

Chapter 5

Applications of Health Psychology to Eating Behaviors: Improving Health Through Nutritional Changes



Learning Objectives

After studying this chapter students will have the knowledge and skills to be able to:

1. Discuss outcomes of unhealthy eating behaviors.
2. Explain biological factors that influence eating.
3. Explain psychosocial factors that influence eating.
4. Identify basic components of healthy eating practices.
5. Compare their own eating patterns to current recommendations.
6. Explain why obesity is a health problem and the ideal ways to assess and eliminate obesity.
7. Identify the basic components of body composition and explain why sudden weight loss is not a healthy way to lose body fat.

8. Suggest interventions to encourage healthier eating practices using theories common to health psychology.
9. Discuss eating disorders and their outcomes for health.

Introduction

As is true of exercise, eating is a behavior important for optimal health. Eating meets basic biological needs, yet many people suffer health problems due to poor eating choices. For example, some people eat too much food for their level of activity and gradually become obese. Others restrict their food intake severely, resulting in serious health problems and even death. Drastically limiting food intake is often motivated by psychosocial factors such as a misguided desire to improve physical appearance or to enhance athletic performance.

Good nutritional practices and weight control are two related but different issues in health psychology. Positive health behaviors include eating all necessary nutrients while preventing an accumulation of excess body fat. Body weight can be lost through starvation, but this is dangerous to health and results in undesirable losses of muscle and bone mass. Another important fact is that many adults who lose weight eventually regain it in the form of fat. This happens because they revert to previous eating and exercise patterns. Maintenance of a healthy body weight is central to good health.

Eating Healthily Is a Lifelong Behavior

Students should think of eating as a chosen behavior, similar to the behavioral choices of exercising, smoking, and drinking alcohol. Eating is a learned behavior beginning in infancy. We make many choices about food consumption every day. We decide when we will eat, what we will eat, how we will eat, how much we will eat, where we will eat, and with whom we will eat. These choices affect our health. We eat to meet biological needs, but there are a multitude of additional choices and behaviors involved in eating. As is true of any behavior, food intake reflects biological, psychological, and sociocultural influences and parallels the biopsychosocial approach used in health psychology.

Some health psychologists and scientists in behavioral medicine and epidemiology specialize in the study of obesity, other eating problems, and interventions for people who habitually make poor nutritional choices. These scientists contribute hundreds of research reports each year examining both causes and solutions to poor nutritional behavior. To understand the science of healthy eating requires a thorough grounding in biopsychosocial influences on food intake, in the basic components of healthy eating behavior, and in ways to avoid unhealthy eating practices. Behavior change theories from health psychology can be applied to eating behavior to improve health.

Obesity

Scientists and health professionals are most concerned with behaviors resulting in **obesity**. Epidemiologists refer to an epidemic of obesity in the United States and other industrialized nations (World Health Organization [WHO], 2008; Centers for Disease Control [CDC], 2003). Obesity is more prevalent among women, members of minority groups, and those with low incomes (U.S. Department of Health and Human Services [USDHHS], 2003). The physiology of obesity is fairly straightforward. It results from consuming more calories from food than the body can use. When people do not move or exercise sufficiently to use all the calories in the food they consumed, their bodies save the nutrients in the form of fat cells. Fat cells accumulate to the point of obesity. More than 44 million adults in the United States are obese, and about 15% of children and adolescents are overweight. The percentage has tripled over the past 20 years (Mokdad, Ford, Bowman, & Dietz, 2003; CDC, 2003). Obesity is a primary cause of deaths due to heart disease, strokes, and some cancers (American Heart Association [AHA], 2006; American Cancer Society [ACS], 2006). Type II diabetes is directly related to obesity and may result in blindness, amputations, kidney failure, and death (American Dietetic Association [ADA], 2008). Solutions to obesity rest in changing both eating and exercise behaviors.

Other Outcomes of Unhealthy Eating Practices

Due to socioeconomic conditions, there are millions of impoverished people who suffer from **malnutrition** or the lack of sufficient nutrients. In the United States people may become malnourished as a result of factors that include low income, inadequate education, age, and debilitating health conditions. Solutions to these problems require economic, political, and social change, along with changes in individual behaviors.

Unhealthy eating behavior includes inadequate intake of calories, vitamins, minerals, water, and fiber. Hypertension, high cholesterol levels, kidney stones, osteoporosis, and gout result from faulty eating behavior. Nutrition during pregnancy is crucial to the health of

obesity A body composition that includes fat at too high a percentage for good health. Obesity is usually determined by comparing one's height and weight to body mass index tables designed for this purpose. Obesity is a risk factor for many serious diseases, including heart disease and diabetes.

malnutrition Inadequate nutrient intake or taking in too few nutrients from food or by intravenous feeding. Malnutrition may lead to sickness and death. Socioeconomic levels and geographic location often result in malnutrition due to famine, war, or natural disasters resulting in the widespread lack of food products for a population. People diagnosed with anorexia nervosa often suffer from malnutrition.

both mother and child. Many clinical health psychologists specialize in the study and treatment of disordered eating practices such as anorexia nervosa and bulimia nervosa. Both cause health problems and may result in death. Good nutritional practices are basic and important to health, but many people never consider changing their eating behavior.

This chapter focuses on the behavior of people who have access to a variety of foods, but still make unhealthy food choices. It considers eating behavior from five perspectives or viewpoints. The first part of the chapter examines biological and psychosocial factors that influence eating behavior. Many current trends result in faulty food choices and prevent optimal health. A second section focuses on the basic components and current recommendations for healthy eating behavior. The third part of the chapter explores the health problems of obesity, and a fourth section discusses disordered eating practices based in popular fad diets, bulimia nervosa, and anorexia nervosa. Anorexia and bulimia are problems for a limited segment of the population, especially young women and some athletes. The fifth and final section of the chapter summarizes applications of health psychology theories to improving eating behavior.

Biological and Psychosocial Factors Influencing Eating Behaviors

Biological Factors Influencing Eating Behavior

There are five biological purposes for eating. We eat to continue to live; to grow when we are young; for energy, so we can do what we want to do; to repair damaged body tissue; and to prevent disease. Studies indicate people may also eat in response to hormonal changes, medications, and to specific types of tumors.

Starvation and Hunger

A basic biological reason for eating is to continue to live. **Starvation** results when no nourishment, either solid or liquid, is taken into the body. Starvation eventually results in death. **Hunger** refers to a biological or physiological state. It is often described as an unpleasant, even painful, sense of an urge to eat. Similarly, thirst is believed to be based in the body's need for liquids such as water. Thirst arises when our bodies become dehydrated or we consume too much salt. Experts consider both hunger and thirst to be physiological drives resulting from biological needs of the body. Hunger is also affected by stomach distension, hormones, and insulin. We will not have the energy to accomplish what we want to do if we are hungry. Even though hunger is biological in origin, it is affected by sociocultural and psychological

starvation The process of suffering from lack of food or nourishment.

hunger Hunger refers to a biological or physiological state. It is often described as an unpleasant, even painful, sense of the need to eat.

factors. For example, do we lose the desire to eat when we see a roach crawl across our plate of food? That is a reaction based in the culture. We also know from historical accounts that when people are extremely hungry, they eat things they would not ordinarily eat including dirt and other people. Hunger can overcome psychosocial values when survival is at risk. **Pica** is a condition of craving and eating non-food items such as clay, chalk, and laundry starch. Some nutritionists believe humans crave certain substances because they contain nutrients needed by the body. The craving of specific foods or odd combinations of foods during pregnancy may be both biological and psychosocial in origin.

Satiety

Satiety is a biologically based feeling that the stomach is full and is related to hunger. Studies show when people overeat frequently, their stomachs stretch or enlarge to accommodate greater and greater amounts of food. This is why some people have their stomachs stapled or banded to prevent overeating. They hope to achieve a sense of satiety before they eat more food than their body needs. Cultural events, such as Thanksgiving, are occasions when people eat beyond satiety. Have you ever had someone you love, like your mother or aunt, insist you eat more food even though you say you are full? Many people also consume specific foods for sociocultural and psychological reasons, including the fact that they enjoy the sensation of eating a food such as candy or ice cream.

Energy

We get energy or calories from foods and liquids. All humans need energy to live and do what they want to do, including work and play. We also need reserve energy for emergencies. Energy is measured by the number of calories or kilocalories in food. In addition to calories, our bodies need water and specific nutrients, including carbohydrates, fats, proteins, vitamins, minerals, and fiber.

Nutritional Needs Vary by Age

Age is a biological factor affecting nutritional need. Adequate nutrition involves taking in a sufficient number of calories and nutrients to survive and grow when we are young. Optimal growth includes the achievement of maximum brain size, skeletal growth, and bone density within the limits of genetic background. Nutritional needs are extremely important during infancy and childhood. As infants we first consumed milk, from breast or bottle. There is evidence that breast milk is the ideal food for infants, because allergic reactions are less likely to occur than with other sources of milk. Lactation is the ability of a woman to produce milk after pregnancy. It is a biological response to childbirth and hormonal

pica A condition of craving and eating non-food items such as clay, chalk, and laundry starch.

satiety A biologically based feeling that the stomach is full.

Think About It!

Better Nutrition Beginning in Infancy

Breast milk can be collected through the use of breast pumps, stored, and later put into bottles for feeding. This is a choice made by many women who must be absent from their infants during the day due to employment or school, but choose to collect, chill, and store milk to be given when their infants are not available to them for feeding. It is still unusual for companies in the United States to allow mothers to bring their infants to work for feeding during the day. Some companies do have “lactation rooms” where employees can collect and store milk during the day.

changes. There are many reasons why women do not breastfeed. Unfortunately, some women cannot breastfeed due to health problems such as AIDS/HIV or the necessity of being away from their infants for long periods of time. Alternatives to breast milk are commercial formulas made for infants. A mother’s milk and most commercial formulas supply the calories and other nutrients needed for an infant to live and grow.

Eventually children need more nutrients than can be provided by milk, so other foods are introduced. Many infants are first given solid food in the form of very liquid cereal products. Cereals are least likely to cause an allergic reaction, although some infants are allergic to grains such as wheat. Following the successful introduction and acceptance of cereal, most parents enlarge infants’ diets to include pureed fruits, vegetables, and meats. Nutrition continues to be important throughout childhood and adolescence. Unfortunately more and more children and teens are becoming obese due to taking in excessive numbers of calories. This puts them at risk of diabetes.

By their middle 20s, most people reach maximum height, but many continue to consume the same number of calories as when they were younger and growing. This is more food than their bodies need. Excess calories no longer needed for growth are stored in the body in the form of fat. Some stored fat is required for good health, because fat insulates and helps control body temperature. Fat is also available for energy when people cannot take in necessary nutrients due to injury, illness, or surgery. Unfortunately many adults take in more calories than they need and become overweight and obese.

Psychosocial Factors Influencing Eating Behavior

We learn what to eat and how to eat from family members and friends at home, school, and work. Fairly early in life toddlers show preferences for certain foods. We may have heard hilarious stories about our rejection of new foods when we were toddlers. Food preferences are not well understood, but may be due to varying senses of taste among children. Psychosocial factors play an important part. Most food preferences are learned behaviors. Some-

times toddlers see their older siblings reject food and copy the behavior. Food preferences change during childhood, when we are teenagers, and again during adulthood. In old age, our eating behavior may change again for economic reasons such as low income or biological reasons such as poor chewing ability. Some elderly people return to eating soft foods similar to those eaten by infants.

It is difficult to separate psychological from sociocultural influences. For example, research reveals that people eat more food than normal or eat specific foods when they are under the influence of strong emotions such as anger. Many people report they eat in unhealthy ways when they are bored, sad, tired, anxious, or depressed. Many of these emotional states or moods are individually or psychologically based, but some can be traced back to earlier life experiences. For example, if our caregiver distracted us from a hurt knee with a cookie, we may now find comfort in the taste of something sweet when we are in pain, unhappy, or anxious. Some people report they consume unhealthy foods when they are lonely or need comfort. Others say they overeat when they are under a great deal of stress.

Eating patterns have sociocultural origins associated with birthdays, earning good report cards in school, and achievements on the job. Vacations and holidays are often accompanied by changes in eating behavior. Some people reward themselves with food. Just seeing or smelling some food may trigger eating even when there is no hunger. **Appetite** is different from hunger. Appetite is the desire to eat or drink. It is mainly influenced by sociocultural and psychological factors, rather than by biological factors. Different foods and liquids have different textures and appearances. Foods may be desired for the pleasure of anticipated flavors such as sweet, sour, bitterness, or saltiness. Sometimes a food's density or mouthfeel, such as softness, hardness, crispness, or creaminess, is appealing to our appetites.

Appetites can be stimulated by the odor and appearance of food. Foods are often described as “mouth-watering” or “finger-licking good.” Some people say they have a “sweet tooth” meaning they always have an appetite for sweet food. Others say they need lots of salt or everything tastes bland. Some substances found in food, such as caffeine, can make us more alert, although too much caffeine can make us nervous and restless. Alcoholic beverages may help us feel relaxed due to their sedative effect on the nervous system. Appetite is also influenced by environmental factors such as heat and cold, as well as by what is available to eat. We say we lack an appetite for certain foods due to past unpleasant experiences including food poisoning or allergic reactions to a food. Appetite stimulates eating behaviors and is based on psychosocial factors.

Childhood Experiences with Food

Food and liquids meet biological needs, but specific eating and drinking behaviors are learned. For most people this occurs first in a social setting such as the family. Family eating patterns reflect the general culture and influence children's eating behavior. Most of us

appetite The desire to eat or drink.

have good and bad memories of foods consumed as children. Behavioral demands were made on us while we ate. We learned proper eating patterns. In this culture, it is likely we were urged to eat vegetables, avoid sweets before meals, use a napkin, chew quietly with our mouths closed, say please and thank you, keep our elbows off the table, and so forth. Sometimes the rules about eating took precedence over the food and made meals an unpleasant experience. Some children are praised if they eat every morsel on their plate, which can develop into a habit of continuing to eat even after we feel full in order to earn dessert and caregiver approval. Something sweet becomes a reward for doing as parents or caregivers wished us to do.

Our eating practices broaden when we start school, watch television, and visit outside the family and neighborhood. We are exposed to other ideas about food and eating behavior. Children often trade food in the school cafeteria. They learn some foods are socially acceptable and others are “yucky.” At this stage children throw away food they dislike or give it to pets.

Other Psychosocial Influences

Scientific reports in newspapers, magazines, and on television influence eating behavior. From the 1940s to the 1960s, parents were told that their children’s level of intelligence depended mainly on their intake of protein. The result was that many children developed the habit of eating too much protein, mainly from meat and eggs. High-protein foods are often high in fat, so children learned to consume more fat than they needed. Many continue to follow the pattern as adults.

As we grow older, sociocultural factors have a greater influence on what, where, when, how, and with whom we eat. Ethnicity, religion, historical traditions, advertising, and regional and global availability of food also shape eating behavior. Ethnicity is a sociocultural factor influencing eating and reflecting the availability of foods in different regions of the world. Due to immigration and international travel, many foods once unique to one population are now eaten and enjoyed on a worldwide basis. On the other hand, the smell and sight of certain foods may be offensive to some members of ethnic or religious groups. For example, people from India who honor cattle may find the odor of cooking beef and animal fat repugnant. People growing up in the United States may find the odors of spices used in Asian countries nauseating. Rural areas often have access to foods not available in the city, and vice versa. People now visit farmers’ markets to buy farm-fresh organically grown food. **Figure 5.1** shows many factors that affect food choice.

Religion influences eating behavior in other ways. Followers of the Muslim and Jewish faiths have many dietary rules, including ingredients that cannot be eaten or time periods during which no food is allowed. For many years, Roman Catholics were to avoid eating meat on Fridays. Many continue to observe rules of controlled eating during Lent, and many people forego a specific food, such as chocolate or alcohol, during the 40 days before Easter. Many specific foods and recipes are associated with religious customs.

There are common national holiday eating patterns. In the United States, Thanksgiving Day is a national holiday and meals on that day often include turkey, dressing, cranberry

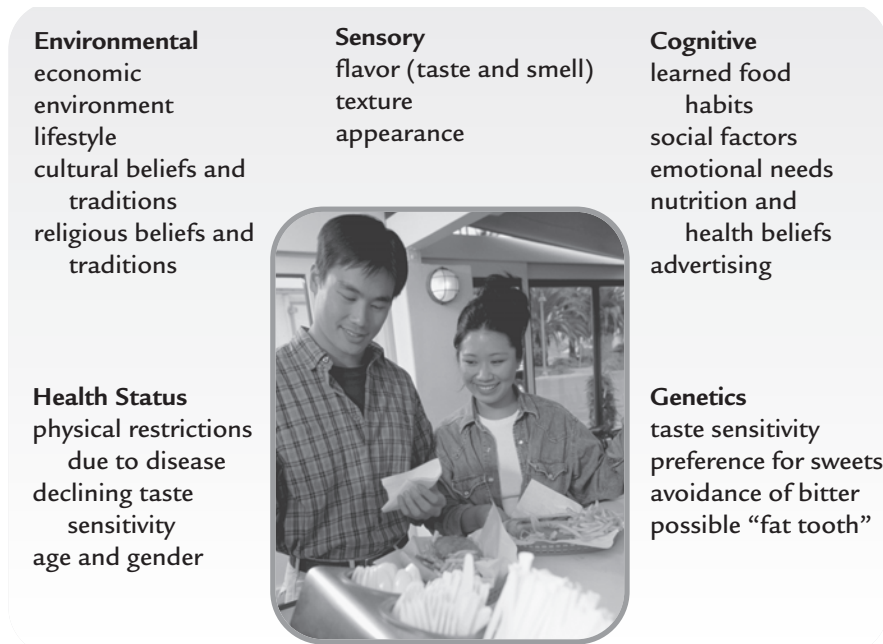


Figure 5.1 As we grow older many factors affect our choice of foods.

Source: Insel, P., Turner, R. E., & Ross, D. 2007 *Nutrition* (3rd ed.). Sudbury, MA: Jones and Bartlett Publishers.

sauce, and pumpkin pie. The spring celebration of Easter may include new clothes, dyeing hardboiled eggs, and eating baked ham or lamb. New Year’s Eve and the next day are celebrated with champagne or other liquor and in some areas of the country, by eating black-eyed peas for luck. Special events such as birthdays are often accompanied by cakes with candles for the celebrant to blow out after making a wish. Halloween is associated with costumed children going through neighborhoods collecting candy. Valentine’s Day cards may be accompanied by boxes of chocolate candy. These are all traditions based in the culture and passed on in families, schools, and through the media. All influence eating behavior.

Advertising encourages specific eating behaviors by making foods appealing. Many people in the United States grow up liking the smell and taste of cooked fat, and salivate when they smell French fries or hamburgers cooking. Others associate eating at fast food restaurants with happy occasions when the whole family was together. Some advertisements relate foods like ice cream with special family occasions, such as the return of a soldier from war. Other ads recommend we eat in certain restaurants as a way to relax after a hard work week, or in bars to drink beer and meet other people like ourselves. Additional advertising comes from the diet food industry and reflects currently popular fads about healthy eating. The Food and Drug Administration (FDA) has established criteria for food to be labeled

“low fat” or “high fiber.” Food labeled “low fat” is sometimes not very nutritional because it contains large amounts of sugar. For example, all of the calories in soft drinks come from sugar. Processed sugar lacks protein, fats, vitamins, minerals, and fiber.

Types of food, and the frequency and timing of eating, also reflect occupations. In early history, the United States was basically an agrarian economy. Most people worked on farms and were self-sufficient. They raised plants and animals for food. Their eating behavior reflected the types of food they produced and the timing of their work day. This is the likely origin of the hearty American breakfast consisting of eggs, bacon or sausage, and bread. Many of us still expect this kind of breakfast even though we will never touch a shovel, plow, or tractor. In fact, most jobs no longer require much physical labor, although we continue to consume hearty American breakfasts like farm-based cultures.

Culture affects eating in other ways. Most of us expect to eat three meals a day, with mid-morning and midafternoon breaks that often include doughnuts or sweet rolls. This may result in our consuming more sugar and fat calories than we need based on our activity level. Many people work long hours and come home tired and hungry. When this happens, there is a tendency to overeat or consume too many calories. Where we eat also reflects sociocultural lifestyles. Many people lead rushed lives, with long commutes to and from work in cars, buses, or trains. One outcome is people grab food that is easy to eat en route. People also eat while watching television or reading the paper. Nutritionists believe this behavior is detrimental, because people are more likely to overeat when they are distracted while eating.

Socioeconomic factors such as income affect eating patterns, including eating at home, which is generally less expensive than eating in restaurants or drive-through eateries. Education, including knowledge of nutrition, affects eating behavior, although many people say they know better than to eat certain foods they love. Some people believe hard work deserves indulgence in food and drink. Types of jobs also affect eating behavior. Some people pack a lunch, eat a hearty workingman’s lunch, or take 2 hours for a business lunch that includes alcohol. Construction workers often buy food from portable canteens near worksites. Children hear music from ice cream trucks and run to buy sugary treats. A multitude of other psychosocial factors affect eating behavior and health. It is important to learn the basic components of healthy eating in order to understand the health issues involved and the influence of psychosocial factors.

Basic Components of Healthy Eating

Most adults are involved in many activities, including work, school, spending time with family and friends, and participating in various forms of recreation. In order to do all these things, people need a healthy diet and adequate sleep. Most activities require energy and health achieved through food and exercise. A well-chosen diet with necessary calories, vitamins, minerals, and fiber helps us avoid sick days and spending time and money at medical facilities. The biological benefits of healthy eating are to live, grow, have energy to do what we want to do, and maintain good health through old age. As adults, we must consume

enough calories and other nutrients to sustain life, to have adequate energy, and to have reserve energy in case of an emergency. We need stored fat for energy in situations when we cannot eat due to illness or injury.

Health psychologists interested in research and clinical practices have a thorough grounding in the science of nutrition and healthy eating behavior in addition to understanding theories about ways to change eating behavior. In the science of nutrition, there are standard terms and recommendations. Food refers to both solids and liquids including beverages. **Diet** describes typical eating patterns. For example, the study of an animal's diet would examine its typical feeding behavior. There is confusion about the word "diet" because it is often used to describe various plans for losing weight and implies restrictions in normal eating patterns. Our diet is simply the food we eat on a daily basis. There are special diets when people are ill or have surgery. For example, there are liquid diets and salt-free diets. General recommendations for healthy eating for all adults include adequacy, balance, and variety.

Adequacy

Taking in sufficient amounts of food and liquids is the first imperative for dietary intake. Nutritional recommendations reflect age, activity level, and general health requirements. **Adequacy** refers to eating sufficient amounts and types of foods to consume the correct number of calories and all necessary nutrients. Adequacy is a minimum standard. Nutrition scientists have many recommendations about nutrition for both genders and different ages. From time to time the Food and Nutrition Board of the National Academy of Sciences recommends changes based on new scientific findings (Insel, Turner, & Ross, 2006). The **recommended dietary allowances (RDAs)** and **dietary reference intakes (DRIs)** specify recommendations about calories, protein, fats, fiber, and some vitamins and minerals. RDAs and DRIs can be found on the inside cover or in the appendices of most nutrition

diet A person's usual eating practice or pattern.

adequacy Eating sufficient amounts and types of foods to consume the correct number of calories and all necessary nutrients.

recommended dietary allowances (RDAs) These specify recommendations about calories, protein, fats, fiber, and some vitamins and minerals that meet the needs of most healthy individuals by life-stage and gender. RDAs and DRIs can usually be found on the inside cover or in the appendices of most nutrition textbooks.

dietary reference intakes (DRIs) Suggested by the Food and Nutrition Board of the National Academy of Sciences. There are targets for intake by healthy individuals and include vitamins, minerals, water, carbohydrates, fiber, fat, linoleic acid, and alpha-linolenic acid protein. The DRIs include the RDAs.

textbooks. Some requirements are explained on food labels of commercially prepared foods. An ideal diet is called **optimal**. Optimal means we are taking in all the nutrients we need for the best possible health regardless of age.

Our diet should contain enough calories to avoid fatigue and illness. Level of activity influences the ideal range of calories. Physically active people such as soccer players and gymnasts need more calories than office workers. People who stand all day need more calories than people who sit all day. When we are sick or injured we may need more calories than when we are well. For example, if we are badly injured in an automobile accident, experience a bad burn, or have surgery, then we need more of some nutrients until we recover although relative inactivity may necessitate lower caloric intake. Needs fluctuate throughout life, but always include a balance of carbohydrates, protein, fats, vitamins, minerals, and fiber.

Complex Carbohydrates

Calories come from foods containing carbohydrates, proteins, and fats or lipids. Foods containing **complex carbohydrates** should be our major energy source and include grains, vegetables, fruit, and milk. Food containing carbohydrates is especially important for the brain and other parts of the nervous system. If we skip breakfast and get a headache, it is probably from lack of adequate carbohydrate for fuel. Carbohydrates are very important to health, even though some fad diets suggest avoidance. Eating too many calories, regardless of the type of food it comes from, will result in obesity. Most of the calories we take in on a daily basis should come from carbohydrates.

Nutritionists say that if we do not take in enough calories from carbohydrates, our bodies will degrade or metabolize lean body mass (muscle) and stored fat to provide energy. Metabolizing stored fat may sound like a good idea, but the process can damage our kidneys.

Carbohydrates should be complex rather than simple to include vitamins, minerals, and fiber along with energy. Nutritionists emphasize the role of fiber in health, because it helps prevent health problems in the colon. In the battle with obesity, the bulkiness of fiber helps fill stomachs and takes longer to digest. We are less likely to overeat if we consume fiber with each meal. Imagine eating an orange and compare that experience to consuming a soft drink or a beer with the same number of calories. We get hungry sooner when calories come from simple sugars or alcohol than when we eat high-fiber foods such as oranges. In most cases, sugar is a simple carbohydrate and provides calories, but no vitamins, minerals, or fiber.

optimal An ideal diet.

complex carbohydrate A food containing carbohydrates for energy along with other important nutrients and fiber. Dietary guidelines for Americans encourage intake of complex carbohydrates by increasing consumption of fruit, vegetables, whole grains, and low-fat milk. Chemically, the term refers to chains of two or more monosaccharides to differentiate them from simple carbohydrates or sugar molecules.

For that reason sugar is known as an “empty” calorie. The typical cola drink contains 8 teaspoons of sugar. Sugar contributes to obesity and tooth decay. In the United States we consume more than 100 pounds of sugar per person each year.

Protein

The **protein** found in food is important for building and repairing body tissue, as well as for many biochemical processes. Muscle is mostly protein. Protein is derived from food groups that include meat, eggs, nuts, and fish, but also from legumes or beans. Iron is an important mineral we get from meats, eggs, and some vegetables. Milk products also contain protein, along with a very important mineral, calcium. Most adults should choose low-fat or fat-free proteins.

Oils and Fats

Dietary fat is an important nutrient, because it provides a sense of satiety or fullness. Stored fat insulates the body from temperature changes, and pads of fat protect body parts from injury. Important vitamins are found in fats and essential fatty acids must be included for good health. Most people in the United States take in too many calories from fat compared to their calories from carbohydrates and protein. Per gram, fats and oils have twice the calories of carbohydrate and protein.

Balance and Variety

Our eating patterns should represent a balance among the major nutrients. Dietary recommendations include percentages of daily caloric intake from carbohydrate (45% to 65%), fats (20% to 35%), and protein (10% to 35%) plus small amounts of fatty acids (Institute of Medicine, Food and Nutrition Board, 2002). A major issue in the United States today is the lack of balance in food intake. Most people consume food with too few calories from complex carbohydrates, and too many calories from proteins, simple carbohydrates, and fats.

Eating a variety of foods helps ensure consumption of essential nutrients, including all known vitamins and minerals, and helps achieve balance. Variety also helps us to avoid excessive amounts of harmful additives, contaminants, or toxins found in food. This is why eating exactly the same foods every day is not recommended.

In addition to providing carbohydrate, protein, and fat, the foods we eat should contain vitamins, minerals, and fiber. Drinking water is also essential to good health, as is exposure

protein A large complex compound consisting of amino acids that provide nutrients to the body for growth and repair of body tissue. Examples of foods containing sizeable amounts of protein are meat, poultry, milk, eggs, fish, and some vegetables and grains. Burns, surgery, fevers, and infections require greater amounts of protein than normal to maintain health.

to sunlight so the body can manufacture vitamin D. In addition to eating an adequate diet we should also eat a balanced diet.

The Ideal Diet

We may wonder about the ideal diet for eating behavior. This is an important question, and the answer is that an optimal eating pattern depends on multiple factors, including individual characteristics. When we were children, teens, and younger adults, we needed extra nutrients to support growth. When we stop growing, we no longer need the same amount of calories. In addition, age affects metabolic rate, or the rate at which we use calories. Generally, metabolic rates slow as we age, meaning we need fewer calories. An exception is when we are sick or injured.

Deficiencies

Vitamin, mineral, and fiber deficiencies occur even if we consume sufficient calories. Many nutrition-related health problems were not understood until vitamins and their food sources were identified. Up until the late 18th century, seamen experienced and died from scurvy caused by lack of vitamin C. Deficiency in vitamin C causes depression, hysteria, bleeding gums, loosened teeth, and failure of wounds to heal. Vitamin A deficiency still results in blindness in children all over the world. If we have difficulty seeing at night, it could be due to a vitamin A deficiency. This deficiency also results in dry, rough, scaly skin and contributes to leg cramps. The processing used to create the flour for commercially produced white bread removed most of the nutrients found in whole grains and in flours typically used in home-baked breads. When vitamin B deficiencies were understood, the U.S. government compelled commercial food producers to enrich bread and cereal products. Today food processors must ensure that nutrients are included in the foods they sell. They are required to provide detailed labels of nutrient values so consumers can make healthier choices.

Many people in the United States suffer from malnutrition. Nutritionists say low levels of calcium, vitamin D, protein, and fiber often occur in the general population. Low levels of calcium lead to bone loss, which contributes to osteoporosis. Osteoporosis contributes, in turn, to more easily broken bones, particularly in older women and men. Elderly people also experience bone loss due to the lack of adequate vitamin D from sunlight. The legs of children and adults lacking vitamin D often become bent or bowed.

Adequate fiber helps people avoid constipation, diverticulosis, and some types of colon cancer. Dental health depends on an adequate supply of several vitamins and minerals, including calcium. Protein is important for blood cell production and protecting muscle mass. The lack of niacin and folate or folic acid contributes to diarrhea, irritability, dizziness, confusion, and neural tube defects. Anemia and abnormal brain-wave patterns are associated with the lack of vitamin B6. Many people in the United States rely on fast food, which may be deficient in important vitamins and minerals.

The absence of needed nutrients and water affects biopsychosocial health. Dehydration, or the lack of adequate water, may result in headaches. When we lack sufficient nutrients and calories we do not have the energy to work, play, or even be pleasant to people at home or at work. When important relationships are disrupted, we are more likely to become depressed and anxious. There are other psychological problems specifically connected with the absence of certain nutrients. Weakness and confusion follow inadequate magnesium and potassium intake. Lack of salt can result in mental apathy. Iron deficiency anemia, the most common deficiency in the world, results in weakness, headaches, and the inability to concentrate. High sugar intake is associated with obesity and must be avoided by people who have diabetes or who are at risk of diabetes. In some people, high blood pressure or hypertension is associated with excessive salt intake. Alcohol also contributes to hypertension and strokes. High-fat diets contribute to cardiovascular disease, diabetes, and some cancers. Fortunately we have good sources of information about ways to improve nutritional choices.

Guidelines for Healthy Eating Behavior

There are many ways to analyze eating behaviors. Current research suggests that the four food groups of a generation ago were too simple. Recommended dietary allowances (RDAs) may be too complex for daily use. A simpler approach to assessing eating habits is the food guide pyramid (U.S. Department of Agriculture [USDA], 2007). It is based on current knowledge about adequacy, balance, and variety. The first food guide pyramid, introduced in 1992, was an effort by the USDA to simplify nutrition recommendations for all adults.

That pyramid was divided into six zones and graphically showed which food groups should make up the bulk of food intake. For example, the bread, cereal, rice, and pasta group was the largest area at the base of the pyramid. At least six servings are recommended per day for adults. A minimum of three vegetable servings and two fruit servings are in the next zones. At least two servings each day should come from the milk, yogurt, and cheese group. Two servings of the meat, poultry, fish, dry beans, eggs, and nut group are recommended daily. The pyramid recommends using fats, oils, and sweets sparingly, as seasonings and in cooking (**Figure 5.2**). The pyramid also defines what counts as a serving.

The pyramid looks simple but may not be sufficient for our purposes. For example, many foods, such as casseroles, are combinations of food groups. Also it is difficult for some people to calculate the size of servings without actually measuring them. Measuring is tedious and hot food becomes cold before it can be eaten. Nevertheless, the pyramid is a great advance over previous efforts to make understandable dietary recommendations. The U.S. population includes many ethnic and nationality groups, so nutritionists devised a Mediterranean diet pyramid, a Latin American diet pyramid, and an Asian diet pyramid. Key recommendations pertain to adequate nutrients within caloric limits, weight management, and physical activity, and include information about food safety and alcohol consumption.

The USDA introduced MyPyramid (USDA, 2007), a more personalized approach for those with access to the Internet. It emphasizes physical activity, moderation in food choices,

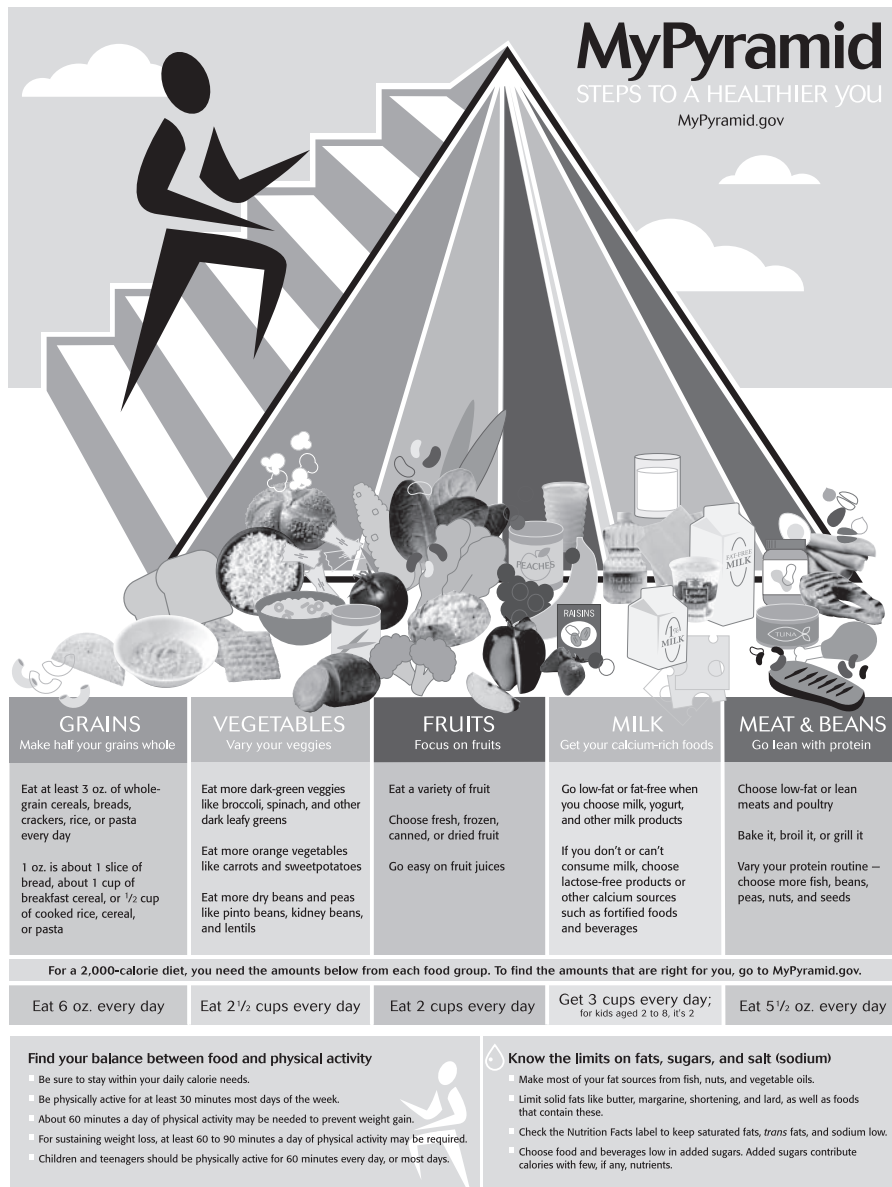


Figure 5.2 Compare your eating patterns over the past 24 hours with the recommendations on the pyramid. Did you eat recommended amounts from the five categories before eating any extra food?

Source: U.S. Department of Agriculture, www.mypyramid.gov

and recommends changes in typical diets. For example, cereals should be whole grains, and serving size is specific for the grain group. “Amounts of food” for each group are more specific than “serving size,” because they include ounces for grains and the meat/bean groups. Cups are used for vegetables, fruits, and milk. Users can go to the web site, enter their age, gender, and level of physical activity. Based upon this input, the program will calculate the number of appropriate calories for the individual. A recommended eating plan based on seven food groups can then be printed out and used. If level of activity changes, caloric needs will change, and users can recalculate recommendations.

Health Problems Associated with Obesity

In addition to eating a healthy diet, everyone should also have a healthy body weight. Overeating, or consuming more calories than can be used in a day, leads to the common and serious health risk of obesity. People in the United States tend to gradually add fat weight to their bodies as they grow older. In 2003 and 2004, 32.2% of adults (over 66 million) were obese and almost 5% of those were extremely obese. At the same time 17% of children and adolescents 2–19 years of age (more than 12 million) were overweight (Centers for Disease Control, 2006). Obesity is a risk factor for cardiovascular disease, diabetes, and some cancers. An additional point to remember is that people can be obese and still be deficient in nutrients. For example, if people eat only beef, bread, and ice cream, then they are taking in too many calories from protein, fat, and simple carbohydrates, but lack important nutrients found in vegetables and fruits. Fats and sugar contribute to satiety, but crowd out or displace other important nutrients from a diet. Fibrous foods, such as fruits, vegetables, and some plant-based sources of protein take more time to digest, so they stay in the stomach longer, producing a sense of satiety and prevent hunger pangs.

The major causes of death in the United States are cardiovascular disease (CVD) and cancer, so researchers interested in these illnesses focus on identification of their causes. The previous chapter examined the evidence that daily, moderate, aerobic exercise reduces risks of CVD, diabetes, and some cancers. This chapter examines additional solutions related to eating behaviors found in people living in industrialized countries.

Excessive intake of fat and low intake of fiber are believed to be major contributors to obesity, CVD, diabetes, and cancer. Epidemiologists studying countries with low rates of cardiovascular disease discovered that in those countries most diets were based on whole grains. They concluded that excessive amounts of meat and animal-based fats contribute to high rates of cardiovascular disease. They noted lower levels of colon cancer in those countries, as well, and concluded that fiber helps prevent colon cancer. In Japan, less animal fat is consumed than in the United States, and Japanese women have lower rates of breast cancer than U.S. women. Japanese men have lower rates of heart disease until they move to the United States. Many scientists suggest that eating more plant-based food, such as grains, vegetables, and fruits, might lower the high rates of obesity, CVD, and cancer in the United States.

What Is a Healthy Body Size?

Many people ask but cannot find a definitive answer to this question. If our health is good, we are not weak from hunger, and we are neither gaining nor losing weight, then our eating behavior and weight are probably appropriate for our age and current activity level. Caloric intake and activity levels are balanced. If we stop our physical activity but continue to eat in our usual way, we will begin to gain fat weight. For example, when people retire they are usually less active, and gain fat weight because they are eating the same amount and types of food as when they were employed. If they add daily exercise, then caloric intake and energy use will again be in balance. (See **Figure 5.3** about balancing caloric intake with energy output.)

Our body stores any calories we eat but do not use or burn. Fat is energy held in reserve, and too much body fat is defined as obesity. Several components contribute to body weight. This is known as body composition.

Body Composition

Body weight includes the combined weight of water, bone, muscle, and fat. Among these four elements, only excess fat is considered unhealthy. Most nutrition books contain charts recommending appropriate weights based on age, gender, and height. Unfortunately, these charts do not distinguish among the four components. From a health viewpoint, it is very important to maintain adequate amounts of water, muscle, and bone in the body. Fat is the only component we should ever try to lose through exercise and dietary behavior change. It is possible to be very thin and still have too much fat, because very-low-calorie intake reduces bone and muscle mass, changing our body composition. See **Figure 5.4** to understand the effect of body composition on appearance.

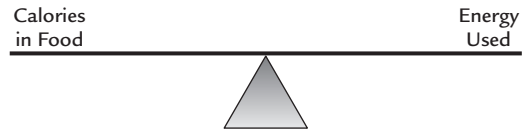
Body Mass Index

Some scientists use the calculation of **body mass index (BMI)** to indicate healthy weight ranges. BMI is based on height and weight, but does not tell us about body composition. BMI is used because weight and height are simple to measure and understood by most adults, but the index does not give a complete picture for purposes of health. BMI is based on total weight, but fails to distinguish among weight from fat, muscle, bone, and water. There are several complex ways to compare weight from fat to weight from lean body mass (bone and muscle), but they require complicated and expensive measurement techniques done by trained personnel. Two examples are underwater weighing and biological impedance measurements.

body mass index (BMI) Body weight in kilograms divided by the square of height in meters. BMI tables suggest appropriate, healthy weight for height for men and women.

Figure 5.3

When energy intake equals energy used then body weight stays the same.



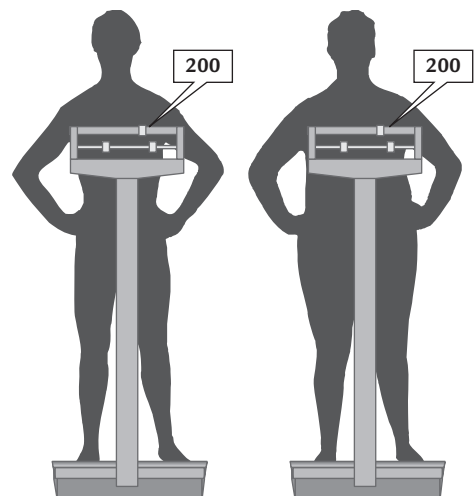
Waist-to-Hip Ratio, a Simple Measure

Some scientists believe that fat around the waistline, or central obesity, is more dangerous for health than fat carried elsewhere on the body. One easy way to measure this distribution of fat is to compare the distance around the waist to the distance around the hips. A string will do, but a measuring tape makes it easier. In general, we are healthier if the distance around our hips (measured 7 to 9 inches below the waist) is longer than the distance around the waist. If the waist measurement is greater than the hip measurement, the person may be obese and is eating more calories than he or she needs based on his or her level of activity. Divide waist measurement by hip measurement. Women whose ratio is greater than 0.90 and men whose ratio is greater than 0.80 are probably at increased risk for health problems.

The best solution is two-pronged: increase activity level through exercise, and analyze eating behaviors to make sure all necessary food groups are represented properly. Lower-calorie foods such as vegetables or fruit can be substituted for higher-calorie foods such as ice cream or hamburgers and fries. A related but even simpler way to assess whether or not we are gaining fat weight is to compare waist measurements over the past few years. If we are letting our belt out a notch, or cannot snap or zip up jeans, then we have probably added fat to our waistline and body weight.

Figure 5.4

The man on the left has a healthier body composition than the man on the right even though they weigh the same.



Suggestions to Encourage Healthier Eating Behavior

Health psychologists apply the process of behavior modification to change habitual acts such as exercise and eating. In the previous chapter, behavior modification techniques and theories from health psychology were applied to improving exercise behavior. The logic used in the health belief model, the theories of planned behavior and reasoned action, and the transtheoretical model can also be applied to modification of eating behavior. There are hundreds of books on eating behavior, and most are called diet books. Outside of closed residential treatment programs, such as at weight-loss spas, it is difficult for most people to change food consumption habits on their own. Fortunately, there are useful recommendations based on scientific studies from the field of health psychology. Most people cannot suddenly change lifelong eating patterns, so clinical health psychologists and nutrition counselors suggest making gradual changes when altering eating behavior. They discovered a number of useful recommendations in addition to gradual change. Most recommend recording all eating behaviors.

Record and Evaluate Eating Behavior

The first step in changing a behavior is to record and understand the behavior. Often what we actually do is different from what we think we are doing. There are a variety of record-keeping formats available. **Retrospective records** rely on memory of past food consumption. Retrospective food records usually focus on the last 3 days or the last 24 hours of eating. This provides a quick look at eating patterns (Snooks & Hall, 2002). Many nutritionists, clinical psychologists, and weight-loss groups begin sessions by using retrospective records, weighing and measuring their clients, and then making recommendations for changes before the next session. The initial meeting is followed by weekly sessions, with measurement and discussions of the past week's behavior and recommended changes for the coming week. This approach is also used by most commercial weight-loss groups.

Prospective records are kept at the time one actually consumes a food. Some studies indicate that recording everything we eat actually reduces food intake, because it is tiresome to write everything down and also because it is embarrassing to report eating an entire package of cookies. Prospective eating diaries are more likely to be accurate, because food is mea-

retrospective records Records of past eating, exercise, or other behaviors relying on the memory of intervention participants. For example, retrospective food records usually focus on the last 3 days or the last 24 hours of eating. This provides a quick assessment of eating patterns.

prospective records Records of eating, exercise, smoking, or other behaviors written at the time the behavior occurs. Analysis makes it possible to set up a plan for changes in eating, exercise, or smoking behavior.

sured before it is eaten. Keeping a record of everything eaten for a year or even for a month is burdensome. Eventually people get tired of keeping records, stop analyzing their behavior, and cancel appointments with clinicians or stop attending group sessions.

One solution to this attrition is to use a shorter time frame for recordkeeping. Many people are able to keep accurate records for 7 consecutive days, but most settle for 3-day records based on 2 week days and 1 day of a weekend. For simplicity, the recommendation is to record food and drink consumed at the time it takes place. The 3 days should be when routines are followed and not times of special events like birthdays. It is important to record both the food and the amount eaten. It is best to measure the amount of food or drink before it is consumed rather than estimate the amount.

Some restaurants, including fast food places, provide brochures with the food they serve, number of calories in each type, and the division of calories among fat, carbohydrate, and protein (McDonalds, 2008; Wendy's, 2008). The label on most food packages provides serving size, nutritional composition, and calories. Students can also learn more about serving size by studying the food guide pyramid on the Internet.

Compare Food Records to the Ideal Diet

People can find the structure of an ideal diet for their age and activity level on the web site and then compare what they eat to what is recommended. For most people, the food guide pyramid's servings, or the more recent MyPyramid, with ounces and cups, make this step easy. In the United States, most people eat too many servings from the meat and fat group and not enough from the vegetable group. Comparing actual consumption to an ideal diet that takes individual factors into account enables one to determine what food groups should be added and which should be reduced.

Record and Evaluate Moods and Thoughts Associated with Eating Behavior

Many clinical health psychologists and counselors recommend recording not only what we eat, but where, when, and why we chose that food and the amount. Some therapists also ask clients to record the extent of their hunger and their feelings or emotional states before and after eating to give individuals a better understanding of eating behavior.

Choose One Serving of One Food Group to Add to the Daily Routine

Most experts recommend making one simple change at a time until the behavior becomes habitual. From a behavior modification viewpoint, it may be simpler to add food rather than take away something we like and avoid feeling deprived. When one food change becomes routine, then a second can be made. Adding servings from the vegetable group is a good place to start because adding one vegetable to the daily diet adds variety, vitamins, minerals, carbohydrates, and fiber. All improve health. Once the behavior change is established, a second

vegetable serving could be added until the recommended three servings per day are habitual. Next people might choose another food group to change. Fruit is a good idea, because it is sweet.

Other Possible Changes

After adding food groups to the daily diet, people can use behavior modification to eat less of the meat group, because most people in the United States consume too much meat. This can be accomplished by smaller or fewer servings. For example, if someone habitually eats a Big Mac every day, the person could opt one day a week for a different sandwich or have one meat patty rather than two. A McDonalds hamburger contains 260 calories with about 4 grams of fat, while a Big Mac contains 560 calories with about 11.5 grams of fat (McDonalds, 2008). Wendy's Junior hamburger has 280 calories, including 80 calories from fat, while a Classic Single with Everything has 420 calories, including 180 calories from fat (Wendy's, 2008). People can avoid feeling hungry by adding servings from the cereal, vegetable, fruit, or milk groups.

Writing Prospective Eating Plans

Some health promotion specialists recommend following a specific plan and not worrying about past behavior. If we educate ourselves about nutrition and are highly motivated, we can use a standard, such as the new food guide pyramid, to devise daily menus. This approach provides an idea of what nutrients are missing from our diets. We can add servings of healthy food groups and eliminate servings of food groups being overeaten.

Prepared Foods and Commercial Programs

Many commercial weight-loss programs sell meals precisely planned and prepared to control caloric and nutritional intake. Most require adding fresh fruit, vegetables, and milk to meals. These meals are more expensive than the do-it-yourself modifications suggested above, but are less expensive than eating out. One risk of this approach may be losing weight so quickly that muscle and bone are lost along with fat. Exercising aerobically and strength training help maintain lean body tissue.

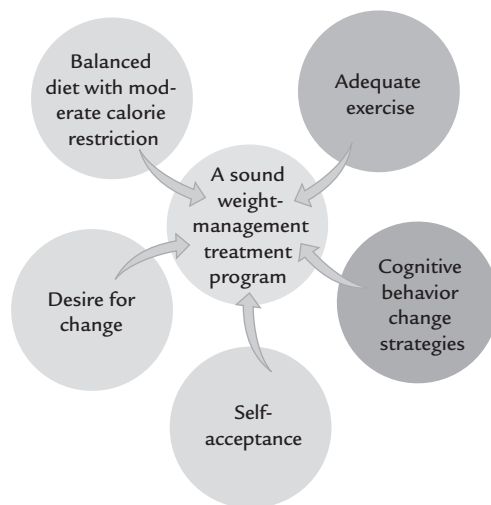
Prevention of Relapse

A basic problem with any behavior change is reverting or returning to old habits (Marlatt & Gordon, 1985). This occurs with modification of both eating and exercise behaviors. One particular complication is that food has social and psychological value in addition to its biological benefits. Many people use food as a way to deal with problems or unpleasant emotions. Records and analysis of eating patterns may reveal a tendency to eat unhealthily when experiencing fatigue or negative emotional states such as anxiety or depression. Many peo-

Figure 5.5

Planning and implementing self-management of exercise and eating behaviors will result in healthy fat weight loss.

Source: Insel, P., Turner, R. E., & Ross, D. 2007 *Nutrition* (3rd ed.). Sudbury, MA: Jones and Bartlett Publishers.



ple eat because they think they need more energy when they are simply tired and need sleep, rest, or relaxation. Others grab something sweet, such as a candy bar, when they see a bad test grade or after meeting with supervisors about poor work productivity. Another common tendency is to control caloric intake with friends or family, but overeat in private. In those cases solutions may be to eat more at meals and to have healthy snacks available for between-meal hunger when alone. (See **Figure 5.5** for components of a healthy weight management program.)

Theoretical Approaches to Changing Eating Behavior

Eating behavior is a more complicated behavior to change than exercise, for several reasons. First, there are a variety of ways to improve health through nutritional choices. For example, some studies focus on increasing consumption of fruits and vegetables, others on lowering fat intake. Secondly, obesity reflects dieting and exercise behaviors rather than just one or the other. A third difficulty is that motivation to lose weight should include improvement in physical appearance. Changing only for health reasons may not succeed. A fourth research complication is people may not value health or appearance more than the pleasure of eating. Eating-behavior-modification theory includes analyses of records, attitudes, decision making, cognitions or thoughts, social actions, self-change processes, motivations, social interaction, social environments, health beliefs, modeling, and other causal pathways to predict behavior change for both weight loss and dietary modification (Ewart, 2004).

Based in systems theory, social action theory (SAT) examines behaviors as highly routine actions followed daily. Health-protective behaviors are more likely to become habitual if they are compatible with existing lifestyle routines. In designing interventions for behavioral change, SAT researchers focus on interpersonal interaction sequences, including the

impact of cultural factors. The processes of taking action to protect health include motivations and expectations, self-efficacy, goals, problem solving, considering alternative behaviors, and other factors (Ewart, 2004, p. 265).

Students will recall the health belief model included the concepts of health beliefs (eating more healthily), perceptions of threats to health (heart disease, stroke, and cancer), susceptibility to those threats, and comparisons of the costs versus the benefits of making a change especially in terms of the time and effort required to change. The transtheoretical or stages of change model can be applied to eating behavior, whether it is to increase intake of fibrous foods or decrease fat intake (Rosen, 2000).

Some health psychologists combine theories to help people change nutritional practices. For example, Steptoe, Doherty, Kerry, Rink, and Hilton (2000) used the health belief model, self-efficacy, and stages of change theories to test an intervention to increase consumption of lower-fat foods among people with high cholesterol levels. In the study, self-efficacy and perceived benefits of low-fat eating predicted behavior change. Study participants who made larger reductions in fat intake reported greater self-efficacy and perceived benefits. Povey, Conner, Sparks, James, and Shepherd (2000) examined stages of change for three nutritional goals ranked from general to specific: eating a healthy diet, eating a low-fat diet, and eating five servings of fruits and vegetables each day. The more general the behavior, the more likely participants were to be in action or maintenance stages. In another study, the theory of planned behavior served as a predictor of dietary change and revealed the effects of attitudes and perceived behavioral control were larger than the effects of subjective norms (Bogart & Delahanty, 2004, pp. 218–219).

An Experiment That Reduced Risks of Cardiovascular Disease

It is often difficult to make comprehensive changes in eating and exercise behaviors unless people are living in controlled situations. Ornish (2001), a physician, sequestered volunteer cardiac patients in a hotel and controlled their food intake and exercise behavior in a closely supervised experiment. His plant-based diet was designed to reduce risks of cardiovascular disease without resorting to surgery. Changes in eating habits, along with exercise and stress management, reversed existing heart disease, as demonstrated by improvements on arteriograms. Patients who switched from meat and eggs to legumes and grains lost more weight and felt better than those who made only moderate changes to their diets. For this reason, Ornish believes comprehensive dietary changes are easier to make than gradual minor modifications. His Advantage Ten program benefits most people, because it is low in cholesterol and fat, which are known risk factors for artery disease. His eating plan is also high in antioxidants believed to be protective against cancer. A somewhat unusual aspect of his diet is the avoidance of fats and oils of all kinds, including oils from avocados, olives, nuts, and seeds. Ornish also suggests avoiding alcohol and simple sugars. He contends that people who follow his diet will lose weight safely, improve their health, and still eat abundantly. The majority of calories in his plan come from complex carbohydrates including beans, legumes, grains, fruits, vegetables, and non-fat dairy products. (Legumes are plants

Think About It!

Another Challenge: Will You Do It?

Behavior

Identify faulty eating behaviors and eliminate or ignore improper eating cues.

Reduce caloric intake.

Stay focused on weight-loss goal.

Actions to Modify Behavior

- Keep daily food records to identify problem foods.
- Use a shopping list and do not buy problem foods.
- Eat fruit or a meal before shopping for food.
- Discard problem foods.
- While at home, restrict eating to the kitchen or dining room.
- Do not eat while watching TV, reading, or talking on the phone.
- Avoid places with vending machines.
- Avoid fast-food restaurants that do not sell low-fat foods.
- Serve meals on smaller plates.
- Prepare smaller amounts of foods to reduce the likelihood of “seconds.”
- Avoid buffet-style or all-you-can-eat restaurants.
- Eat a low-fat high-fiber snack such as a piece of fruit or vegetable before a meal.
- Keep fruit and vegetables on hand to snack on when hungry.
- Ask for salad dressing “on the side” at restaurants.
- Prepare low-calorie lunches and snacks to take to work or school.
- Substitute fresh fruit or yogurt for rich desserts.
- Read nutrition labels to identify high-calorie foods.
- Learn to leave some food on your plate.
- Set reasonable incremental goals, such as losing 5 pounds in 5 weeks.
- Place a picture of yourself on the refrigerator, pantry door, or bedroom mirror.

(continues)

Practice appropriate behaviors.

- Measure your waistline once a week.
- Place exercise equipment and walking shoes where you can see them.
- Buy new pants that are one size smaller and hang them where you can see them.
- Ask your friends and family to support your efforts. Give them examples of how they can help.
- Find ways to move around while at work, school, or home. For example, take the stairs instead of the elevator.
- If you relapse, tell yourself that this is normal. Do not label yourself a failure. Ask yourself what you can learn from the experience so it is less likely to affect your eating again. Minor occasional indulgences will not affect your weight. Continue to focus on your weight loss goal.
- Set aside at least 30 minutes each day to engage in an enjoyable physical activity. Gradually increase the duration of the activity to 45 to 60 minutes daily.

Use nonfood rewards for behaviors

- Praise yourself frequently for exercising or taking smaller servings of high-calorie appropriate foods.
- Buy a desired item such as a new CD, DVD, or an item of clothing.
- Take a walk or ride a bike through a park.

Source: Alters, S., & Schiff, W. (2009). *Essential concepts for healthy living* (5th ed.). Sudbury, MA: Jones and Bartlett Publishers, LLC.

with edible seeds, and include peas, soybeans, and lentils.) Legumes provide protein with little fat, calories for energy, and fiber. In addition to legumes, Ornish emphasizes grains (eg, wheat, corn, and rice). Plant-based foods do not stay in the stomach as long as fat or protein, so hunger results sooner than it does following meals containing fat. People on plant-based diets may have to eat more frequently to avoid feeling hungry.

Dieting and Eating Disorders

Yo-Yo Dieting, Crash Diets, and Fad Diets

There are health risks to severe dietary restrictions even if obesity is reduced. Drastically limiting food intake is not a healthy behavior. It may lead to poorer health, because such diets

often lack important nutrients. Generally, people make poor nutritional choices and eat too much when they are very hungry. There is evidence that weight cycling or **yo-yo dieting** (a pattern of losing weight, gaining weight, and losing again) may be more harmful than just being slightly overweight (Brownell & Rodin, 1996). When people regain weight they generally have a higher percentage of body fat than when they started unless they have consistently exercised.

Unfortunately, the word “diet” has come to mean restricted eating occurring for short periods of time to achieve loss of body weight. A typical psychosocial situation occurs when people plan to attend class reunions. They want to appear attractive to former classmates and believe the way to do this is by losing many pounds of body weight very quickly on drastic crash diets. Unfortunately health is damaged by this practice. First, when someone takes in too few calories for his or her level of activity, the person becomes hungry and irritable with family and friends. Second, when people lose weight by drastic means, they lose muscle and bone along with fat. It is very difficult for adults to replace lost muscle and bone. Third, when calories are restricted, the body assumes the person is starving and slows metabolism to compensate. This means the body uses fewer calories even at rest. Fourth, drastic behavior change is usually not permanent. As soon as the high school reunion is over, most people return to their former eating patterns. What they gain back is fat, not muscle or bone, so they end up with a higher percentage of body fat than when they started restricting food intake.

The majority of adults in the United States report they are dieting to lose weight. Following restrictive eating plans may lead to deficiencies in specific nutrients as well as hunger and fatigue. The truth is, the most healthful way to lose fat weight from the body is to exercise aerobically, as discussed in the previous chapter. The increased activity has the added benefit of maintaining or even increasing lean muscle mass and bone strength. When we use more calories through exercise, our body composition improves. If people decide they consume too many calories each day for good health, then they can reduce the number of calories while increasing exercise. The important point is to decrease caloric intake in such a way that health is protected.

Dieting to lose weight is an enormously popular topic. There are over 600 diet books currently on the market. The most widely sold usually present innovative approaches to eating that become fads. These books become wildly popular and then fall out of favor when another new diet book appears on the market. Most plans result in a loss of weight because people are eating fewer calories. There is nothing magic about any particular kind of food, and general nutrition recommendations should be followed to maintain health. Over the

yo-yo dieting An eating pattern of alternating limiting food intake (dieting), followed by regaining weight, followed by a repetition of dieting and weight loss. This pattern is believed to be detrimental to health, because one’s total percentage of body fat tends to increase each time because muscle and bone are lost due to dieting.

past several years, popular fad diets included high-fat, no-carbohydrate; no sugar or white flour; eggs and grapefruit only; and fruit-only plans. Fruit-only diets are so high in fiber they often result in diarrhea and dehydration.

Early diets based on liquid proteins and on drugs ended in death. Many people trying to lose weight with prescription drugs experience heart damage as a side effect. Psychological side effects of fad diets include feeling irritable and deprived. These two negative emotional states jeopardize relationships with family, friends, and coworkers.

Eating Disorders Are Serious Health Risks

In the United States and other industrialized countries, the majority of health problems with food involve consuming too many calories for a person's level of activity. Obesity, with its attendant problems, is the result. Other eating problems involve taking in too few calories for good health. This behavior pattern is not well understood, but probably happens for a variety of reasons. Motivation for extreme thinness includes an obsession with body size. A culture may put pressure on young women and men who literally starve themselves. The American Psychiatric Association considers **anorexia nervosa** and **bulimia nervosa** to be psychological disorders associated with excessive concern about body size (American Psychiatric Association, 2000). Anorexia nervosa is diagnosed based on a body weight of 15% below normal due to weight loss and refusal to gain weight. People with this disorder have a distorted body image. They believe themselves to be fat when in reality there is very little fat on their bodies. Their low body weight is due to low-calorie diets and/or excessive exercise or both.

The distinguishing characteristic for a diagnosis of bulimia nervosa is a pattern of eating followed by extreme dieting, purging by vomiting, or using laxatives. The American Dietetic Association (2003) notes that both patterns result in serious health problems, including weakened heart muscles, kidney failure, iron-deficiency anemia, and abnormal electrical activity in the brain. Victims of the disorder may experience amenorrhea, or cessation of menstruation, resulting from a very low percentage of body fat. Due to low levels of estrogen, premature osteoporosis may begin with its corresponding loss of bone mineral density. This may also happen to female athletes (Insel, Turner, & Ross, 2006, p. 274). Weakened bones make stress fractures more likely and bone loss is often irreversible. Vomiting may result in erosion of tooth enamel and rupture of the esophagus. In many cases, hospitalization is required to prevent death. Athletes, both male and female, sometimes diet extensively

anorexia nervosa A disordered eating pattern consisting of repeated dieting and/or overexercising, with the result that body weight falls below healthy levels.

bulimia nervosa A disordered or unhealthy pattern consisting of eating followed by vomiting or purging with laxatives.

or purge to improve performance. For example, some jockeys and boxers vomit to meet weight requirements for competition. Ballet dancers may be threatened with expulsion from the ballet company if their weight exceeds certain levels, even if most of their weight is bone and muscle rather than fat.

Summary

Good nutritional practices are essential to health. Eating the correct kinds and amounts of food provides sufficient energy and enhances immune systems to aid in resistance to disease. Food makes it possible for us to grow and thrive when we are young. Once we reach maximum height, many of us continue to eat as though we are still growing. This practice may result in obesity, or excess body fat, putting us at risk for cardiovascular disease, diabetes, and some cancers. A fewer number of people, including teens and adults, risk ill health and death by starving their bodies.

This chapter examines biological, psychological, and sociocultural factors influencing eating behavior. Nutritional needs are greatest for infants, children, and teens. Important psychological factors influencing eating behavior are moods such as boredom, loneliness, or depression. Appetite is a desire to eat or drink. It can be affected by biology, but is mainly psychological and sociocultural in origin. Other sociocultural influences on eating behavior include childhood experiences, ethnicity, religion, advertising, and historical traditions.

A diet is a habitual eating pattern. Diets must be adequate and include carbohydrates, protein, fat, vitamins, minerals, and fiber. Diets should be balanced and include variety to maintain good health. The food guide pyramid and web site, www.MyPyramid.gov, are excellent sources of current information on good nutrition. Obesity, or too much fat on the body, is a serious health risk and often results from too little exercise and from eating too many calories. Our bodies are composed of bone, water, muscle, and fat. Fat is the only part of the body that puts our health at risk.

Using theories and models of behavior modification may help people develop healthier eating behaviors. Recording and analyzing eating behavior, followed by adding recommended food groups, is one path to healthier eating and body composition. Fad diets and crash diets are popular in the United States, but often result in loss of muscle and bone along with fat. The eating disorders of anorexia and bulimia nervosa can damage health and end in death. These disorders are best treated by trained clinicians.

Review Questions

1. Identify the basic biological reasons for healthy eating practices.
2. Summarize psychological and sociocultural influences on eating behavior.
3. List five factors that most influence your own eating behaviors, giving an example of each.

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4. Explain the three major sources of calories in our diet and give an idea of the percentage of each that should be included on a daily basis.
5. Describe one source of reliable information on nutritional practices, including food groups and serving sizes.
6. Discuss the major causes of obesity in this country.
7. Describe healthful solutions to this problem.
8. Explain how it is possible to be obese but malnourished.
9. Discuss ways to measure obesity. What is the problem with calculations such as BMI? What is the simplest method to determine if we are obese?
10. Of the steps for behavior modification discussed in this chapter, which do you think would be the most difficult and why?
11. After reading this chapter, decide if gradual single changes or drastic multiple changes are the better way to change eating patterns.
12. Explain the health problems involved with fad diets and crash diets.
13. Describe two eating disorders, how they are diagnosed, and the best approach to their treatment.
14. Challenge one idea from this chapter that goes against something else you have learned or experienced.

Student Activity

Use what you know about health psychology and behavior modification to accomplish the following:

1. Keep a 3-day record of all the food and drink you consume.
2. Estimate the amount by serving size, or measure the food/drink prior to consumption.
3. Using the food guide pyramid, sort your foods and liquids into the five major food groups.
4. Compare your pyramid to the food guide pyramid in terms of number of servings from each group.
5. Make a list of what food groups you are missing and how many servings you should add from each group.
6. Choose one food group to change and add one serving of that food every day for a week.
7. At the end of the week analyze your success. Give yourself 100 points for each day you ate one serving from the chosen food group.
8. Look at your score. It can range from 0 to 700 points. Give yourself a grade based on your score.
9. Write an analysis of how successful you were at modifying your behavior. Include a list of what helped and hindered your efforts.
10. Identify the origins of what helped and hindered, stating whether the causes were biological, psychological, or sociocultural in origin.
11. Write a report containing all the information listed above.

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