

Seventeenth Edition

# Connect Core Concepts in **HEALTH**



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Claire E. **Insel** | Walton T. **Roth** | Paul M. **Insel**



# CONNECT CORE CONCEPTS IN HEALTH

SEVENTEENTH EDITION

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# PROVEN, SCIENCE-BASED CONTENT

Now in its seventeenth edition, *Connect Core Concepts in Health* remains the leading health textbook in U.S. higher education. In 2020, *Connect Core Concepts in Health* won the Textbook and Academic Authors McGuffey Award for Excellence and Longevity. The book's unique psychological approach to mind-body health encourages students to take proactive self-assessments. Students can stay current on the latest studies while learning how to negotiate cross-cultural ideas of what it means to be healthy and how to live in our diverse, consumer-oriented society. McGraw Hill Education's digital and teaching learning tools also integrate *Connect Core Concepts in Health's* authoritative, science-based content.

**Assess Yourself** helps students analyze their own health and health-related behavior.

**Take Charge** challenges students to take meaningful action toward personal improvement.

**Critical Consumer** helps students navigate the numerous and diverse health-related products available on the market.

**Diversity Matters** introduces the many ways that cultural and gendered ideas of health come to influence our health strengths, risks, and behaviors.

**Wellness on Campus** focuses on health issues, challenges, and opportunities that students are likely to encounter on a regular basis.

**Behavior Change Strategy** offers specific behavior management/modification plans related to the chapter topic.

**Ask Yourself: Questions for Critical Thinking and Reflection** encourages critical reflection on students' own health-related behaviors.

**Quick Stats** updated for the seventeenth edition, focuses attention on particularly striking statistics related to the chapter content.

**Tips for Today and the Future** ends each chapter with a quick, bulleted list of concrete actions readers can take now and in the near future.



# CONNECT IS PROVEN EFFECTIVE



*McGraw Hill Education Connect*<sup>®</sup> is a digital teaching and learning environment that improves performance over a variety of critical outcomes; it is easy to use and proven effective. Connect<sup>®</sup> empowers students by continually adapting to deliver precisely what they need, when they need it, and how they need it, so your class time is more engaging and effective. Connect for *Core Concepts in Health* offers a wealth of interactive online content, including health labs and self-assessments, video activities on timely health topics, and practice quizzes with immediate feedback.

## PERSONALIZED LEARNING



Available within Connect, *SmartBook 2.0*<sup>®</sup> makes study time as productive and efficient as possible by identifying and closing knowledge gaps. SmartBook 2.0 identifies what an individual student knows and doesn't know based on the student's confidence level, responses to questions, and other factors. SmartBook 2.0 builds an optimal, personalized learning path for each student, so students spend less time on concepts they already understand and more time on those they don't. As a student engages with SmartBook 2.0, the reading experience continuously adapts by highlighting the most impactful content that person needs to learn at that moment. This ensures that every minute spent with SmartBook 2.0 is returned to the student as the most value-added minute possible. The result? More confidence, better grades, and greater success.

SmartBook 2.0 is now optimized for phones and tablets. Its interactive features are also accessible for students with disabilities. Just like our new ebook and ReadAnywhere app, SmartBook 2.0 is available both online and offline.

Using Food Labels

### WELLNESS WORKSHEET

#### Informed Food Choices

Be sure to complete all portions of the lab. There are two parts, appearing on two separate screens. Once you complete all content in a particular part, you will be able to navigate to the next screen using the navigation map at the top or bottom of the activity.

#### USING FOOD LABELS

Choose three food items to evaluate. You might want to select three similar items, such as regular, low-fat, and fat-free salad dressing, or three very different items. Record the information from their food labels in the table below.

To receive an initial score of complete, fill out all fields in the table. Enter a zero (0) in a field if a food does not contain a particular nutrient. Enter only whole numbers and decimals in the log. For example, enter a half gram of dietary fiber as 0.5, not 1/2.

Food Items			
Serving size			

### Physical Responses to Stressors

Imagine a close call: As you step off the curb, a car careens toward you. With just a fraction of a second to spare, you leap safely out of harm's way. In that split second of danger and in the moments following it, you experience a predictable series of physical reactions. Your body goes from a relaxed state to one prepared for physical action to cope with a threat to your life.

Two systems in your body are responsible for your physical response to stressors: the nervous system and the endocrine system. Through rapid chemical reactions affecting almost every part of your body, you are primed to act quickly and appropriately in time of danger.

#### The Nervous System

The **nervous system** consists of the brain, spinal cord, and nerves. Part of the nervous system is under voluntary control, as when you tell your arm to reach for a chocolate. The part that is *not* under conscious supervision—for example, the part that controls the digestion of the chocolate—is the **autonomic nervous system**. In addition to digestion, it controls your heart rate, breathing, blood pressure, and hundreds of other involuntary functions. The autonomic nervous system consists of two divisions:

- The **parasympathetic division** is in control when you are relaxed. It aids in digesting food, storing energy, and promoting growth.
- The **sympathetic division** is activated when your body is stimulated, for example, by exercise, and when there is an emergency, such as severe pain, anger, or fear.

#### Endocrine System

- The brain releases **endorphins**—chemicals that inhibit or block sensations of pain—in case you are injured.

As a group, these nearly instantaneous physiological changes are called the **fight-or-flight reaction**. These changes give you the heightened reflexes and strength you need to respond to a stressor.

#### stress response

The physical and emotional reactions to a stressor.

#### stress

The general physical and emotional state that the stressor produces.

#### nervous system

The brain, spinal cord, and nerves.

#### autonomic nervous system

The part of the nervous system that controls certain basic body processes; consists of the sympathetic and parasympathetic divisions.

#### parasympathetic division

The part of the autonomic nervous system that moderates the excitatory effect of the sympathetic division, slowing metabolism and restoring energy supplies.

#### sympathetic division

Division of the autonomic nervous system that reacts to danger or other challenges by accelerating body processes.

#### endocrine system

The system of glands, tissues, and organs that secrete hormones into the bloodstream to influence metabolism and other body processes.

#### hormone

A chemical messenger produced in the body and transported in the bloodstream to target cells or organs for specific regulation of their activities.

## DIETARY ANALYSIS TOOL

NutritionCalc Plus is a suite of powerful dietary self-assessment tools that help students track their food intake and activity and analyze their diet and health goals. Students and instructors can trust the reliability of the ESHA database while interacting with a robust selection of reports. This tool is provided at no additional charge inside Connect Personal Health.

## APPLICATION-BASED ACTIVITIES

New to this edition, Application-Based Activities help your students to assess their own health and behavior. Twelve new self-assessments and five new Portfolio Health Profiles include privacy controls to protect student data.

## WRITING ASSIGNMENT

McGraw Hill's new Writing Assignment tool delivers a learning experience that improves students' written communication skills and conceptual understanding with every assignment. Assign, monitor, and provide feedback on writing more efficiently and grade assignments within McGraw Hill Connect<sup>®</sup>. Writing Assignment gives students an all-in-one place interface, so you can provide feedback more efficiently.

Features include:

- Saved and reusable comments (text and audio)
- Ability to link to resources in comments
- Rubric building and scoring
- Ability to assign draft and final deadline milestones
- Tablet ready and tools for all learners

# CHAPTER-BY-CHAPTER CHANGES

The seventeenth edition focuses current events, health trends, and content changes informed by the COVID-19 pandemic.

## Chapter 1: Taking Charge of Your Health

- A new figure illustrating how lifestyle choices correlate to overall health.
- Expanded discussion of how healthy habits relate to quality of life and reduced risk of death.
- New Diversity Matters feature about health inequality and the COVID-19 pandemic.
- Updated data about the leading causes of death among college-age Americans.
- Updated data about the top 10 health issues affecting college students' academic performance.
- Hot-off-the-press *Healthy People 2030* targets.

## Chapter 2: Stress: The Constant Challenge

- Inclusion of the freeze response to describe physiological reactions to stress.
- Expanded discussion of the social stressors that impact girls and women more than men.
- Updated research about how social media can affect stress in young people.

## Chapter 3: Psychological Health

- Updated language surrounding social anxiety disorder.
- New questions for reflection about digital technology, fear of missing out, and mental health.
- New discussion of the correlation between education about psychological symptoms and the number of college students who report seeking help for mental illness.

## Chapter 4: Sleep

- New discussion of circadian rhythm variation among individuals.
- Revised content about circadian rhythm disruptions and their impact.
- Revised discussion of how the homeostatic sleep drive and the circadian system work together to regulate sleep.
- Revised explanation about how sleep quality and duration change across the life span.

## Chapter 5: Intimate Relationships and Communication

- Expanded discussion of gender roles, culture, and their effects on individuals.

- New content about nonsexual intimate relationships, including peer relationships.
- Expanded discussion of premarital sex, sex education, and the average age of Americans' first sexual experiences.
- New content about how to recognize unhealthy relationships and how these standards have changed over time.
- Revised discussion of how social media and digital tools affect relationships, including a discussion of online bullying, stalking, and violations of privacy.
- New discussion of cultural norms for finding and choosing romantic partners, including the role of online dating.
- Updated examination of marriage, cohabitation, and the factors that influence these trends, including an expanded discussion of trends surrounding the decision to remain single.
- Revised discussion of how spousal and parent roles have changed over time. This includes an updated exploration of single parenthood and blended families.

## Chapter 6: Sex and Your Body

- Updated discussion of intersex conditions, how doctors assign genders, and how intersex individuals make key choices about their sex and gender.
- Expanded explanations of consent have been added throughout the chapter to highlight this important topic.

## Chapter 7: Contraception

- Revised Wellness on Campus feature about contraception use and pregnancy among college students.
- New figure with updated data about contraceptive effectiveness.
- Updated content about how attitudes about gender differences can influence contraception choices, including discussing options with a partner, sharing the costs of contraception, and policies to support contraceptive health care.
- Revised Diversity Matters box about barriers to contraceptive use.

### **Chapter 8: Abortion**

- Updated discussion of the long-term mental health impact of having an abortion as opposed to being turned away.
- New figure illustrating access to abortion facilities in all 50 states.
- New coverage of policies that affect abortion in the United States, including refusal laws and state legislation that challenges *Roe v. Wade*.

### **Chapter 9: Pregnancy and Childbirth**

- Discussion of fetal programming has been removed.
- Expanded discussion of first-trimester screening tests.

### **Chapter 10: Drug Use and Addiction**

- Updated data on drug use among high school seniors, including vaping marijuana (newly added), smoking marijuana, and prescription painkillers. This includes new data about high school drug use and race/ethnicity.
- Revised content about gender differences in drug use, overdose deaths, and substance use disorder.
- Expanded discussion of how addiction works on a physiological level, including drug effects on neurotransmitters, receptors, and neurons.
- Revised discussion of the opioid epidemic, including updated data and the role of synthetic opioids.
- Revised discussion of use and abuse of stimulant ADHD medications.
- New content about the United Nations' findings about addiction as a public health issue. This includes the costs of treatment and drug-related incarceration and recommendations for addressing addiction.

### **Chapter 11: Alcohol: The Most Popular Drug**

- Revised discussion of gender differences in alcohol use and alcohol's effects.
- Updated discussion of driving under the influence, including updated data and discussion questions.

### **Chapter 12: Tobacco Use**

- Expanded discussion of e-cigarettes, including updated data, a new discussion of vaping THC and CBD products, and new recommendations from the Centers for Disease Control.
- New figure illustrating tobacco and e-cigarette use among high school and college students.
- Updated discussion of federal regulation of e-cigarettes and vaping products and devices.

### **Chapter 13: Nutrition Basics**

- Updated material on the forthcoming *2020–2025 Dietary Guidelines for Americans*.

- Revised discussion of the risks and regulation of trans fats.
- New practical advice for how students can afford to eat healthier on a budget.
- Expanded discussion of plant-based products and meat alternatives, including those that mimic meat.

### **Chapter 14: Exercise for Health and Fitness**

- Revised explanation of the physical activity pyramid to enhance clarity.
- Updated material based on the recently released second edition of the U.S. Department of Health and Human Services's *Physical Activity Guidelines for Americans*.

### **Chapter 15: Weight Management**

- New section explaining the various models to describe individual differences in weight and the underlying factors that determine a person's weight, including genetics, body composition, hormones, culture, behavior, and the microbiome.
- Revised Wellness on Campus feature providing practical ways to change behavior for healthy weight management.
- New discussion of intermittent fasting as a weight loss strategy.
- Expanded discussion of how to assess safe and effective weight loss programs.
- Updated explanation of avoidant restrictive food intake disorder (ARFID), a new DSM-5 diagnosis (previously referred to as "selective eating disorder.")

### **Chapter 16: Cardiovascular Health**

- New Take Charge box about using online health tools for cardiovascular health.
- Simplified atherosclerosis figure and technical language throughout the chapter.

### **Chapter 17: Cancer**

- New explanation of CAR-T cell immunotherapy.
- Current numbers of cancer cases and deaths for groups of different genders, ages, and ethnicities.

### **Chapter 18: Immunity and Infection**

- Updated discussion of 2019 measles outbreak, including the role of reduced vaccination rates and the long-term effects of measles.
- New section on the COVID-19 pandemic, including the virus's symptoms, epidemiology, and similarity to other coronaviruses. It also includes sections on the response of the global public health sector.
- New section on the prevention of COVID-19 and similar viruses, and the reasons behind COVID-19's quick spread and difficult treatment. This includes specific behaviors students can take in public and at

home to reduce their risk of infection and treat symptoms.

- Updated discussion of the risks of antibacterial soaps in generating drug-resistant bacteria.

#### **Chapter 19: Sexually Transmitted Infections**

- Extensive data updates about long-term trends in sexually transmitted infections.
- New Diversity Matters box about global disparities in cases of HIV/AIDS.
- Revised Wellness on Campus feature about the risks of a range of sexual behaviors, trends in STI contraction, and how to prevent infection.
- Updated discussions of treatment and diagnoses of HIV cases globally and in the United States.
- Revised feature about STI screening and prevention on college campuses, including strategies for protection.

#### **Chapter 20: Environmental Health**

- Updated discussion of the impact of climate change, including recent wildfires in California, Australia, and the Amazon rainforest.

#### **Chapter 21: Conventional and Complementary Medicine**

- New table showing common alternative mind-body therapies used in the United States.
- Updated statistics about the increased popularity of yoga and meditation in the United States.

#### **Chapter 22: Personal Safety**

- Updated content about preventing distracted driving and the digital tools available to support safe driving.

- Updated explanation of harassment, including strategies for better understanding what type of behavior and communication is appropriate.

#### **Chapter 23: Aging: An Ongoing Process**

- Revised discussion of data about gerontology and the study of aging.
- Revised content about the social effects of aging, including the impact of retirement, the death of a spouse, and divorce.
- Revised section about elderly people being vulnerable to crime.
- Reorganized and updated sections about hearing loss, arthritis, falls, sexual functioning, and cognitive changes.
- Revised discussion of the gender gap in life expectancy and differences in aging between men and women.
- Revised discussion of living and care options.

#### **Chapter 24: Dying and Death**

- Revised discussion of advance directives and specific tools for planning them.
- Updated discussion of organ donation, including how to register and what process is used for donating organs.
- Updated discussion of physician-assisted death, including legislation affecting death-with-dignity laws.

# YOUR COURSE, YOUR WAY

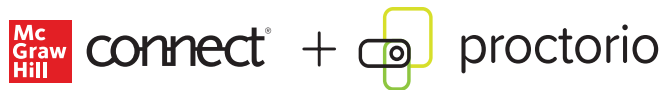


**McGraw Hill Education Create**<sup>®</sup> is a self-service website that allows you to create customized course materials using McGraw Hill Education's comprehensive, cross-disciplinary content and digital products. You can even access third-party content such as readings, articles, cases, videos, and more.

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- Select and personalize your cover.
- Edit and update your materials as often as you'd like.

Experience how McGraw Hill Education's Create empowers you to teach your students your way: <http://create.mheducation.com>.

## Remote Proctoring & Browser-Locking Capabilities



New remote proctoring and browser-locking capabilities, hosted by Proctorio within Connect, provide control of the assessment environment by enabling security options and verifying the identity of the student.

Seamlessly integrated within Connect, these services allow instructors to control students' assessment experience by restricting browser activity, recording students' activity, and verifying students are doing their own work.

Instant and detailed reporting gives instructors an at-a-glance view of potential academic integrity concerns, thereby avoiding personal bias and supporting evidence-based claims.



**McGraw Hill Education Campus**<sup>®</sup> is a groundbreaking service that puts world-class digital learning resources just a click away for all faculty and students. All faculty—whether or not they use a McGraw Hill title—can instantly browse, search,

and access the entire library of McGraw Hill instructional resources and services, including eBooks, test banks, PowerPoint slides, animations, and learning objects—from any Learning Management System (LMS), at no additional cost to an institution. Users also have single sign-on access to McGraw Hill digital platforms, including Connect, Create, and Tegrity, a fully automated lecture caption solution.

## INSTRUCTOR RESOURCES

*Core Concepts in Health* offers an array of instructor resources for the personal health course:

**Instructor's manual.** The instructor's manual provides a wide variety of tools and resources for presenting the course, including learning objectives and ideas for lectures and discussions.

**Test bank.** By increasing the rigor of the test bank development process, McGraw Hill has raised the bar for student assessment. Each question has been tagged for level of difficulty, Bloom's taxonomy, and topic coverage. Organized by chapter, the questions are designed to test factual, conceptual, and higher-order thinking.

**Test Builder.** New to this edition and available within Connect, Test Builder is a cloud-based tool that enables instructors to format tests that can be printed and administered within a Learning Management System. Test Builder offers a modern, streamlined interface for easy content configuration that matches course needs, without requiring a download.

Test Builder enables instructors to:

- Access all test bank content from a particular title
- Easily pinpoint the most relevant content through robust filtering options
- Manipulate the order of questions or scramble questions and/or answers
- Pin questions to a specific location within a test
- Determine your preferred treatment of algorithmic questions
- Choose the layout and spacing
- Add instructions and configure default settings

**PowerPoint.** The PowerPoint presentations highlight the key points of the chapter and include supporting visuals. All slides are WCAG compliant.

# ACKNOWLEDGMENTS

We are grateful for the contributors and reviewers who provided feedback and suggestions for enhancing this seventeenth edition:

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## CHAPTER OBJECTIVES

- Define wellness as a health goal
- Explain two major efforts to promote national health
- Describe factors that influence wellness
- Explain methods for achieving wellness through lifestyle management
- List ways to promote lifelong wellness for yourself and your environment

## CHAPTER

# 1

# Taking Charge of Your Health

## TEST YOUR KNOWLEDGE

1. Which of the following lifestyle factors influence wellness?
  - a. Managing your finances
  - b. Cultivating a support group
  - c. Exercising regularly
2. The terms *health* and *wellness* mean the same thing.  
True or False?
3. What is the leading cause of death for college-age students?
  - a. Alcohol misuse
  - b. Motor vehicle accidents
  - c. Cancer
4. A person's genetic makeup determines whether he or she will develop certain diseases (such as breast cancer), regardless of that person's health habits.  
True or False?

## ANSWERS

1. **ALL THREE.** All of these practices affect your sense of well-being.
2. **FALSE.** The term *health* refers to the overall condition of the body or mind and to the presence or absence of illness or injury. The term *wellness* refers to optimal health and vitality, encompassing the dimensions of well-being.
3. **B.** Motor vehicle accidents are the leading cause of death for people aged 15–24 years.
4. **FALSE.** In many cases, behavior can counter the effects of heredity or environment. For example, diabetes may run in families, but this disease is also associated with controllable factors, such as being overweight and inactive.



**W**hen was the last time you felt truly healthy? Not just free from illness, but energized, hungry, and flexible, like all your muscles just got a good stretching or workout? Many of us do not feel this way. We're overweight; we smoke; we eat a lot of sugar; we don't sleep well. We are surrounded by people who might be contagious, or we might be contagious.

The good news? There is always something we could be improving. This book can help you learn about the many aspects of life that work together to get you feeling on top of your game. Let's set some goals and make some changes!

## WELLNESS AS A HEALTH GOAL

Generations of people have viewed good health simply as the absence of disease, and that view largely prevails today. The word **health** typically refers to the overall condition of a person's body or mind and to the presence or absence of illness or injury. **Wellness** expands this idea of good health to include living a rich, meaningful, and energetic life. Beyond the simple presence or absence of disease, wellness can refer to optimal health and vitality—to living life to its fullest. Although we use the words *health* and *wellness* interchangeably, they differ in two important ways:

- **Health**—or some aspects of it—can be determined or influenced by factors beyond your control, such as your genes, age, and family history. Consider, for example, a 50-year-old man with a family history of early heart disease. This factor increases his risk of having a heart attack at an earlier age than might be expected.

- **Wellness** is determined largely by the decisions you make about how you live. That same 50-year-old man can reduce his risk of an early heart attack by eating sensibly, exercising, and having regular screening tests. Even if he develops heart disease, he may still live a long, rich, meaningful life. To achieve wellness he should choose not only to care for himself physically but also to maintain a positive outlook, enjoy his relationships with others, challenge himself intellectually, and nurture other aspects of his life.

Wellness, therefore, involves conscious decisions that affect **risk factors** that contribute to disease or injury. We cannot control risk factors such as age and family history, but we can control lifestyle behaviors.

## Dimensions of Wellness

The process of achieving wellness is continual and dynamic, involving change and growth. The encouraging aspect of

wellness is that you can actively pursue it. Here are nine dimensions of wellness:

- Physical
- Emotional
- Intellectual
- Interpersonal
- Cultural
- Spiritual
- Environmental
- Financial
- Occupational

These dimensions are interrelated and may affect each other, as the following sections explain. Figure 1.1 lists specific qualities and behaviors associated with each dimension.

**Physical Wellness** Your physical wellness includes not just your body's overall condition and the absence of disease but also your fitness level and your ability to care for yourself. The higher your fitness level, the higher your level of physical wellness. Similarly, as you develop the ability to take care of your own physical needs, you ensure greater physical wellness. The decisions you make now, and the habits you develop over your lifetime, will determine the length and quality of your life.

**Emotional Wellness** Trust, self-confidence, optimism, satisfying relationships, and self-esteem are some of the qualities of emotional wellness. Emotional wellness is dynamic and involves the ups and downs of living. It fluctuates with your intellectual, physical, spiritual, cultural, and interpersonal health. Maintaining emotional wellness requires exploring thoughts and feelings. *Self-acceptance* is your personal satisfaction with yourself—it might exclude society's expectations—whereas *self-esteem* relates to the way you think others perceive you; *self-confidence* can be a part of both acceptance and esteem. Achieving emotional wellness means finding solutions to emotional problems, with professional help if necessary.

**Intellectual Wellness** Those who enjoy intellectual wellness constantly challenge their minds. An active mind is essential to wellness because it detects problems, finds solutions, and directs behavior. People with active minds often discover new things about themselves.

**Interpersonal Wellness** Satisfying and supportive relationships are important to physical and emotional wellness. Learning good communication skills, developing the capacity for intimacy, and cultivating a supportive network are all important to interpersonal (or social) wellness. Social wellness requires participating in and contributing to your community and to society.

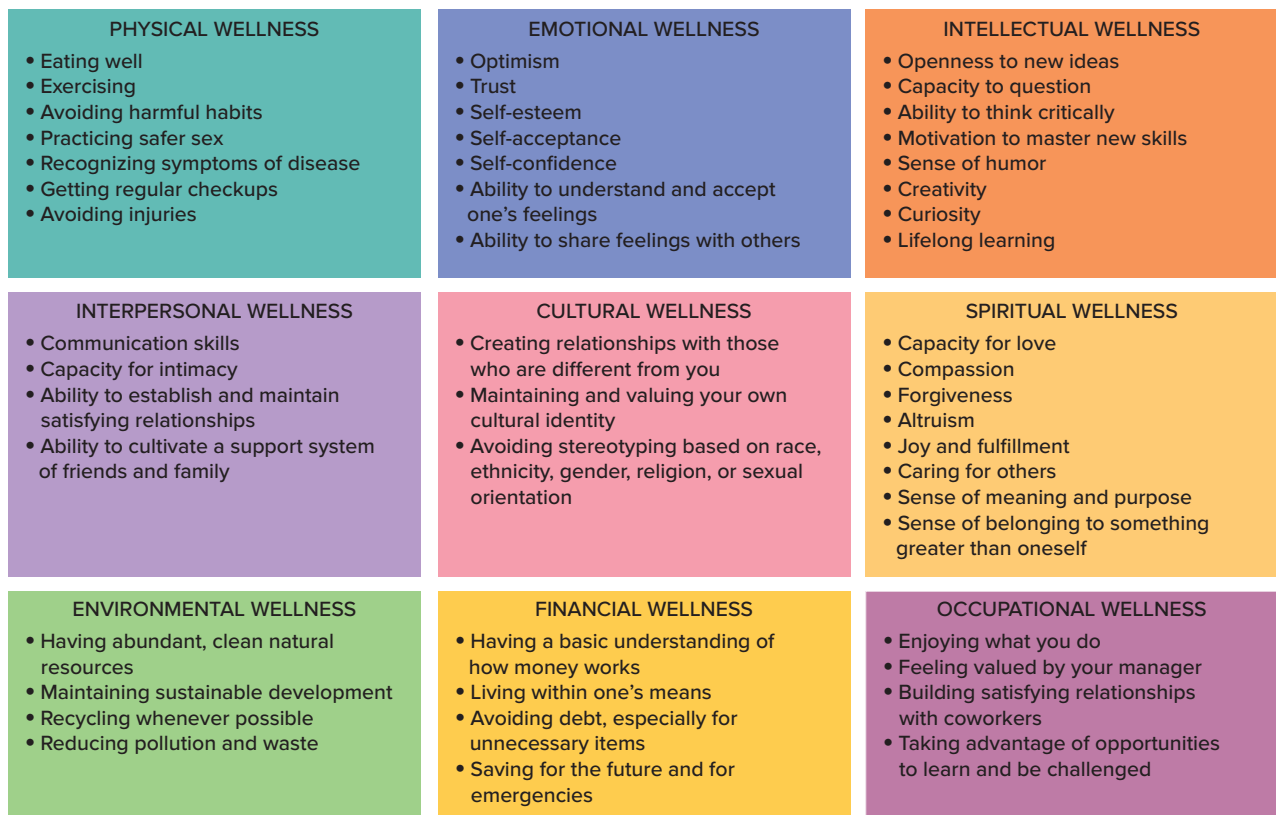
**Cultural Wellness** Cultural wellness refers to the way you interact with others who are different from you in terms of ethnicity, religion, gender, sexual orientation, age, and customs. It involves creating relationships with others and suspending judgment of other's behavior until you have "walked in their shoes." It also includes accepting and valuing the different cultural ways people interact in the world. The extent to which you maintain and value cultural identities is one measure of cultural wellness.

**health** The overall condition of body or mind and the presence or absence of illness or injury.

### TERMS

**wellness** Optimal health and vitality, encompassing all the dimensions of well-being.

**risk factor** A condition that increases your chances of disease or injury.



**FIGURE 1.1** Qualities and behaviors associated with the dimensions of wellness. Carefully review each dimension and consider your personal wellness strengths and weaknesses.

**Spiritual Wellness** To enjoy spiritual wellness is to possess a set of guiding beliefs, principles, or values that give meaning and purpose to your life, especially in difficult times. The spiritually well person focuses on the positive aspects of life and finds spirituality to be an antidote for negative feelings such as cynicism, anger, and pessimism. Organized religions help many people develop spiritual health. Religion, however, is not the only source or form of spiritual wellness. Many people find meaning and purpose in their lives through their loved ones or on their own—through nature, art, meditation, or good works.

**Environmental Wellness** Your environmental wellness is defined by the livability of your surroundings. Personal health depends on the health of the planet—from the safety of the food supply to the degree of violence in society. To improve your environmental wellness, you can learn about and protect yourself against hazards in your surroundings and work to make your world a cleaner and safer place.

**Financial Wellness** Financial wellness refers to your ability to live within your means and manage your money in a way that gives you peace of mind. It includes balancing your income and expenses, staying out of debt, saving for the future, and understanding your emotions about money. See the “Financial Wellness” box.

**Occupational Wellness** Occupational wellness refers to the level of happiness and fulfillment you gain through your work. Although high salaries and prestigious titles are gratify-

ing, they alone may not bring about occupational wellness. An occupationally well person enjoys his or her work, feels a connection with others in the workplace, and takes advantage of the opportunities to learn and be challenged. Another important aspect of occupational wellness is recognition from managers and colleagues. An ideal job draws on your interests and passions, as well as your vocational skills, and allows you to feel that you are making a contribution in your everyday work.

## The Long and the Short of Life Expectancy

Can we control how long we will live, or is our life span determined by our genes? Studies suggest that our genes can determine up to 25% of the variability in life span. Some genes influence lifestyle factors, such as alcohol consumption and addiction. A new study found correlations among genes, behavior, and how long we might expect to live.

Researchers at the University of Edinburgh looked at the genomes of over 600,000 people in Europe, Australia, and North America and at their parents' life spans. They found that the strongest correlations between genes and mortality are susceptibility to coronary artery disease and modifiable behaviors such as cigarette smoking. Also correlated to a shorter life span are obesity, susceptibility to lung cancer, and insulin resistance. Greater longevity can happen for people who give up smoking, maintain their high-density lipoprotein cholesterol levels, attain more education, and cope well with stress.



# TAKE CHARGE

## Financial Wellness

Many students feel less prepared to manage their money than to handle almost any other aspect of college life. Compared to a 2016 study on students' financial behaviors, an identical 2019 study reveals that fewer students reported

paying bills on time, saving money, and avoiding spending money they don't have. Compared to college graduates and those who did not complete college, students were least likely to know their credit score; they also scored lower on tests about financial literacy and money management skills. *Financial wellness* means having a healthy relationship with money. Here are strategies for establishing that relationship:

### Follow a Budget

A budget is a way of tracking where your money goes and making sure you're spending it on the things that are most important to you. To start one, list your monthly income and expenditures. If you aren't sure where you spend your money, track your expenses for a few weeks or a month. Then organize them into categories, such as housing, food, transportation, entertainment, services, personal care, clothes, books and school supplies, health care, credit card and loan payments, and miscellaneous. Knowing where your money goes is the first step in gaining control of it.

Now total your income and expenditures and examine your spending patterns. Use this information to set guidelines and goals for yourself. If your expenses exceed your income, identify ways to make some cuts.

### Be Wary of Credit Cards

Students have easy access to credit but little training in finances. A little more than half of students use a credit card, with an average monthly balance of \$1,183. Many pay credit card bills late, pay only the minimum amount, and have large total outstanding credit balances.

Shifting away from credit and toward debit cards is a good strategy for staying out of debt. More students now use mobile payment services like PayPal and Venmo, and the majority link their debit cards to it. Familiarity with financial terminology helps as well. Basic financial literacy with regard to credit cards involves understanding terms like *APR* (annual percentage rate—the interest you're charged on your balance), *credit limit* (the maximum amount you can borrow), *minimum monthly payment* (the smallest payment your creditor will accept each month), *grace period* (the number of days you have to pay your bill before interest or penalties are charged), and *over-the-limit* and *late fees* (the amounts you'll be charged if you go over your credit limit or your payment is late).

### Manage Your Debt

One-fifth of students with a debt are behind on their payments. When it comes to student loans, having a direct,

personal plan for repayment can save time and money, reduce stress, and help you prepare for the future. However, only about 10% of students surveyed feel they have all the information needed to pay off their loans. Work with your lender and make sure you know how to access your balance, when to start repayment, how to make payments, what your repayment plan options are, and what to do if you have trouble making payments. Information on managing federal student loans is available from <https://studentaid.ed.gov/sa/>.

If you have credit card debt, stop using your cards and start paying them off. If you can't pay the whole balance, try to pay more than the minimum payment each month. It can take a very long time to pay off a loan by making only the minimum payments. For example, paying off a credit card balance of \$2000 at 10% interest with monthly payments of \$20 would take 203 months—nearly 17 years. Check out an online credit card calculator like <http://money.cnn.com/calculator/pf/debt-free/>. If you carry a balance and incur finance charges, you are paying back much more than your initial loan.

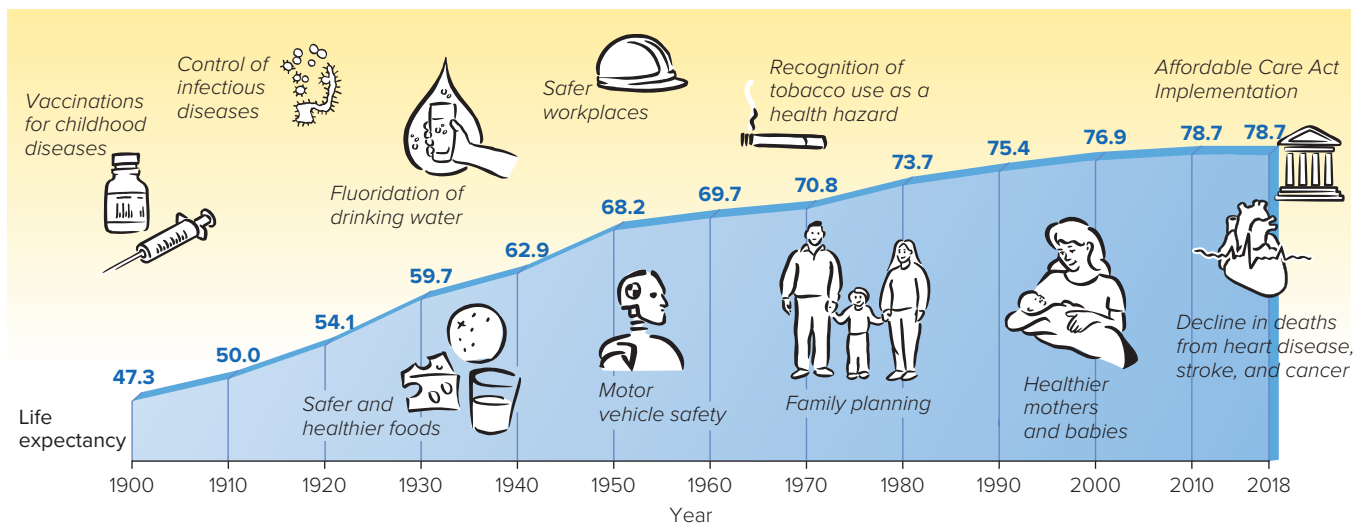
### Start Saving

If you start saving early, the same miracle of compound interest that locks you into years of credit card debt can work to your benefit (for an online compound interest calculator, visit <http://www.interestcalc.org>). Experts recommend “paying yourself first” every month—that is, putting some money into savings before you pay your bills. If you work for a company with a 401(k) retirement plan, contribute as much as you can every pay period.

### Become Financially Literate

Most Americans have not received any basic financial training. For this reason, the U.S. government has established the Financial Literacy and Education Commission (<http://MyMoney.gov>) to help Americans learn how to save, invest, and manage money better. Developing lifelong financial skills should begin in early adulthood, as money-management experience appears to have a more direct effect on financial knowledge than does education. For example, when tested on their basic financial literacy, students who had checking accounts had higher scores than those who did not.

**SOURCES:** Smith, C., and G. A. Barboza. 2013. The role of trans-generational financial knowledge and self-reported financial literacy on borrowing practices and debt accumulation of college students. Social Science Research Network (<http://ssrn.com/abstract=2342168>); EverFi. 2016. *Money Matters on Campus: Examining Financial Attitudes and Behaviors of Two-Year and Four-Year College Students* ([www.moneymattersoncampus.org](http://www.moneymattersoncampus.org)); Sallie Mae and Ipsos Public Affairs. 2019. *Majoring in Money 2019*. ([https://www.salliemae.com/assets/about/who\\_we\\_are/Majoring-in-Money-Report-2019.pdf](https://www.salliemae.com/assets/about/who_we_are/Majoring-in-Money-Report-2019.pdf)).



**FIGURE 1.2 Public health, life expectancy, and quality of life.** Public health achievements during the 20th century are credited with adding more than 25 years to life expectancy for Americans, greatly improving quality of life, and dramatically reducing deaths from infectious diseases. Public health improvements continue into the 21st century, including greater roadway safety and a steep decline in childhood lead poisoning. Between 2014 and 2017, U.S. life expectancy declined, likely due to the opioid and obesity epidemics. Life expectancy rose 0.1 year in 2018.

**SOURCES:** Centers for Disease Control and Prevention. 2011. Ten great public health achievements—United States, 2001–2010. *MMWR* 60(19): 619–623; Centers for Disease Control and Prevention. 1999. Ten great public health achievements—United States, 1900–1999. *MMWR* 48(50): 1141; Xu, J. Q., et al. 2020. Mortality in the United States, 2018. NCHS Data Brief, no 355. Hyattsville, MD: National Center for Health Statistic (<https://www.cdc.gov/nchs/products/databriefs/db355.htm>).

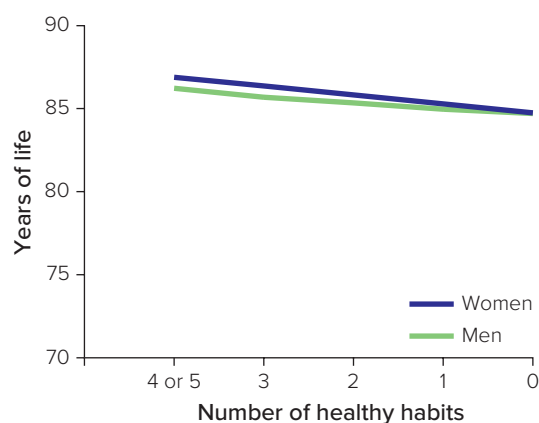
Why does education help us live longer? Consider smoking to understand the effect of education on life span. People with more education smoke less, so they have a lowered risk for lung cancer. For example, smoking a pack of cigarettes per day over 20 years reduces **life expectancy** by seven years. Each year spent in higher education correlates to an additional year of life.

Other factors, such as obesity and drug use, also strongly correlate to life span (Figure 1.2). The effect of obesity can be measured by cases of coronary artery disease. Except for smoking, no other modifiable risk factor contributes to a shorter life span than obesity. (See box “Life Expectancy and the Obesity Epidemic.”)

In the United States, opioid use disorders stand out as a contributor to years of life lost. In 2018, there were over 67,000 drug-related deaths, two-thirds of which involved opioids.

In the early 20th century, **morbidity** and **mortality rates** (rates of illness and death, respectively) from common **infectious diseases** (e.g., pneumonia, tuberculosis, and diarrhea) were much higher than Americans experience today. By 1980, life expectancy had nearly doubled, due largely to the development of vaccines and antibiotics to fight infections and to public health measures such as water

purification and sewage treatment to improve living conditions. After over two decades of Americans’ living increasingly longer, life expectancy declined between 2014 and 2017. This decline is generally attributed to drug overdose, suicide, and obesity. By 2018, suicide rates had continued to rise, but death rates from overdoses, cancer, accidents, and other diseases were lower, resulting in an increase in life expectancy. Regardless of the general rise in life expectancy, many would agree that it’s the quality of our lives during those years that matters most. The major difference between life span (how long we live) and **health span** (how long we stay healthy) is freedom from chronic or disabling disease (Figure 1.3).



**FIGURE 1.3 How long people at age 50 can expect to live if they don’t develop cancer, CVD, or type 2 diabetes.** Note that life expectancy increases with more healthy habits: not smoking, getting exercise, eating well, drinking alcohol in moderation, and maintaining a normal body weight.

**SOURCE:** Yanping, L., et al. 2020. Healthy lifestyle and life expectancy free of cancer, cardiovascular disease, and type 2 diabetes. *British Medical Journal* 368 (2020): I6669.

**life expectancy** The period of time a member of a given population is expected to live. **TERMS**

**morbidity rate** The relative incidence of disease among a population.

**mortality rate** The number of deaths in a population in a given period; usually expressed as a ratio, such as 75 deaths per 1000 members of the population.

**infectious disease** A disease that can spread from person to person, caused by microorganisms such as bacteria and viruses.

**health span** How long we stay healthy and free from chronic or disabling disease.



# TAKE CHARGE

## Life Expectancy and the Obesity Epidemic

Life expectancy consistently increased each decade in the United States since 1900 (see Figure 1.3). But the upward trend has reversed, and some researchers point to the significant increase in obesity among Americans as a potential cause.

According to estimates released in 2020, about 42% of adults and 19% of children are obese. The problem isn't confined to the United States: The 2018 European Congress on Obesity estimates that by 2045, 22% of the global population will be obese.

Along with increases in obesity come increased rates of diabetes, chronic liver disease, heart disease, stroke, and other chronic diseases that are leading causes of death. Of course, medical interventions for these conditions have improved over time, lessening the impact of obesity to date. Still, medical treatments may be reaching their limits in preventing early deaths related to obesity. Moreover, people are becoming obese at earlier ages, exposing them to the adverse effects of excess body fat over a longer period of time. The magnitude of the obesity problem has brought predictions that an overall decline in life expectancy will take place in the United States by the mid-21st century.

What can be done? For an individual, body composition is influenced by a complex interplay of personal factors, including heredity, metabolic rate, hormones, age, and dietary and activity habits. But many outside forces—social, cultural, and economic—shape our behavior, and some experts recommend viewing obesity as a public health problem that requires an urgent and coordinated public health response. A response in health care technology such as gastric bypass surgery, medications, and early screening for obesity-related diseases has helped in the past, but if obesity trends persist, especially among children, average life spans may begin to decrease.

What actions might be taken? Suggestions from health promotion advocates include the following:

- Change food pricing to promote healthful options; for example, tax sugary beverages and offer incentives to farmers and food manufacturers to produce and market affordable healthy choices and smaller portion sizes.
- Limit advertising of unhealthy foods targeting children.
- Require daily physical education classes in schools.

- Fund strategies to promote physical activity by creating more walkable communities, parks, and recreational facilities.
- Train health professionals to provide nutrition and exercise counseling, and mandate health insurance coverage for treatment of obesity as a chronic condition.
- Promote the expansion of work site programs for improving diet and physical activity habits.
- Encourage increased public investment in obesity-related research.

In addition to indirectly supporting these actions, you can directly do the following:

- Analyze your own food choices, and make appropriate changes. Nutrition is discussed in detail in Chapter 13, but you can start by shifting away from consuming foods high in sugar and refined grains.
- Be more physically active. Take the stairs rather than the elevator, ride a bike instead of driving a car, and reduce your overall sedentary time.
- Educate yourself about current recommendations and areas of debate in nutrition.
- Speak out, vote, and become an advocate for healthy changes in your community.

See Chapters 13–15 for more on nutrition, exercise, and weight management.

**SOURCES:** Hales, C. M., et al. 2020. Prevalence of obesity and severe obesity among adults: United States, 2017–2018. NCHS Data Brief, No 360. Hyattsville, MD: National Center for Health Statistics (<https://www.cdc.gov/nchs/data/databriefs/db360-h.pdf>); Ludwig, D. S. 2016. Lifespan weighed down by diet. *JAMA* (published online April 4, 2016, DOI:10.1001/jama.2016.3829); Olshansky, S. J., et al. 2005. A potential decline in life expectancy in the United States in the 21st century. *New England Journal of Medicine* 352(11): 1138–1145; National Center for Health Statistics. 2016. *Health, United States, 2015: With Special Feature on Racial and Ethnic Health Disparities*. Hyattsville, MD: National Center for Health Statistics; International Food Policy Research Institute. 2016. *Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030*. Washington, DC: International Food Policy Research Institute; U.S. Department of Agriculture. 2015. *Scientific Report of the 2015 Dietary Guidelines Advisory Committee* (<http://www.health.gov/dietaryguidelines/2015-scientific-report>); Fottrell, Q. 2018. Almost a quarter of the world's population will be obese by 2045. *MarketWatch.com*, May 26.

Most Americans contend with some level of physical and cognitive impairment during the last 15% of our lives. Another

**chronic disease** A disease that develops and continues over a long period, such as heart disease, cancer, or diabetes.

### TERMS

**lifestyle choice** A conscious behavior that can increase or decrease a person's risk of disease or injury; such behaviors include smoking, exercising, and eating a healthful diet.

important factor to quality of life is our level of happiness. An analysis of responses to the Health and Retirement Study yielded data from 11,964 older adults and found that happiness and cognitive impairment are not closely linked; we can expect to live substantially more years happy than cognitively impaired.

People also have some control over whether they develop **chronic diseases**. Table 1.1 and Figure 1.4 both show **lifestyle choices** that most affect the length and the quality of our lives. The numbers in Figure 1.4 give an idea that both

**Table 1.1** Leading Causes of Death in the United States, 2018

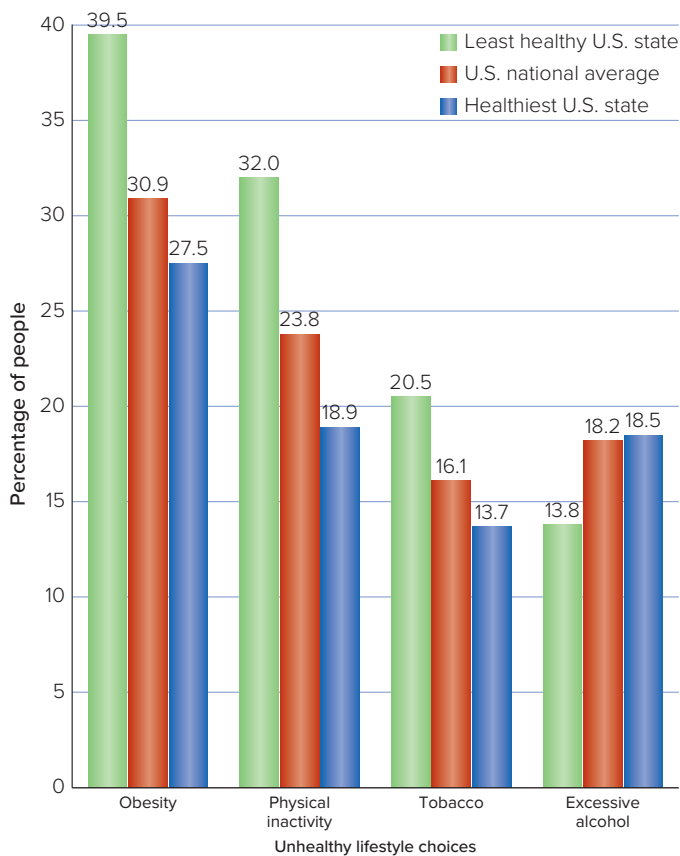
RANK	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENTAGE OF TOTAL DEATHS	LIFESTYLE FACTORS
1	Heart disease	655,381	23.1	D I S A O
2	Malignant neoplasms (cancer)	599,274	21.1	D I S A O
3	Unintentional injuries (accidents)	167,127	5.9	I S A
4	Chronic lower respiratory diseases	159,486	5.6	S A O
5	Cerebrovascular diseases (stroke)	147,810	5.2	D I S A O
6	Alzheimer's disease	122,019	4.3	I S A O
7	Diabetes mellitus	84,946	3.0	D I S A O
8	Influenza and pneumonia	59,120	2.1	D I S A O
9	Kidney disease	51,386	1.8	I S A O
10	Intentional self-harm (suicide)	48,344	1.7	I S A O
11	Chronic liver disease and cirrhosis	42,838	1.5	I S A O
12	Septicemia (systemic blood infection)	40,718	1.4	I S A O
13	Hypertension (high blood pressure)	35,835	1.3	D I S A O
14	Parkinson's disease	33,829	1.2	I S A O
15	Lung inflammation due to solids and liquids	19,239	0.7	I S A O
	All other causes	571,853	20.1	I S A O
	All causes	2,839,205	100.0	I S A O

**Key**

- D Diet plays a part.
- I Inactive lifestyle plays a part.
- S Smoking plays a part.
- A Excessive alcohol use plays a part.
- O Obesity is a contributing factor.

**NOTE:** The 2020 cause-of-death data will reflect the impact of the SARS-CoV-2 pandemic.

**SOURCE:** Xu, J., et al. 2020. Mortality in the United States, 2018. National Center for Health Statistics Data Brief No. 355 (<https://www.cdc.gov/nchs/products/databriefs/db355.htm>).



lifestyle choices and external circumstances—such as where we live and how easily we can access health care—influence our general health. Two of the most important contributors to health are obesity and smoking. Notice that obesity results from more than just physical inactivity—diet control is vital. The need to make good choices is especially true for teens and young adults. For Americans aged 15–24, for example, the leading cause of death is unintentional injuries (accidents), with the greatest number of deaths linked to car crashes, followed by drug overdose deaths (Table 1.2).

Sudden, large-scale outbreaks of infectious disease, such as the coronavirus that began in 2019, have the widespread feel of natural disasters but can be greatly affected by individual and joint, worldwide efforts to curb the tide.

**FIGURE 1.4** Key behaviors to avoid for a longer, healthier life. America's Health Ranking reports assess the nation's health state by state, based on factors including behaviors, public policies, access to health care, poverty, education and environmental conditions. The poorer, less educated areas of the country also fare the worst.

**SOURCE:** United Health Foundation. 2020. *America's Health Rankings Annual Report, 2019*. ([https://assets.americashealthrankings.org/app/uploads/ahr\\_2019annualreport.pdf](https://assets.americashealthrankings.org/app/uploads/ahr_2019annualreport.pdf)).

**Table 1.2** Leading Causes of Death among Americans Aged 15–24, 2018

RANK	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENTAGE OF TOTAL DEATHS
1	Unintentional injuries (accidents):	12,044	47.9
	Motor vehicle	6,308	25.1
	Unintentional poisoning (drug overdose)	4,245	17.0
	All other unintentional injuries	1,491	6.0
2	Suicide	6,211	25.0
3	Homicide	4,607	18.0
4	Cancer	1,371	5.5
5	Heart disease	905	3.5
	All causes	25,138	100.0

**SOURCE:** Centers for Disease Control and Prevention. 2020. Fatal Injury Data: Leading Causes of Death 1981–2018 (<https://www.cdc.gov/injury/wisqars/index.html>).

## Ask Yourself

### QUESTIONS FOR CRITICAL THINKING AND REFLECTION

How often do you feel exuberant? Vital? Joyful? What makes you feel that way? Conversely, how often do you feel downhearted, de-energized, or depressed? What makes you feel that way? Have you ever thought about how you might increase experiences of vitality and decrease experiences of discouragement?

## PROMOTING NATIONAL HEALTH

Wellness is a personal concern, but the U.S. government has financial and humanitarian interests in it, too. A healthy population is the nation's source of vitality, creativity, and wealth. Poor health drains the nation's resources and raises health care costs for all. The primary **health promotion** strategies at the government and community levels are public health policies and agencies that identify and discourage unhealthy and high-risk behaviors and that encourage and provide incentives for positive health behaviors. At the federal level in the United States, the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) are charged with promoting the public's health. These and other agencies translate research results into interventions and communicate research findings to health care providers and the public. There are also health promotion agencies and programs at the state, community, workplace, and college levels. Take advantage of health promotion resources at all levels that are available to you.

## Health Insurance Options

The Affordable Care Act (ACA), also called “Obamacare,” was signed into law on March 23, 2010. It has remained in

**health promotion** The process of enabling people to increase control over their health and its determinants, and thereby improve their health.

### TERMS

effect under President Trump, but certain provisions have been altered. Health insurance costs will likely increase as a result.

**Finding a Plan** Under the ACA, health insurance marketplaces, also called health exchanges, facilitate the purchase of health insurance at the state level. The health exchanges provide a selection of government-regulated health care plans that students and others may choose from. Those who are below income requirements are eligible for federal help with the premiums. Many employers and universities also offer health insurance to their employees and students. Small businesses and members of certain associations may also be able to purchase insurance through membership in a professional group.

**Benefits to College Students** The ACA continues to permit students to stay on their parents' health insurance plans until age 26—even if they are married or have access to coverage through an employer. Students not on their parents' plans who do not want to purchase insurance through their schools can do so through a health insurance marketplace.

Young, healthy people may be tempted to buy a “catastrophic” health plan. Such plans tend to have low premiums but require you to pay all medical costs up to a certain amount, usually several thousand dollars. This can be risky if you select a plan that does not cover the ACA's 10 essential benefits. They are: preventive care, outpatient care, emergency services, hospitalization, maternity care, lab tests, mental health and substance use treatment, prescription drugs, rehabilitative services and devices, lab services, and pediatric care. It's recommended that everyone select a plan that covers all of these important types of care.

Students whose income is below a certain level may qualify for Medicaid. Check with your state. Individuals with non-immigrant status, which includes worker visas and student visas, qualify for insurance coverage through the exchanges. You can browse plans and apply for coverage at [HealthCare.gov](http://HealthCare.gov).

## The Healthy People Initiative

The national Healthy People initiative aims to prevent disease and improve Americans' quality of life. *Healthy People*

Table 1.3

## Healthy People 2030 Targets

	BASELINE (% IN 2016–2018)	TARGET (% BY 2030)
Increase proportion of people with health insurance	89.0	92.1
Reduce proportion of adults with hypertension	29.5 (2013–2018)	27.7
Reduce proportion of obese adults	38.6 (2013–2016)	36.0
Reduce proportion of adults who engaged in binge drinking in past 30 days	26.6	25.4
Increase proportion of adults who meet federal guidelines for exercise	24.0	28.4
Reduce current use of any tobacco products by adults	20.1	16.2

SOURCE: U.S. Department of Health and Human Services. *Healthy People 2030* data search (<https://health.gov/healthypeople>).

reports, published each decade since 1980, set national health goals based on 10-year agendas. *Healthy People 2030* proposes the eventual achievement of the following broad national health objectives:

- Eliminate preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve health literacy.
- Create social, economic, and physical environments that promote good health for all.
- Promote healthy development and healthy behaviors across every stage of life.
- Engage leadership and the public to design effective health policies.

This continues a trend set by *Healthy People 2020*. Both emphasize the importance of health determinants—factors that affect the health of individuals, demographic groups, or entire populations. Health determinants are social (including factors such as ethnicity, education level, or economic status) and environmental (including natural and human-made environments). Thus one goal is to improve living conditions in ways that reduce the impact of negative health determinants.

Examples of individual health-promotion goals from *Healthy People 2030* appear in Table 1.3.

## Health Issues for Diverse Populations

We all need to exercise, eat well, manage stress, and cultivate positive relationships. We also need to protect ourselves from disease and injuries. But some of our differences—both as individuals and as members of groups—have important implications for wellness. These differences can be biological (determined genetically) or cultural (acquired as patterns of behavior through daily interactions with family, community, and society); many health conditions are a function of biology and culture combined.

Eliminating health disparities is a major focus of *Healthy People*. But not all health differences between groups are considered **health disparities**, which are those differences linked with social, economic, and/or environmental disadvantage. They affect groups who have systematically experienced

greater obstacles to health based on characteristics that are historically linked to exclusion or discrimination. For example, the fact that women have a higher rate of breast cancer than men is a health *difference* but is not considered a disparity. In contrast, the higher death rates from breast cancer for black women compared with non-Hispanic white women is considered a health disparity.

You share patterns of influences with certain others, and information about those groups can help you identify areas that may be of concern to you and your family.

**Sex and Gender** *Sex* refers to the biological and physiological characteristics that define men, women, and intersex people. In contrast, *gender* encompasses how people identify themselves and also the roles, behaviors, activities, and attributes that a given society considers appropriate for them. Examples of gender-related characteristics that affect wellness include the higher rates of smoking and drinking found among men and the lower earnings found among women (compared with men doing similar work). Although men are more biologically likely than women to suffer from certain diseases (a sex issue), men are less likely to visit their physicians for regular exams (a gender issue). Men have higher rates of death from injuries, suicide, and homicide, whereas women are at greater risk for Alzheimer’s disease and depression. On average, men and women also differ in body composition and certain aspects of physical performance.

**Race and Ethnicity** Among America’s racial and ethnic groups, striking disparities exist in health status, access to and quality of health care, and life expectancy. However, measuring the relationships between ethnic or racial backgrounds and health issues is complicated for several reasons. First, separating the effects of race and ethnicity from socioeconomic status is difficult. In some studies, controlling for social conditions reduces health disparities. For example, a study from the Exploring Health Disparities in Integrated

**health disparity** A health difference linked to social, economic, or environmental disadvantage that adversely affects a group of people.

TERMS