

Sixteenth Edition

Connect Core Concepts in HEALTH



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CONNECT CORE CONCEPTS IN HEALTH

SIXTEENTH EDITION

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CONNECT CORE CONCEPTS IN HEALTH, SIXTEENTH EDITION

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PROVEN, SCIENCE-BASED CONTENT

Now in its Sixteen Edition, *Connect Core Concepts in Health* is written by experts who work and teach in the fields of exercise science, medicine, physical education, and health education. *Connect Core Concepts in Health* provides accurate, reliable, and current information on key health and wellness topics while also address issues related to mind-body health, research, diversity, and consumer health.

McGraw-Hill Education's digital and teaching learning tools are built on the solid foundation of *Connect Core Concepts in Health's* authoritative, science-based content. The Sixteenth Edition maintains important features on behavior change, personal reflection, critical thinking, and other key content and skills as well as the latest research, statistics, and a new chapter on sleep.

Assess Yourself provides assessments for students to use in analyzing 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 set of health-related products currently available.

Diversity Matters discusses the ways that our personal and cultural backgrounds 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 Sixteenth Edition, focus attention on particularly striking statistics related to the chapter content.

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

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New to this edition, SmartBook 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 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.

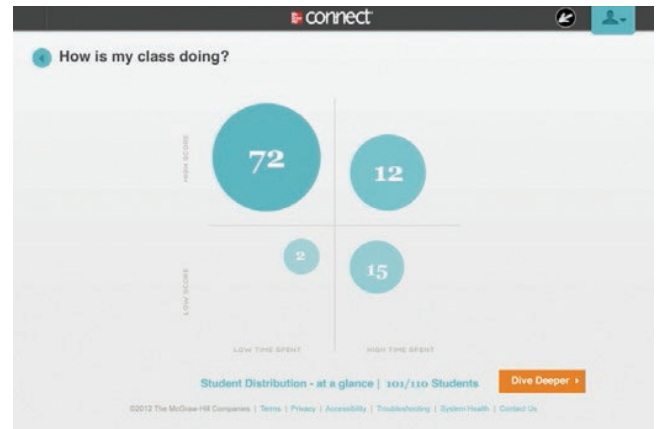
hormone

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

ADVANCED REPORTING



Connect Insight[®] is Connect's one-of-a-kind visual analytics dashboard—available for both instructors and students—that provides at-a-glance information regarding student performance, which is immediately actionable. By presenting assignment, assessment, and topical performance results together with a time metric that is easily visible for aggregate or individual results, Connect Insight enables users to take a just-in-time approach to teaching and learning, which was never before available. Connect Insight presents data that empower students and help instructors to improve class performance in a way that is efficient and effective.



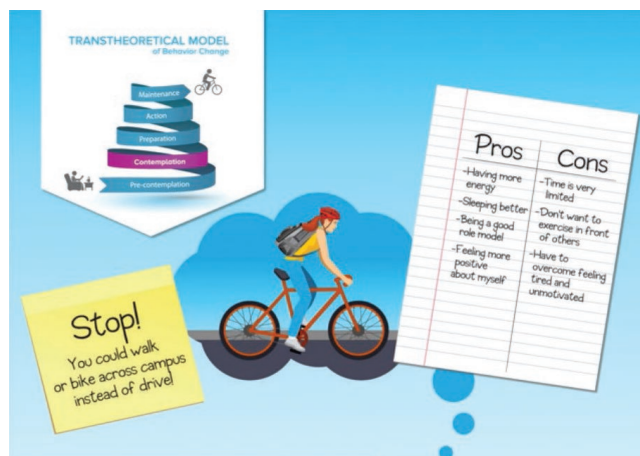
WHAT'S NEW IN CONNECT CORE CONCEPTS IN HEALTH, SIXTEENTH EDITION?

The Sixteenth Edition focuses on the following: new digital assets in Connect designed to help students succeed in the course, a new sleep chapter, and other current chapter content changes informed by student data.

NEW DIGITAL ASSETS IN CONNECT

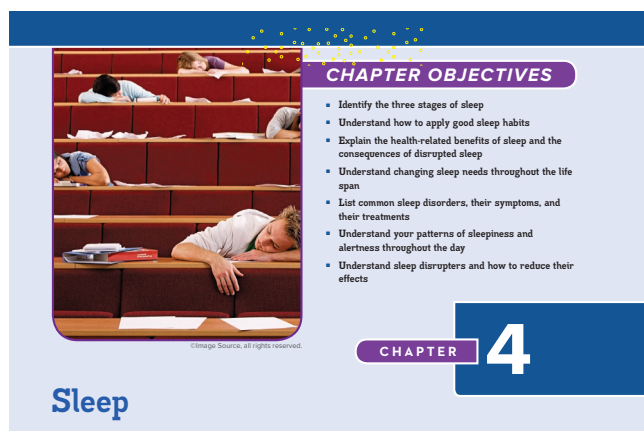
New to this edition are assignable and assessable **Concept Clips**, which help students to master key personal health concepts. Using colorful animation and easy-to-understand audio narration, Concept Clips provide step-by-step presentations to promote student comprehension. Topics include the stages of change model, diabetes types and metabolism, changes to the Nutrition Facts label, the cardiorespiratory system, and the stress response.

Also new are **NewsFlash** activities, which tie current news stories to key personal health concepts. After interacting with a contemporary news story, students are assessed on their understanding and their ability to make the connections between real-life events and course content. Examples of NewsFlash include topics such as hands-only CPR, reducing sun damage, and vaccination rates.



NEW SLEEP CHAPTER

A new chapter on sleep covers a comprehensive discussion of sleep stages, cycles, and drives; sleep across the life span; and the relationship between sleep and health. In addition, the chapter provides guidance for identifying sleep disrupters and addressing the social and biological influences on sleep.



CHAPTER-BY-CHAPTER CHANGES—INFORMED BY STUDENT DATA

The authors revised in response to student heat-map data derived from SmartBook that pinpointed the topics and concepts that students struggle with the most. This heat map-directed revision is reflected primarily in Chapters 6, 7, 11, 13, and 19.

Chapter 1: Taking Charge of Your Health

- New discussion of life span and life expectancy, including major genetic, environmental, and lifestyle factors.
- Updated explanation of the Affordable Care Act and changes to health care law.
- Expanded discussion of how to select health insurance, with a focus on the importance of the 10 essential benefits.
- Improved overview of environmental health factors.
- Updated “Vital Statistics” about public health, lifestyle factors, leading causes of death, and life expectancy.

Chapter 2: Stress: The Constant Challenge

- Enhanced discussion of personality and resilience.
- Revised explanations of the general adaptation syndrome and allostatic load.
- Updated discussion of the impact of stress on physical health.
- New discussions of social stressors, including the impact of digital technology, social media, and challenging social situations.
- New sections covering traumatic stressors and biofeedback.

Chapter 3: Psychological Health

- Updated discussion of developing a unified sense of self.
- Revised discussion of ethnicity, culture, and psychological self, including the topics of hybrid identity and multiculturalism.

Chapter 4: Sleep

- New chapter on sleep includes comprehensive discussion of sleep stages, cycles, and drives; sleep across the life span; sleep disorders, including insomnia, restless leg syndrome, sleep apnea, and narcolepsy; and the relationship between sleep and health.
- It also provides three detailed steps and accompanying tools to help students adopt a healthy sleep program.
- Includes guidance for identifying sleep disrupters and addressing social and biological influences on sleep.

Chapter 5: Intimate Relationships and Communication

- Updated discussion of social media and digital communication.
- Updated data on marriage, singlehood, and family living arrangements, and related attitudes.

Chapter 6: Sex and Your Body

- New content to address a spectrum of gender identities.
- New “Diversity Matters” box explores current, accepted language for genders and new discussion of transgender versus cisgender people.
- Updated section about gender roles and sexual orientation.
- Updated discussions of puberty, andropause, and sexual dysfunctions.

Chapter 7: Contraception

- Updated discussion of the relationship between unplanned pregnancy and college dropout rates.
- Updated discussion of long-acting reversible contraception and short-acting reversible contraception, including revised side effects and risks of oral contraceptives.

Chapter 8: Abortion

- Updated data on pregnancy, birth, and abortion rates, as well as data on women’s age and gestation period.
- Updated discussion of potential physical effects of abortion and legality of abortion procedures.

Chapter 9: Pregnancy and Childbirth

- Updated data on the costs to raise a child.
- Revised discussion of pluripotency and the first trimester.
- Updated discussion of guidelines and recommendations for physical activity during pregnancy.

Chapter 10: Drug Use and Addiction

- Updated “Vital Statistics” on nonmedical drug use.
- Revised discussion of the APA’s definition of addiction and the preferred terms.
- New information about the heroin and opioid epidemic, including an updated discussion of syringe-exchange programs and college-aid opioid users. Updated overdose and use addiction data.
- New discussion of kratom, a stimulant used to aid opioid withdrawal.

Chapter 11: Alcohol: The Most Popular Drug

- New material on alcoholic energy drinks and the effects of combining caffeine and alcohol.
- Updated data on alcohol-related deaths, trends, and risk factors.

Chapter 12: Tobacco Use

- Expanded data and discussion of young adult and LGBT tobacco use and trends.
- Updated discussion of hookah and smokeless tobacco, including snuff, snus, lozenges, and chewing tobacco.
- Added discussion of thirdhand smoke, including the toxicity, sources, and effects of tobacco residue.
- Updated discussion of the effects of smoking bans, cigarette taxes, and warning labels, including new references and updated data. New material on FDA regulations introduced in 2018.
- Updated information on cigarette-industry lobbying and political funding.

Chapter 13: Nutrition Basics

- Updated information about shelf-stable and processed foods, including those containing hydrogenated oils, saturated fats, and trans fats.
- Expanded discussion of vegetarian and plant-based diets.
- Updated information on new nutrition labels, including an explanation of changes regarding added sugars, calories from fat, nutrient daily values, and serving sizes.

Chapter 14: Exercise for Health and Fitness

- Expanded discussion of the FITTP model of exercise, which includes the significance of frequency, intensity, time, type, and progression of physical activity.
- Updated discussion of how individual differences influence physical fitness, body composition, and exercise capacity.

Chapter 15: Weight Management

- Updated data on the prevalence of obesity and the frequency of physical activity in the United States.

- Revised explanation of how body fat and body composition can differ among individuals and how this can be assessed.
- Updated discussion of how the hormones leptin and ghrelin influence appetite and body weight.

Chapter 16: Cardiovascular Health

- Updated discussion of cardiovascular disease, including symptoms, types, prevalence, and risk factors.
- Revised material on blood pressure readings to account for new guidelines and thresholds for elevated blood pressure and hypotension. Includes a discussion of how the new guidelines and targets affect public health trends.

Chapter 17: Cancer

- Updated discussion of the relationship between smoking rates and cancer death rates; updated data. Explanation of what this trend suggests and updated “Vital Statistics” about different types of cancer attributed to smoking.
- Revised explanation of PSA screening for prostate cancer, including how the test works, why it is controversial, and when it is appropriate.
- Updated discussion of specialized and experimental treatments, including immunotherapies, hormone therapies, and stem cell transplants. New discussion of targeted therapy, liquid biopsies, and the relationship between cancer and oxygen.

Chapter 18: Immunity and Infection

- Updated discussion of the different cell types in the immune system, including a new figure illustrating how antigens and immune cells work.
- Updated discussion of contagion, including an explanation of symptomatic and asymptomatic states.
- New material explaining the microbiome and the significance of gut microbiota.
- Updated information on vaccination, including for influenza, shingles, and hepatitis A and B.
- New information about the dangers of the raw water movement and the efficacy of the Safe Drinking Water Act and modern water treatment.
- Updated information about malaria, toxoplasmosis, and West Nile virus.

Chapter 19: Sexually Transmitted Infections

- Updated “Vital Statistics” on STI cases estimated annually. Updated prevalence data among high-risk groups and data on HIV-status awareness. New information about preexposure prophylaxis (PrEP).
- Updated chlamydia symptoms and treatment for epididymitis and proctitis. New section about lymphogranuloma venereum (LGV) and trichomoniasis.
- Revised content on hepatitis C, including risk, public health trends, and history.

Chapter 20: Environmental Health

- Updated section on climate change and atmospheric ozone, including global political events, such as the U.S. withdrawal from the Paris Agreement.
- Updated information on water safety and efficiency, including a discussion of the Flint, Michigan, water crisis and the Cape Town, South Africa, water shortage.
- New information about the risks of pesticide exposure and the differences between organic and conventional produce.

Chapter 21: Conventional and Complementary Medicine

- Revised information about alternative medical treatments, including yoga, chiropractic, acupuncture, and other therapies. Includes updated trends on U.S. spending on complementary health approaches.
- Revised section on insurance and ACA coverage of complementary and alternative medicines (CAMs) and therapies.

Chapter 22: Personal Safety

- Updated content on the effects of prescription and over-the-counter medications and marijuana on driving. New material on the effects of drugs and alcohol on pedestrian behavior and safety.
- Revised section on defensive driving strategies.
- Updated information on workplace injuries and illnesses. New supporting statistics.
- New information about sexual abuse and risks on college campuses, including the role of peer support and misogyny.
- Updated content on hate crimes and the role of race in killings. New information on school violence and gun violence, including updated statistics.

Chapter 23: Aging: A Vital Process

- Updated explanation of the different types of aging humans experience (including biological, psychological, and social aging). Includes examples of these experiences and a discussion of their effects.
- Revised discussion of physical activity guidelines for different life stages.
- Revised discussion of chronic diseases in common among elderly people, including updated prevalence rates.
- New section about cognitive impairment, including updated material on Alzheimer’s disease, vascular dementia, and Lewy-body dementia. Includes symptoms, prevalence rates, and risk factors for each.
- Updated statistics about poverty, lifestyle risks, and education levels among the elderly.

Chapter 24: Dying and Death

- Revised explanation of advance directives, living wills, and health care proxies, including guidelines for when each is appropriate and how to create them. Revised material about organ donation.

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INSTRUCTOR RESOURCES

Instructor resources available through Connect for *Connect Core Concepts in Health* include a Test Bank, Image Bank, and PowerPoint presentations for each chapter. All test questions are available within TestGen[™] software. PowerPoint presentations are now WCAG compliant.

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CHAPTER OBJECTIVES

- Define wellness as a health goal
- Explain two major efforts to promote national health
- List 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.

The next time you ask someone, “How are you?” and you get the automatic response “Fine,” be grateful. If that person had told you how he or she actually felt—physically, emotionally, mentally—you might wish you had never asked. Your friend might be one of the too many people who live most of their lives feeling no better than just all right, or so-so, or downright miserable. Some do not even know what optimal wellness is. How many people do you know who feel great most of the time? Do you?

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 strong family history of early heart disease. This factor increases this man’s 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. These factors suggest 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 continuing 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 continually challenge their minds. An active mind is essential to wellness because it detects problems, finds solutions, and directs behavior. Often they 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 others’ 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.

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

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

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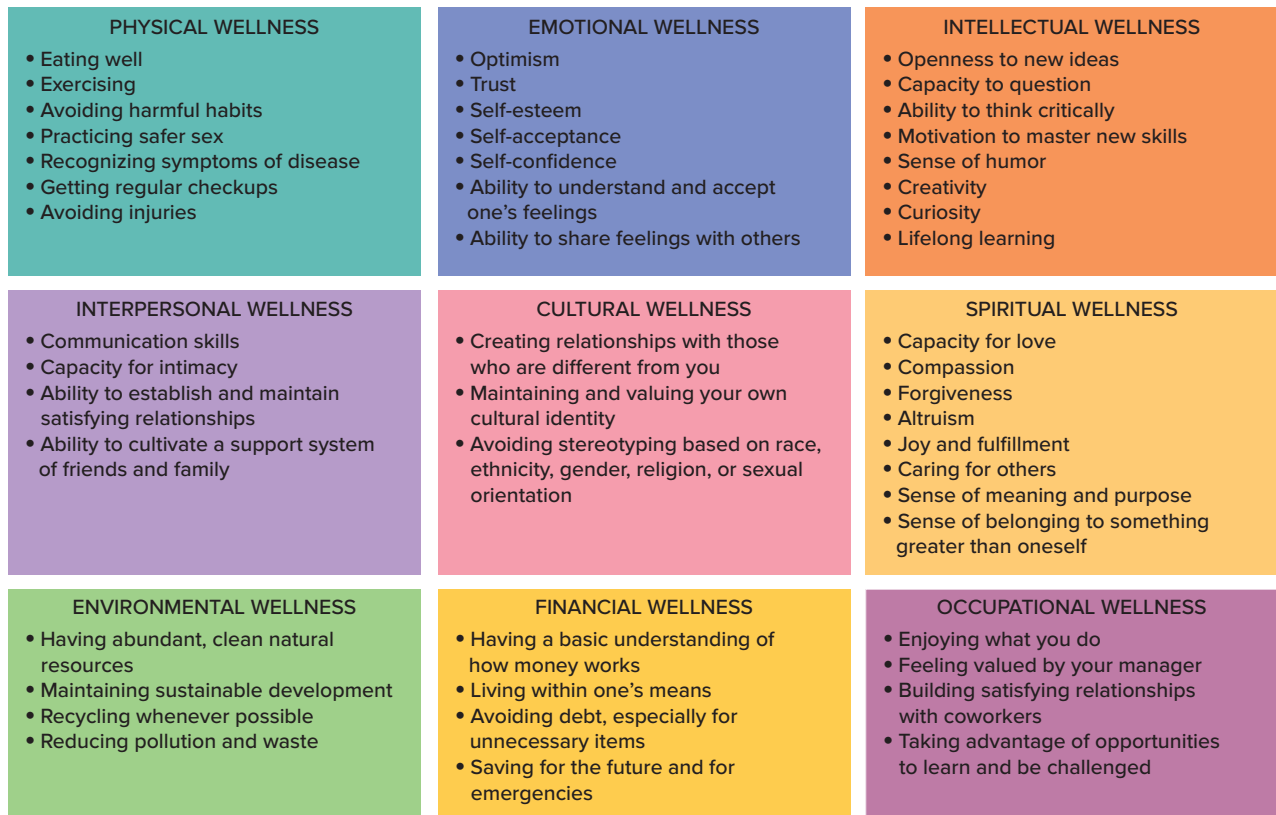


FIGURE 1.1 Qualities and behaviors associated with the dimensions of wellness. Carefully review each dimension and consider your personal wellness strengths and weaknesses.

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? 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 remain open to new experiences.



TAKE CHARGE

Financial Wellness

Researchers surveyed nearly 90,000 college students about their financial behaviors and attitudes. According to results released in 2016, a large percentage of students feel less prepared to manage their money than to handle almost any other aspect of college life. They also express distress over their current and future financial decisions. Front and center in their minds is how to manage student loan debt. *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. For example, if you spend money going out at night, consider less expensive options like having a weekly game night with friends or organizing an occasional potluck.

Be Wary of Credit Cards

Students have easy access to credit but little training in finances. An increase in credit card use has correlated with an increase in paying credit card bills late, paying only the minimum amount, and having larger total outstanding credit balances.

Shifting away from using credit cards and toward using debit cards is a good strategy for staying out of debt. 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. You may want to save for a large purchase, or you may even be looking ahead to retirement. 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 (MyMoney.gov) to help Americans learn how to save, invest, and manage money better. Developing lifelong financial skills should begin in early adulthood, during the college years, if not earlier, 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 Student* (www.moneymattersoncampus.org).

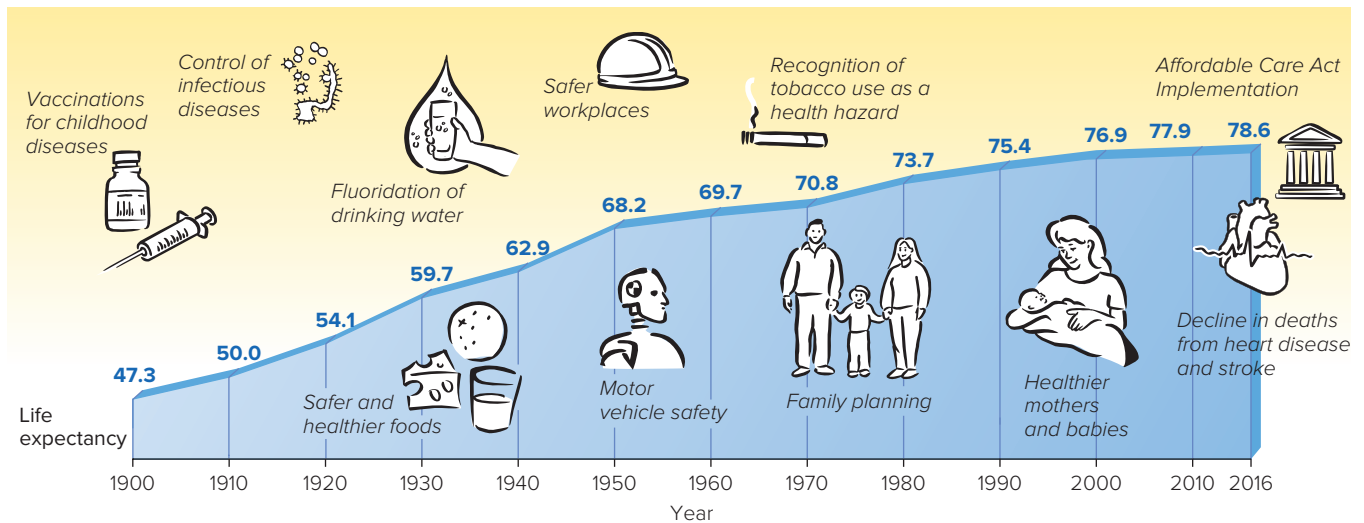


FIGURE 1.2 Public health, life expectancy, and quality of life. Public health achievements during the 20th century are credited with adding more than 25 years to life expectancy for Americans, greatly improving quality of life, and dramatically reducing deaths from infectious diseases. Public health improvements continue into the 21st century, including greater roadway safety and a steep decline in childhood lead poisoning. In 2016 and 2017, U.S. life expectancy declined, likely due to the opioid and obesity epidemics.

SOURCES: Kochanek, K.D., et al. 2016. Deaths: Final data for 2014. *National Vital Statistics Reports* 65(4); 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. Centers for Disease Control and Prevention. 2017. Fatal Injury Data: Leading Causes of Death 1981–2016 (<https://www.cdc.gov/injury/wisqars/index.html>).

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. The effect of obesity can be measured by cases of coronary artery disease. For every extra kilogram people carry, they cut their life expectancy by two months. (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 2016, there were over 63,600 drug-related deaths, two-thirds of which were caused by opioids. Researchers believe that the opioid epidemic and the obesity epidemic, which began in the 1970s, have contributed to a declining American life expectancy for two consecutive years (Figure 1.2).

In the early 20th century, **morbidity** and **mortality rates** (rates of illness and death, respectively) from common

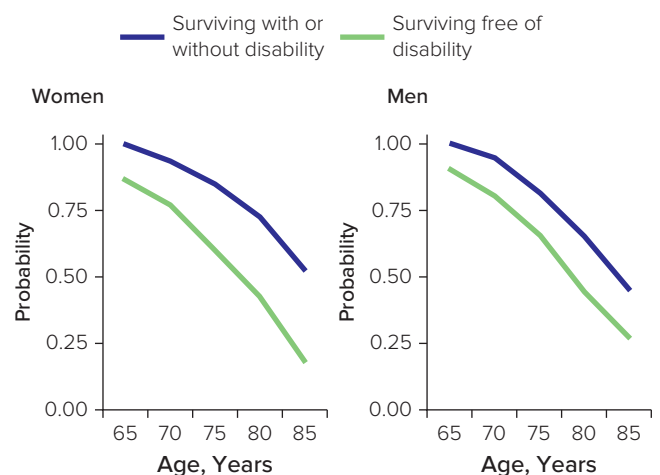


FIGURE 1.3 Quantity of life versus quality of life. Probability of surviving overall and surviving without disability, United States, 2011. People living to older ages are likelier to do so with some health problems.

SOURCE: Adapted from Freedman, V. A., D. A. Wolf, and B. C. Spillman. 2016. Disability-free life expectancy over 30 years: a growing female disadvantage in the US population. *American Journal of Public Health* 106(6): 1079–1085.

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.

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. But even though life expectancy has been increasing (until 2015), the number of years we live in good health is different. The major difference between life span (how long we live) and **health span** (how long we stay healthy) is freedom from chronic or



TAKE CHARGE

Life Expectancy and the Obesity Epidemic

Life expectancy consistently increased each decade in the United States since 1900 (see Figure 1.2). 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 2018, about 34% 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. 2018. trends in obesity and severe obesity prevalence in U.S. youth and adults by sex and age, 2007–2008 to 2015–2016. *JAMA* 319(16): 1723–1725; 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.

disabling disease (Figure 1.3). Poor health will limit most Americans' activities during the last 15% of their lives.

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.

The good news is that people have some control over whether they develop **chronic diseases**. For example, each of us can take personal responsibility for **lifestyle choices** about smoking, diet, exercise, and drug and alcohol use. Tables 1.1 and 1.2 show the estimated number of annual deaths tied to selected underlying causes. 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 (Table 1.3). Factors that influence wellness, including the choices we can all make to promote it, are discussed later in this chapter.

Table 1.1 Leading Causes of Death in the United States, 2016

RANK	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENTAGE OF TOTAL DEATHS	LIFESTYLE FACTORS
1	Heart disease	635,260	23.1	D I S A O
2	Malignant neoplasms (cancer)	598,038	21.8	D I S A O
3	Unintentional injuries (accidents)	161,374	5.9	I S A
4	Chronic lower respiratory diseases	154,596	5.6	I S A O
5	Cerebrovascular diseases (stroke)	142,142	5.2	D I S A O
6	Alzheimer's disease	116,103	4.2	I S A O
7	Diabetes mellitus	80,058	2.9	D I S A O
8	Influenza and pneumonia	51,537	1.9	D I S A O
9	Kidney disease	50,046	1.8	I S A O
10	Intentional self-harm (suicide)	44,965	1.6	I S A O
11	Septicemia (systemic blood infection)	40,613	1.5	I S A O
12	Chronic liver disease and cirrhosis	40,545	1.5	I S A O
13	Hypertension (high blood pressure)	33,246	1.2	D I S A O
14	Parkinson's disease	29,697	1.1	I S A O
15	Lung inflammation due to solids and liquids	19,715	0.7	I S A O
	All other causes	547,286		I S A O
	All causes	2,744,248	100.0	I S A O

Key

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

SOURCE: Centers for Disease Control and Prevention. 2017. Fatal Injury Data: Leading Causes of Death 1981–2016 (<https://www.cdc.gov/injury/wisqars/index.html>).

Table 1.2 Key Contributors to Deaths among Americans

	ESTIMATED NUMBER OF DEATHS PER YEAR	PERCENTAGE OF TOTAL DEATHS PER YEAR
Diet/activity patterns (obesity)*	500,000	19.0
Tobacco	480,000	17.8
Microbial agents**	140,000	5.0
Alcohol consumption	90,000	3.5
Illicit drug use***	55,000	2.0
Firearms	35,000	1.3
Motor vehicles	35,000	1.3
Sexual behavior****	15,000	0.5

*The number of deaths due to obesity is an area of ongoing controversy and research. Recent estimates have ranged from 112,000 to 400,000.

**Microbial agents include bacterial and viral infections, such as influenza, pneumonia, and hepatitis. Infections transmitted sexually are counted in the “sexual behavior” category, including a proportion of deaths related to hepatitis, which can be transmitted both sexually and nonsexually.

***Drug overdose deaths have increased rapidly in recent years, making it likely that this estimate will rise.

****Estimated deaths linked to sexual behavior includes deaths from cervical cancer and sexually acquired HIV, hepatitis B, and hepatitis C.

SOURCES: Murphy, S. L., et al. 2017. Deaths: Final data for 2015. National Vital Statistics Reports 66(6), The US Burden of Disease Collaborators. “The State of U.S. Health, 1990-2016: Burden of Diseases, Injuries, and Risk Factors Among US States,” *Journal of the American Medical Association*, 2018 319(14). Contribution of excessive alcohol consumption to deaths and years of potential life lost in the United States. *Preventing Chronic Disease: Research, Practice, and Policy* 11: 130293; U.S. Department of Health and Human Services. 2014. *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Table 1.3 Leading Causes of Death among Americans Aged 15–24, 2016

RANK	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENTAGE OF TOTAL DEATHS
1	Unintentional injuries (accidents):	13,895	54.8
	Motor vehicle	7,203	28.4
	All other unintentional injuries	6,692	26.4
2	Suicide	7,366	29.0
3	Homicide	5,172	20.4
4	Cancer	1,431	5.6
5	Heart disease	949	3.7
	All causes	25,367	100.0

SOURCE: Centers for Disease Control and Prevention. 2017. Fatal Injury Data: Leading Causes of Death 1981–2016 (<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.

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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 prefer 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.

The Healthy People Initiative

The national Healthy People initiative aims to prevent disease and improve Americans' quality of life. *Healthy People* reports, published each decade since 1980, set national health

Table 1.4

Progress toward *Healthy People 2020* Targets

	BASELINE (% IN 2008)	MOST RECENT (% IN 2016)	TARGET (% BY 2020)	PROGRESS TOWARD GOAL
Increase proportion of people with health insurance	83.2	89.7	100.0	Significant progress
Reduce proportion of adults with hypertension	29.9	29.5	26.9	Insignificant progress
Reduce proportion of obese adults	33.9	38.6	30.5	Getting worse
Reduce proportion of adults who drank excessively in past 30 days	28.2	28.2	25.4	No progress
Increase proportion of adults who meet federal guidelines for exercise	18.2	22.5	20.1	Target met
Reduce proportion of adults who use cigarettes	20.6	15.7	12.0	Significant progress

SOURCE: U.S. Department of Health and Human Services. *Healthy People 2020* data search (<https://www.healthypeople.gov/2020/data-search/Search-the-Data>).

goals based on 10-year agendas. *Healthy People 2030* is in development and 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*, which emphasizes 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 2020*, along with estimated progress, appear in Table 1.4.

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.

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