’s diabetes, Daniel Radcliffe’s alcohol abuse, and Ricky Gervais’s efforts to increase physical activity. We also include a profile of “celebrities” in the world of health psychology, including Dr. Angela Bryan, Dr. Norman Cousins, and Dr. Rajiv Kumar, to give readers a better sense of the personal motivation and activities of those in the health psychology and medical fields.

Questions and Answers In this text, we adopt a *preview, read, and review* method to facilitate student’s learning and recall. Each chapter begins with a series of *Questions* that organize the chapter, preview the material, and enhance active learning. As each chapter unfolds, we reveal the answers through a discussion of relevant research findings. At the end of each major topic, an *In Summary* statement recaps the topic. Then, at the end of the chapter, *Answers* to the chapter-opening questions appear. In this manner, students benefit

from many opportunities to engage with the material throughout each chapter.

Check Your Health Risks At the beginning of most chapters, a “Check Your Health Risks” box personalizes material in each chapter. Each box consists of several health-related behaviors or attitudes that readers should check before looking at the rest of the chapter. After checking the items that apply to them and then becoming familiar with the chapter’s material, readers will develop a more research-based understanding of their health risks. A special “Check Your Health Risks” appears inside the front cover of the book. Students should complete this exercise before they read the book and look for answers as they proceed through the chapters (or check the website for the answers).

Would You Believe . . .? Boxes We keep the popular “Would You Believe . . .?” boxes, adding many new ones and updating those we retained. Each box highlights a particularly intriguing finding in health research. These boxes explode preconceived notions, present unusual findings, and challenge students to take an objective look at issues that they may not have evaluated carefully.

Becoming Healthier Embedded in most chapters is a “Becoming Healthier” box with advice on how to use the information in the chapter to enact a healthier lifestyle. Although some people may not agree with all these recommendations, each is based on the most current research findings. We believe that if you follow these guidelines, you will increase your chances of a long and healthy life.

Other Changes and Additions

We have made several subtle changes in this edition that we believe make it an even stronger book than its predecessors. More specifically, we

- Replaced old references with more recent ones
- Reorganized many sections of chapters to improve the flow of information
- Added several new tables and figures to aid students’ understanding of difficult concepts
- Highlighted the biopsychosocial approach to health psychology, examining issues and data from biological, psychological, and social viewpoints
- Drew from the growing body of research from around the world on health to give the book a more international perspective

- Recognized and emphasized gender issues whenever appropriate
- Retained our emphasis on theories and models that strive to explain and predict health-related behaviors

Writing Style

With each edition, we work to improve our connection with readers. Although this book explores complex issues and difficult topics, we use clear, concise, and comprehensible language and an informal, lively writing style. We write this book for an upper-division undergraduate audience, and it should be easily understood by students with a minimal background in psychology and biology. Health psychology courses typically draw students from a variety of college majors, so some elementary material in our book may be repetitive for some students. For other students, this material will fill in the background they need to comprehend the information within the field of health psychology.

Technical terms appear in **boldface type**, and a definition usually appears at that point in the text. These terms also appear in an end-of-the-book glossary.

Instructional Aids

Besides the glossary at the end of the book, we supply several other features to help both students and instructors. These include stories of people whose behavior typifies the topic, frequent summaries within each chapter, and annotated suggested readings.

Within-Chapter Summaries

Rather than wait until the end of each chapter to present a lengthy chapter summary, we place shorter summaries at key points within each chapter. In general, these summaries correspond to each major topic in a chapter. We believe these shorter, frequent summaries keep readers on track and promote a better understanding of the chapter's content.

Annotated Suggested Readings

At the end of each chapter are three or four annotated suggested readings that students may wish to examine. We chose these readings for their capacity to shed additional light on major topics in a chapter. Most of these

suggested readings are quite recent, but we also selected several that have lasting interest. We include only readings that are intelligible to the average college student and that are accessible in most college and university libraries.

MindTap® Psychology: We now provide *MindTap*® in the tenth edition. *MindTap for Health Psychology 10th Edition* is the digital learning solution that helps instructors engage and transform today's students into critical thinkers. Through paths of dynamic assignments and applications that you can personalize, real-time course analytics, and an accessible reader, MindTap helps you turn cookie cutter into cutting edge, apathy into engagement, and memorizers into higher-level thinkers. As an instructor using MindTap you have at your fingertips the right content and unique set of tools curated specifically for your course all in an interface designed to improve workflow and save time when planning lessons and course structures. The control to build and personalize your course is all yours, focusing on the most relevant material while also lowering costs for your students. Stay connected and informed in your course through real-time student tracking that provides the opportunity to adjust the course as needed based on analytics of interactivity in the course.

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John thanks all his past undergraduate students for making health psychology such a thrill to teach. This book is dedicated to them and to the future generation of health psychology students.

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Linda Brannon is a professor in the Department of Psychology at McNeese State University in Lake Charles, Louisiana. Linda joined the faculty at McNeese after receiving her doctorate in human experimental psychology from the University of Texas at Austin.



Jess Feist was Professor Emeritus at McNeese State University. He joined the faculty after receiving his doctorate in counseling from the University of Kansas and stayed at McNeese until he retired in 2005. He died in 2015.



In the early 1980s, Linda and Jess became interested in the developing field of health psychology, which led to their coauthoring the first edition of this book. They watched the field of health psychology emerge and grow, and the subsequent editions of the book reflect that growth and development.

Their interests converge in health psychology but diverge in other areas of psychology. Jess carried his

interest in personality theory to his authorship of *Theories of Personality*, coauthored with his son Greg Feist. Linda's interest in gender and gender issues led her to publish *Gender: Psychological Perspectives*, which is in its seventh edition.

John A. Updegraff is a professor of social and health psychology in the Department of Psychological Sciences at Kent State University in Kent, Ohio. John received his PhD in social psychology at University of California, Los Angeles, under the mentorship of pioneering health psychologist Shelley Taylor. John then completed a postdoctoral fellowship at University of California, Irvine, prior to joining the faculty at Kent State.



John is an expert in the areas of health behavior, health communication, stress, and coping, and is the recipient of multiple research grants from the National Institutes of Health. His research appears in the field's top journals.

John stays healthy by running the roads and trails near his home. John is also known for subjecting students and colleagues to his singing and guitar playing (go ahead, look him up on YouTube).



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LEARNING OBJECTIVES

After studying this chapter, you will be able to...

- 1-1** Recognize how the major causes of death have changed over the last century
- 1-2** Understand how factors such as age, ethnicity, and income relate now to the risk of disease and death
- 1-3** Contrast the biomedical model with the biopsychosocial model of health
- 1-4** Trace the expanding role of psychology in understanding physical health, from its roots in psychosomatic medicine and behavioral medicine to its current role in the field of health psychology
- 1-5** Familiarize yourself with the profession of health psychology, including how health psychologists are trained and the varied types of work that they do

CHAPTER 1

Introducing Health Psychology

1-1 The Changing Field of Health

CHAPTER OUTLINE

Real-World Profile of the COVID-19 Pandemic

Real-World Profile of Angela Bryan

- The Changing Field of Health
- Psychology's Relevance for Health
- The Profession of Health Psychology

QUESTIONS

This chapter focuses on three basic questions:

1. How have views of health changed?
2. How did psychology become involved in health care?
3. What type of training do health psychologists receive, and what kinds of work do they do?

LEARNING OBJECTIVES

- 1-1 Recognize how the major causes of death have changed over the last century
- 1-2 Understand how factors such as age, ethnicity, and income relate now to the risk of disease and death
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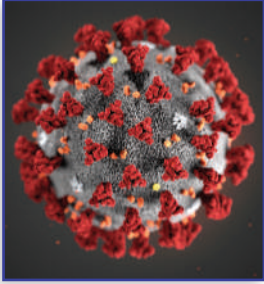
“We are now living well enough and long enough to slowly fall apart” (Sapolsky, 1998, p. 2).

The field of health psychology developed relatively recently—the 1970s, to be exact—to address the challenges presented by the changing field of health and health care. A century ago, the average **life expectancy** in the United States was approximately 50 years of age, far shorter than it is now. When people in the United States died, they died largely from infectious diseases such as pneumonia, tuberculosis, diarrhea, and enteritis (see **Figure 1.1**). These conditions resulted from contact with impure drinking water, contaminated foods, or sick people. People might seek medical care only after they became ill, but medicine had few cures to offer. The duration of most diseases—such as typhoid fever, pneumonia, and diphtheria—was short; a person either died or got well in a matter of weeks. People felt limited responsibility for contracting a contagious disease because such a disease was not controllable.

Life and death are now dramatically different than they were a century ago. Life expectancy in the United States is nearly 80 years of age, with more Americans now than ever living past their 100th birthday. Over 30 countries boast even longer life expectancies than the United States, with Japan boasting the longest at 84 years of age. Public sanitation for most citizens



Real-World Profile of COVID-19 PANDEMIC



Alissa Eckert, MS, Dan Higgins, MAMS/CDC
(Centers for Disease Control and Prevention)

This is an image of a SARS-CoV-2 virus. It is tiny, only 100 nanometers in diameter. It would take 1,000 of these, lined up side to side, to make a speck that could be seen by even the sharpest of human eyes.

Yet this virus was the cause of the global COVID-19 pandemic, an unprecedented public health crisis. In the first year of its emergence, COVID-19 resulted in over nearly 2 million deaths, economic collapses, school and business closures, unemployment, and a fundamental shift in how humans interact with one another. How could a virus so small have such a devastating impact?

The SARS-CoV-2 virus cannot reproduce on its own; it requires a host, such as a human, to spread. As such, the SARS-CoV-2 virus is a biological disease-causing agent, but its spread is due to human behavior. It is passed from person to person mainly through close, interpersonal contact with an infected person. People's behavior, in turn, is shaped by psychological, social, and cultural factors, including their beliefs about risk and severity of infection, adherence to preventive measures, their perceptions of what others around them do, and the cultural environment in which they live. For example, some countries such as Singapore, Taiwan, and South Korea endorsed immediate and strict social policies to contain the potential spread of the virus. Other countries such as Sweden did not, at least immediately. Even within countries such as the United States, people's behaviors varied widely from state to state, as did the infection rates between communities.

Among those infected by SARS-CoV-2, the potential for severe illness or death also depends on factors influenced by behavior. Older adults are at greatest risk, as well as people with underlying chronic conditions such as diabetes, cancer, chronic obstructive pulmonary disease, and obesity. As you will learn in this book, the development and management of these medical conditions are influenced, to some degree, by people's past and current behavior. The immune system's ability to fight off an infection, too, can be diminished due to stress, sleep loss, depression, and loneliness; rates of such experiences and conditions increased during the COVID-19 pandemic. Some ethnic groups were at greater risk of illness than others, with these disparities due likely to a combination of environmental, economic, behavioral, and social factors.

When vaccines and cures are available for COVID-19, behavior remains important. People will need to choose to obtain vaccinations or adhere to treatments. These behaviors, again, are shaped by psychological, social, and cultural factors, including beliefs about effectiveness or support from health care providers and family.

The COVID-19 pandemic, like many other health issues we will review in this book, is more than simply a matter of biology, but a matter of behavior as well. For this reason, the field of health psychology emerged and has adopted a **biopsychosocial model of health**, which we introduce in this chapter. The biopsychosocial model accounts for the complex ways that biology, behavior, beliefs, emotions, the social environment, and culture all interact to either increase our risk of illness or help us remain healthy. The rest of this book will cover many issues that are relevant to the COVID-19 pandemic, including how research contributes to our knowledge of behavioral factors in health (Chapter 2), when and why people seek medical care (Chapter 3), why people do not always engage in healthy behaviors (Chapter 4), stress and its role in disease (Chapters 5 and 6), and how behavior relates to health and chronic illness (Chapters 9 through 15). As you read the pages ahead, you will see many examples of the central premise of health psychology: While illness is based in biology, our behavior matters.

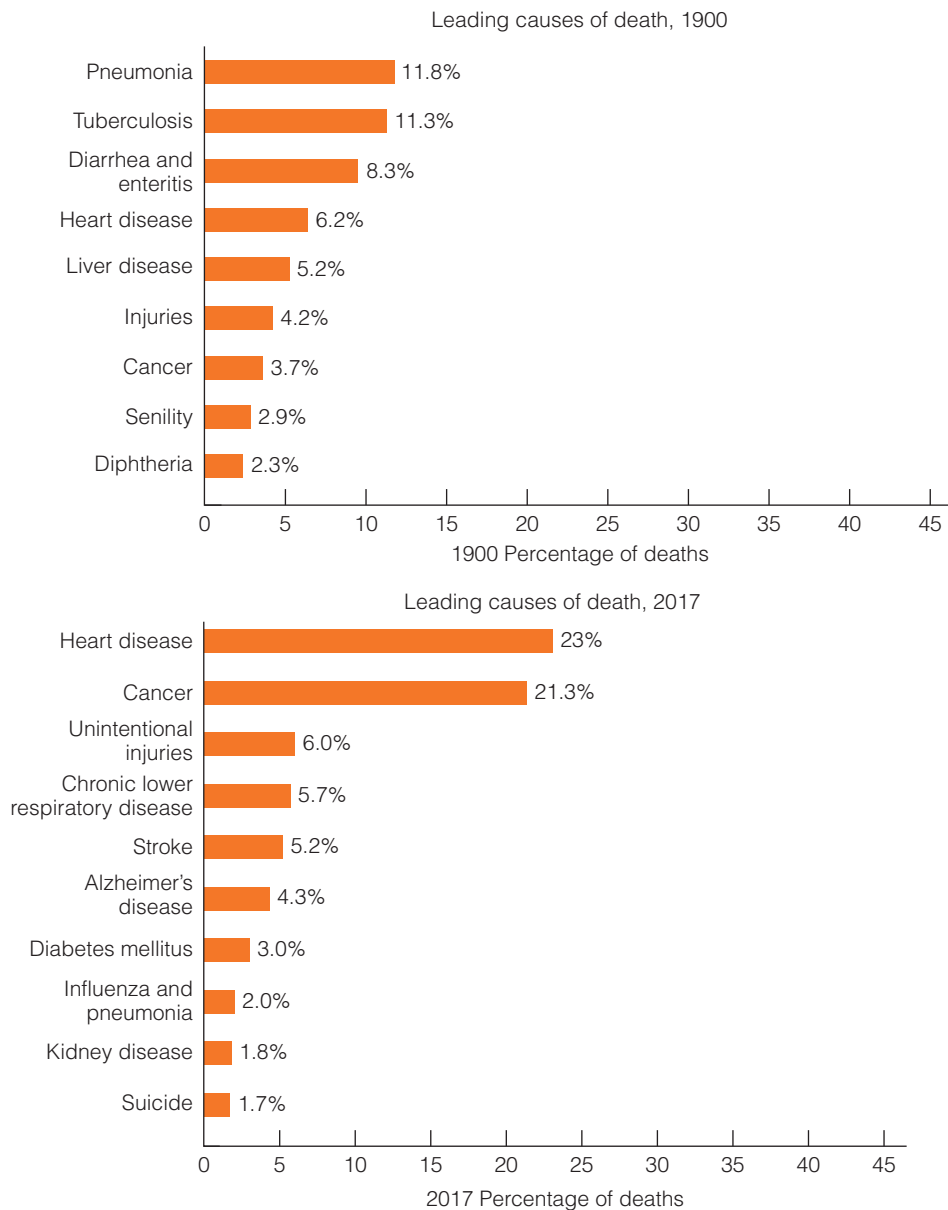


FIGURE 1.1 Leading causes of death, United States, 1900 and 2013.

Source: *Healthy people, 2010, 2000*, by U.S. Department of Health and Human Services, Washington, DC: U.S. Government Printing Office; “Deaths: Final Data for 2017,” 2019, by Heron, M., *National Vital Statistics Reports, 68(6)*, Table C.

of industrialized nations is vastly better than it was a century ago. Vaccines and treatments exist for many infectious diseases. However, improvements in the prevention and treatment of infectious diseases allowed for a different class of disease to emerge as today’s killers: **chronic diseases**. Heart disease, cancer, and stroke—all chronic diseases—are now the leading causes of mortality in the

United States and account for a greater proportion of deaths than infectious diseases ever did. Chronic diseases develop and then persist or recur, affecting people over long periods of time. Every year, over 2 million people in the United States die from chronic diseases, but over 130 million people—almost one out of every two adults—live with at least one chronic disease.

Furthermore, most deaths today are attributable to diseases associated with lifestyle and behavior. Heart disease, cancer, stroke, chronic lower respiratory diseases (including emphysema and chronic bronchitis), unintentional injuries, and diabetes are all due in part to cigarette smoking, alcohol abuse, unhealthy eating, stress, and a sedentary lifestyle. Because today's major killers arise in part due to lifestyle and behavior, people have a great deal more control over their health than they did in the past. However, many people do not exercise this control, so unhealthy behavior is an important public health problem. Indeed, unhealthy behavior contributes to the escalating costs of health care.

In this chapter, we describe the changing patterns of disease and disability and the increasing costs of health care. We also discuss how these trends change the very definition of health and require a broader view of health than in the past. This broad view of health is the biopsychosocial model, a view adopted by health psychologists.

Patterns of Disease and Death

The 20th century brought about major changes in the patterns of disease and death in the United States, including a shift in the leading causes of death. Infectious diseases were the leading causes of death in 1900, but over the next several decades, chronic diseases—such as heart disease, cancer, and stroke—became the leading killers. Only with the COVID-19 pandemic beginning in 2020 has an infectious disease been a leading cause of death in this century. In 2020, COVID-19 was the third most common cause of death in the United States, after heart disease and cancer. When the COVID-19 pandemic subsides, chronic diseases will remain as the leading causes of mortality in the United States.

During the first few years of the 21st century, deaths from some chronic diseases—those related to unhealthy lifestyles and behaviors—began to *decrease*. These include heart disease, cancer, and stroke, which all were responsible for a smaller proportion of deaths in 2010 than in 1990. Why have deaths from these diseases decreased in the last few decades? We will discuss this in greater detail in Chapter 9, but one major reason is that fewer people in the United States now smoke cigarettes than in the past. This change in behavior contributed to some of the decline in deaths due to heart disease; improvements in health care also contributed to this decline.

Death rates due to unintentional injuries, suicide, and homicide have increased in recent years. Significant increases also occurred in Alzheimer's disease,

kidney disease, septicemia (blood infection), liver disease, hypertension, and Parkinson's disease. For many of these recently increasing causes, behavior is a less important component than for those causes that have decreased. However, the rising death rates due to Alzheimer's and Parkinson's reflect another important trend in health and health care: an increasingly older population.

Age Obviously, older people are more likely to die than younger ones, but the causes of death vary among age groups. Thus, the ranking of causes of death for the entire population may not reflect any specific age group and may lead people to misperceive the risk for some ages. For example, cardiovascular disease (which includes heart disease and stroke) and cancer account for over 50% of all deaths in the United States, but they are not the leading cause of death for young people. For individuals between 1 and 24 years of age, unintentional injuries are the leading cause of death, and violent deaths from suicide and homicide rank high on the list as well (National Center for Health Statistics [NCHS], 2018). Taken together, injuries, suicides, and homicide account for over half of deaths during these younger years. As **Figure 1.2** reveals, other causes of death account for much smaller percentages of deaths among adolescents and young adults than unintentional injuries, homicide, and suicide.

For adults 45 and older, the picture is quite different. Cardiovascular disease and cancer become the leading causes of death, accounting for nearly half of deaths. As people age, they become more likely to die, so the causes of death for older people dominate the overall figures. However, younger people show very different patterns of mortality.

Ethnicity, Income, and Disease Question 2 from the quiz inside the front cover asks if the United States is among the top 10 nations in the world in terms of life expectancy. It is not even close. It ranks 34th among all nations (World Health Organization [WHO], 2018c). Within the United States, ethnicity is also a factor in life expectancy, and the leading causes of death also vary among ethnic groups. **Table 1.1** shows the ranking of the leading causes of death for four ethnic groups in the United States. No two groups have identical profiles of causes, and some causes do not appear on the list for each group, highlighting the influence of ethnicity on mortality.

If African Americans and European Americans in the United States were considered to be different nations, European America would rank higher in life

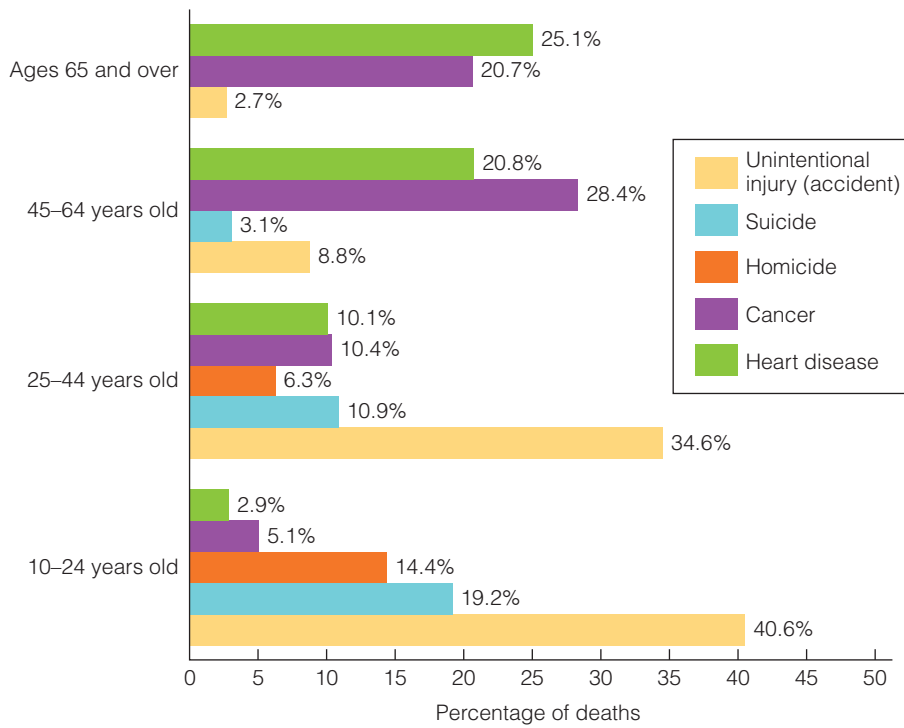


FIGURE 1.2 Leading causes of death among individuals aged 10–24, 25–44, 45–64, and 65+, United States, 2017.

Source: “Deaths: Final Data for 2017,” 2019, by Heron, M., *National Vital Statistics Reports*, 68(6), Figure 2.

TABLE 1.1 Leading Causes of Death for Four Ethnic Groups in the United States, 2017

	European Americans	Hispanic Americans	African Americans	Asian Americans
Heart disease	1	2	1	2
Cancer	2	1	2	1
Chronic lower respiratory disease	3	8	6	8
Unintentional injuries	4	3	3	4
Stroke	5	4	4	3
Alzheimer’s disease	6	6	9	6
Diabetes	7	5	5	5
Pneumonia & influenza	8	11	12	7
Suicide	9	9	16	11
Kidney disease	10	10	8	9
Chronic liver disease	11	7	14	14
Septicemia	12	13	10	12
Hypertension	14	14	11	10
Homicide	20	12	7	18

Source: “Deaths: Leading Causes for 2017,” 2019, by M. Heron, *National Vital Statistics Reports*, 68(6), Table D.

expectancy than African America—38th place and 80th place, respectively (NCHS, 2021; WHO, 2018c). Thus, European Americans have a longer life expectancy than African Americans, but neither should expect to live as long as people in Japan, Canada, Iceland, Australia, the United Kingdom, Italy, France, Hong Kong, Israel, and many other countries.

Hispanics have socioeconomic disadvantages like those of African Americans (U.S. Census Bureau [USCB], 2011), including poverty and low educational level. About 10% of European Americans live below the poverty level, whereas 32% of African Americans and 26% of Hispanic Americans do (USCB, 2011). European Americans also have educational advantages: 86% receive high school diplomas, compared with only 81% of African Americans and 59% of Hispanic Americans. These socioeconomic disadvantages translate into health disadvantages (Crimmins et al., 2007; Smith & Bradshaw, 2006). That is, poverty and low educational level both relate to health problems and lower life expectancies. Thus, some of the ethnic differences in health are due to socioeconomic differences.

Access to health insurance and medical care is not the only factor that makes poverty a health risk. Indeed, the health risks associated with poverty begin before birth. Even with the expansion of prenatal care by Medicaid, poor mothers, especially teen mothers, are more likely to deliver low-birth-weight babies, who are more likely than normal-birth-weight infants to die (NCHS, 2021). Also, pregnant women living below the poverty line are more likely than other pregnant women to be physically abused and to deliver babies who suffer the consequences of prenatal child abuse (Zelenko et al., 2000).

The association between income level and health is so strong that it appears not only at the poverty level but also at higher income levels. That is, very wealthy people have better health than people who are just, well, wealthy. Why should very wealthy people be healthier than other wealthy people? One possibility comes from the relation of income to educational level, which, in turn, relates to occupation, social class, and ethnicity. The higher the educational level, the less likely people are to engage in unhealthy behaviors such as smoking, eating high-fat foods, and maintaining a sedentary lifestyle (see *Would You Believe . . . ?* box). Another possibility is the perception of social status. People's perception of their social standing may differ from their status as indexed by educational, occupational, and income level; remarkably, this perception relates to health status more strongly than objective measures (Operario, Adler, & Williams, 2004). Thus, the relationships between health and ethnicity are intertwined with the relationships between health, income, education, and social class.

Changes in Life Expectancy During the 20th century, life expectancy rose dramatically in the United States and other industrialized nations. In 1900, life expectancy was 47.3 years, whereas today it is almost 78 years (NCHS, 2021). In other words, infants born today can expect, on average, to live more than a generation longer than their great-great-grandparents born at the beginning of the 20th century.

What accounts for the 30-year increase in life expectancy during the 20th century? Question 3 from the quiz inside the front cover asks if advances in medical care

Would You BELIEVE...?

College Is Good for Your Health

Would you believe that attending college could be good for your health? You may find that difficult to believe, as college seems to add stress, exposure to alcohol or drugs, and demands that make it difficult to maintain a healthy diet, exercise, and sleep. How could going to college possibly be healthy?

The health benefits of college appear after graduation. People who

have been to college have lower death rates than those who have not. This advantage applies to both women and men and to infectious diseases, chronic diseases, and unintentional injuries (NCHS, 2015). Better-educated people report fewer daily symptoms and less stress than less educated people (Grzywacz et al., 2004).

Even a high school education provides health benefits; but going

to college offers much more protection. For example, people with less than a high school education die at a rate of 575 per 100,000; those with a high school degree die at a rate of 509 per 100,000; but people who attend college have a death rate of only 214 per 100,000 (Miniño et al., 2011). The benefits of education for health and longevity apply to people around the world. For example,

a study of older people in Japan (Fujino et al., 2005) found that low educational level increased the risk of dying. A large-scale study of the Dutch population (Hoeymans, van Lindert, & Westert, 2005) also found that education was related to a wide range of health measures and health-related behaviors.

What factors contribute to this health advantage for people with more education? Part of that advantage may be intelligence, which predicts both health and longevity (Gottfredson & Deary, 2004). In addition, people who are well educated tend to live with and around people

with similar education, providing an environment with good health-related knowledge and attitudes (Øystein, 2008). Income and occupation may also contribute (Batty et al., 2008); people who attend college, especially those who graduate, have better jobs and higher average incomes than those who do not and thus are more likely to have better access to health care. In addition, educated people are more likely to be informed consumers of health care, gathering information on their diseases and potential treatments. Education is also associated with a variety of habits that contribute to

good health and long life. For example, people with a college education are less likely than others to smoke or use illicit drugs (Johnston et al., 2007), and they are more likely to eat a low-fat diet and to exercise.

Thus, people who attend college acquire many resources that are reflected in their lower death rate— income potential, health knowledge, more health-conscious spouses and friends, attitudes about the importance of health, and positive health habits. This strong link between education and health is one clear example of how good health is more than simply a matter of biology.

were responsible for this increase. The answer is “False”; other factors have been more important than medical care of sick people. The single most important contributor to the increase in life expectancy is the lowering of infant mortality. When infants die before their first

birthday, these deaths lower the population’s average life expectancy much more than do the deaths of middle-aged or older people. As [Figure 1.3](#) shows, infant death rates declined dramatically between 1900 and 1990, but little decrease has occurred since that time.

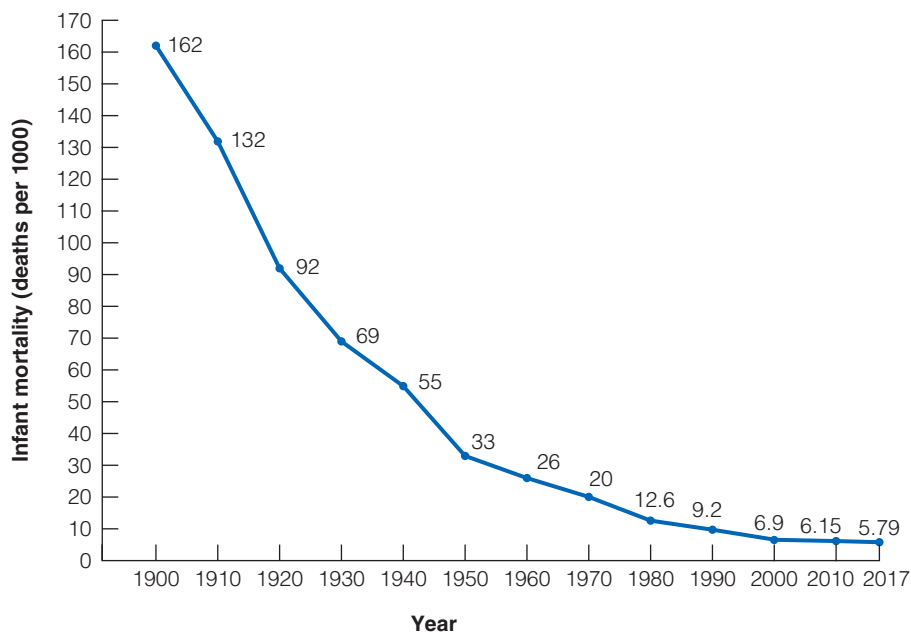


FIGURE 1.3 Decline in infant mortality in the United States, 1900–2013.

Source: Data from *Historical statistics of the United States: Colonial times to 1970, 1975* by U.S. Bureau of the Census, Washington, DC: U.S. Government Printing Office, p. 60; “Deaths: Final Data for 2013,” 2016, by Xu, J., Murphy, S. L., Kochanek, K. D., & Bastian, B. A., *National Vital Statistics Reports*, 64(2), Table B; “Recent Declines in Infant Mortality in the United States, 2005–2011,” National Center for Health Statistics, Number 120, 2013.