Part Ⅰ

Introduction to Basic Principles of Nutrition Science

Chapter 1

Food, Nutrition, and Health

one

KEY CONCEPTS

- Optimal personal and community nutrition are major components of health promotion and disease prevention.
- Nutrients in food are essential to our health and well-being.
- Food and nutrient guides help us to plan a balanced diet that is in accordance with our individual needs and goals.

We live in a world of rapidly changing elements, including our environment, food supply, population, and scientific knowledge. Within different environments, our bodies, emotional responses, needs, and goals change. To be realistic within the concepts of change and balance, the study of food, nutrition, and health care must focus on **health promotion.** Although we may define health and disease in a variety of ways, the primary basis for promoting health and preventing disease must start with a balanced diet and the nutrition it provides. The study of nutrition is of primary importance in the following two ways: it is fundamental for our own health, and it is essential for the health and well-being of our patients and clients.

HEALTH PROMOTION

Basic Definitions

Nutrition and Dietetics

Nutrition science is the science of food, the nutrients and other substances within food; their action, interaction, and balance in relation to maintenance, growth, reproduction, health and disease of an organism; and the processes by which the organism ingests, absorbs, assimilates, utilizes and excretes food substances. **Dietetics** is the health profession responsible for applying nutrition science to promote human health and treat disease. The **registered dietitian (RD)**, who is also referred to as a *clinical nutrition specialist, a registered dietitian nutritionist,* or a *public health nutritionist,* is the nutrition authority on the health care team; this health care professional carries the major responsibility of nutrition care for patients and clients.

Health and Wellness

High-quality nutrition is essential for good health throughout life, beginning with prenatal life and continuing through old age. In its simplest terms, the word **health** is defined as the absence of disease. However, life experience shows that the definition of health is much more complex. It must include extensive attention to the roots of health for the meeting of basic needs (e.g., physical, mental, psychologic, and social well-being). The concept of *wellness* broadens this approach further. Wellness seeks the full development of potential for all people within their given environments.

health promotion the active engagement in behaviors or programs that advance positive well-being.

nutrition the sum of the processes involved with the intake of nutrients as well as assimilating and using them to maintain body tissue and provide energy; a foundation for life and health.

nutrition science the body of science, developed through controlled research, that relates to the processes involved in nutrition internationally, clinically, and in the community.

dietetics the management of the diet and the use of food; the science concerned with nutrition planning and the preparation of foods.

registered dietitian (RD) a professional dietitian accredited with an academic degree from an undergraduate or graduate study program who has passed required registration examinations administered by the Commission on Dietetic Registration (CDR). The RD and RDN (registered dietitian nutritionist) credentials are legally protected titles that may only be used by authorized practitioners and by the CDR. The term *nutritionist* alone is not a legally protected title in most states and may be used by virtually anyone. See *www.eatright.org* for more details.

health a state of optimal physical, mental, and social well-being; relative freedom from disease or disability.

National Health Goals

The wellness movement continues to be a fundamental response to the health care system's burden of illness and disease treatment and the rising costs of medical care. Since the 1970s, holistic health and health promotion have focused on lifestyle and personal choice when it comes to helping individuals and families develop plans for maintaining health and wellness. The U.S. national health goals continue to reflect this wellness philosophy. The most recent report in the *Healthy People* series published by the U.S. Department of Health and Human Services, *Healthy People 2020,* continues to focus on the nation's main objective of positive health promotion and disease prevention (Figure 1-1). The guidelines encompass four overarching goals with the ultimate vision of a "society in which all people live long, healthy lives".

A major theme throughout the report is the encouragement of healthy choices in diet, promotion of weight control, and education about other risk factors for disease, especially in the report's specific nutrition objectives. The *Healthy People 2020* topics, objectives, interventions, resources, and national data are all available on their website (www.healthypeople.gov). Some of the specific national goals under *Nutrition and Weight Status* include the following: promoting healthier food access, improving the presence of nutrition in the health care and worksite settings, improving the overall healthy weight status of the nation's population, reducing food insecurity, improving overall food and nutrient consumption, and reducing iron deficiency. Other objectives involving nutrition may be found under the topics *Adolescent Health, Diabetes, Education and Community-Based Programs, Food Safety,* and *Heart Disease and Stroke.*

FIGURE 1-1 *Healthy People 2020* Goals. (From the U.S. Department of Health and Human Services. *Healthy People 2020.* Washington, DC: U.S. Government Printing Office; 2010.)

Importance of a Balanced Diet

Importance of Good Nutrition

The U.S. Departments of Health and Human Services and Agriculture suggest that appropriate nutritional intervention can reduce morbidity (illness) and mortality (death) that result from cardiovascular diseases by 25%, from respiratory and infectious diseases by 20%, from cancer by 20%, and from diabetes by 50%. The National Academy of Sciences report on diet and health also pointed that cardiovascular diseases, obesity, dental decay, and osteoporosis could be much decreased by dietary improvements. Therefore, it appears that the knowledge about good nutrition may be one of our most valuable and underused resources in health promotion and disease prevention.

Signs of Good Nutrition

A lifetime of good nutrition is evidenced by a well-developed body, the ideal weight for height and body composition (i.e., the ratio of muscle mass to fat mass), and good muscle development. In addition, a healthy person's skin is smooth and clear, the hair is glossy, and the eyes are clear and bright. Appetite, digestion, and elimination are normal. Well-nourished people are more likely to be mentally and physically alert and to have a positive outlook on life. They are also more able to resist infectious diseases as compared with undernourished people. This is particularly important with our current trends of population growth and ever-increasing life expectancy. The national vital statistics report published in 2015 stated that life expectancy in the United States reached a high of 76.4 years for men and 81.2 years for women.

Food and Health

Food is a necessity of life. However, many people are only concerned with food insofar as it relieves

their hunger or satisfies their appetite and not with whether it supplies their bodies with all of the components of proper nutrition. Nutrients provided by the diet are further divided into the categories of **essential, nonessential,** and **energy-yielding nutrients.**

The six essential nutrients in human nutrition are the following:

1. Carbohydrates
2. Proteins
3. Fats
4. Vitamins
5. Minerals
6. Water

The core practitioners of the health care team (e.g., physician, dietitian, nurse) are all aware of the important part that food plays in maintaining good health and recovering from illness. Therefore, assessing a patient's nutritional status and identifying his or her nutrition needs are primary activities in the development of a health care plan.

History of Nutrition

Nutrition is a relatively new science. Most of nutrition research has occurred in the twentieth century, but general interest in nutrition traces back further. The history of nutrition can be divided into four main eras.

Naturalistic Era (before 1785)

The naturalistic era was characterized by many vague ideas concerning taboos, magical powers, and medicinal values associated with different foods. Many such ideas were swept aside by discoveries in later eras, but early men and women clearly and correctly recognized that food was essential for survival and health.

Budding and Formative Era (1785 to 1945)

The basic concepts and theories of nutrition were gradually established with the identification of the main elements of food and human bodies during the so-called "Chemical revolution" in France at the end of the eighteenth century. The methods of chemical analysis and animal experiments were also developed. The chemical analytical stage was initiated in the eighteenth century by Laviosier, who was the first person to search the relationship between the oxygen we breathe and the heat our bodies produce. Early in the nineteenth century, methods were developed to analyze foods to determine the amounts of the elements carbon, hydrogen and nitrogen they contained. The results of the early analyses led Liebig to suggest that the nutritive value of food was a function of its nitrogen content. During this period the causes of certain nutritional deficiency diseases were clarified, and most of nutrients were isolated and identified in food. By 1912, Casimir Funk introduced the term vitamine to describe another essential dietary component in addition to water, carbohydrate, fat, protein and minerals. By 1940s, the chemical structure of each vitamin had been established, many of them had been synthesized and the knowledge of their biological functions was accumulating rapidly. The mineral requirements for a healthful diet were also explored. Nutrition-budding and forming era was a peak for discovering the nutrients and a golden period for the development of nutrition science. The science of nutrition achieved recognition as a distinct discipline in 1934 with the founding of the American Institute of Nutrition.

All-round Developing and Ripening Era (1945-1985)

Since 1945 many new techniques have made it possible to study the nutrient requirements of individual cells and even of the subcellular components or organelles, allowing a rapid growth in our understanding of the intricacies of cell structure and of the complex and vital roles that nutrients play in the growth, development, and maintenance of healthy cells. After 1960 the emphasis of nutrition research turned to the relationships between nutrients, the precise biological roles of nutrients, determination of the optimal amounts of nutrients in the human diet, and the effect of processing on the nutritive quality of food. Besides the problems of undernutrition, the harm of overnutrition to health was also concerned. The concept of public nutrition was put forward by Mason in 1996 and defined by 16th International Congress of Nutrition in 1997, indicating the maturation of public nutrition.

Novel Breakthrough and Breeding Era (1985 to present)

The research field of nutrition science is turning more extensive. In addition to nutrients, much attention is being paid to the contribution of phytochemicals to human health and the prevention of chronic non-communicable diseases. The contents of nutrition research are getting more intensive, with the emerging of the concept of molecular nutrition in 1985, which initiates a molecular era of nutrition research. Moreover, the research contents are becoming more macroscopic. Giessen declaration and the 19th International Congress of Nutrition in 2005 proposed new nutrition science, focusing not only on food and

essential nutrient nutrients a person must obtain from food because the body cannot make them for itself in sufficient quantity to meet physiologic needs.

nonessential nutrient a nutrient that can be manufactured in the body by means of other nutrients. Thus, it is not essential to consume this nutrient regularly in the diet.

energy-yielding nutrient nutrients that break down to yield energy within the body, including carbohydrates, fat, and protein.

health, also on politics, economics and culture as well as the changes of environment and ecosystem; not only on the nutrition problems in a region or a country, but also on those in global background; not only on nowadays nutrition problems, but also on future sustainable development of nutrition.

FUNCTIONS OF NUTRIENTS IN FOOD

To sustain life, the nutrients in foods must perform the following three basic functions within the body:

1. Provide energy
2. Build tissue
3. Regulate metabolic processes

Metabolism refers to the sum of all body processes that accomplish the basic life-sustaining tasks. Close metabolic relations exist among all nutrients and their metabolic products. This is the fundamental principle of *nutrient interaction*, which involves two concepts. First, the individual nutrients have many specific metabolic functions, including primary and supporting roles. Second, no nutrient ever works alone; this key principle of nutrient interaction is demonstrated more clearly in the following chapters. Although the nutrients may be separated for study purposes, remember that they do not exist that way in the human body or in the food that we eat. They always interact as a dynamic whole to produce and maintain the body.

Energy Sources

Human energy is measured in heat units called **kilocalories,** which is abbreviated as *kcalories* or *kcal* (see Chapter 6). Of the six essential nutrients, there are three energy-yielding nutrients including carbohydrates, fat, and protein. The only other energy-yielding substance in the diet comes from alcohol. Because alcohol has no essential function in the body, it is not a *nutrient*. Although not a nutrient, alcohol does provide energy. There are 7 kcal/gram of alcohol.

Carbohydrates

Dietary carbohydrates (e.g., starches, sugars) provide the body's primary and preferred source of fuel for energy. Carbohydrates also maintain the body's reserve store of quick energy as **glycogen** (see Chapter 2). Each gram of carbohydrate consumed yields 4 kcal of body energy. In a well-balanced diet, carbohydrates from all sources should provide approximately 45% to 65% of the total kilocalories.

Fats

Dietary fats from both animal and plant sources provide the body's secondary or storage form of energy. This form is more concentrated, yielding 9 kcal for each gram consumed. In a well-balanced diet, fats should provide about 20% to 35% of the total kilocalories. Approximately two thirds of this amount should be from plant sources, which provide monounsaturated and polyunsaturated fats, and no more than 10% of kilocalories should come from saturated fat (see Chapter 3).

Proteins

Ideally protein would not be used for energy by the body. Rather, it should be preserved for other critical functions, such as structure, enzyme and hormone production, fluid balance, and so on. However, in the event that necessary energy from carbohydrates and fat is insufficient, the body may draw from dietary or tissue protein to obtain required energy. When protein is used for energy it yields 4 kcal/g. In a well-balanced diet, protein should provide approximately 10% to 35% of the total kilocalories (see Chapter 4).

Thus, the recommended intake of each energy-yielding nutrient, as a percent of total kilocalories, is listed as follows:

	AMERICAN RECOMM-ENDATION	CHINESE RECOMME-NDATION
• Carbohydrate:	45% to 65%	50% to 65%
• Fat:	20% to 35%	20% to 30%
• Protein:	10% to 35%	-

Figure 1-2 illustrates the acceptable ranges of caloric intake for each macronutrient as part of the whole diet. Because individual needs vary, there are no exact recommendations for any macronutrient. If the diet is on the lower end of kilocalories from one of the macronutrients, then a necessary increase in percentage of total kilocalories will come from one or both of the other macronutrients.

Tissue Building

Proteins

The primary function of protein is tissue building. **Amino acids** are the building blocks of protein that

metabolism the sum of all chemical changes that take place in the body by which it maintains itself and produces energy for its functioning; products of the various reactions are called *metabolites*.

kilocalorie the general term *calorie* refers to a unit of heat measure, and it is used alone to designate the small calorie; the calorie that is used in nutrition science and the study of metabolism is the large Calorie or kilocalorie, which avoids the use of large numbers in calculations; a kilocalorie, which is composed of 1000 calories, is the measure of heat that is necessary to raise the temperature of 1000 g (1 L) of water by 1℃ .

glycogen a polysaccharide; the main storage form of carbohydrate in the body, which is stored primarily in the liver and to a lesser extent in muscle tissue.

amino acids the nitrogen-bearing compounds that form the structural units of protein; after digestion, amino acids are available for the synthesis of required proteins.

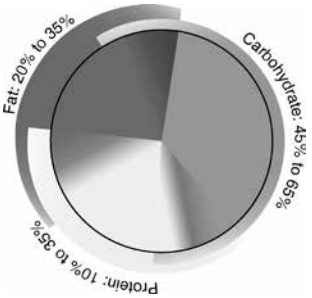

FIGURE 1-2 The recommended intake of each energy-yielding nutrient as a percentage of total energy intake.

are necessary for constructing and repairing body tissues (e.g., organs, muscles, cells, blood proteins). Tissue building is a constant process that ensures the growth and maintenance of a strong body structure as well as the creation of vital substances for cellular functions.

Other Nutrients

Several other nutrients contribute to the building and maintenance of tissues. Some examples are provided here.

Vitamins and minerals. Vitamins and minerals are essential nutrients that help to regulate many body processes. An example of the use of a vitamin in tissue building is that of vitamin C in developing collagen. Collagen is the protein found in fibrous tissues such as cartilage, bone matrix, skin, and tendons. Two major minerals, calcium and phosphorus, participate in building and maintaining bone tissue. Another example is the mineral iron, which contributes to building the oxygen carrier protein hemoglobin in red blood cells. Several other vitamins and minerals are respectively discussed in greater detail in Chapters 7 and 8 with regard to their functions, which include tissue building.

Fatty acids. Fatty acids, the building blocks of lipids, help to build the central fat substance that is necessary in all cell membranes, and they promote the transport of fat-soluble nutrients throughout the body.

Regulation and Control

The multiple chemical processes in the body that are necessary for providing energy and building tissue are carefully regulated and controlled to maintain a constant dynamic balance among all body parts and processes. Several of these regulatory functions involve essential nutrients.

Vitamins

Many vitamins function as coenzyme factors, which are components of cell enzymes, in the governing of chemical reactions during metabolism. This is true for most of the B-complex vitamins. In other words, the body must have an adequate supply of the B vitamins in order to yield energy (in the form of adenosine triphosphate [ATP]) from the metabolism of the energy-yielding nutrients (see Chapter 7).

Minerals

Many minerals also serve as coenzyme factors with enzymes in cell metabolism. For example, cobalt, which is a central constituent of vitamin B_{12} (cobalamin), functions with this vitamin in the synthesis of heme for hemoglobin formation.

Water and Fiber

Water and fiber also function as regulatory agents. In fact, water is the fundamental agent for life itself, providing the essential base for all metabolic processes. The adult body encompassed approximately 50% to 70% water. Dietary fiber helps to regulate the passage of food material through the gastrointestinal tract, and it influences the absorption of nutrients.

NUTRITIONAL STATES

Optimal Nutrition

Optimal nutrition means that a person receives and uses adequate nutrients obtained from a varied and balanced diet of carbohydrates, fats, proteins, minerals, vitamins, and water. The desired amount of each essential nutrient should be balanced to cover variations in health and disease and to provide reserve supplies without unnecessary excesses.

Malnutrition

Malnutrition refers to a condition that is caused by an improper or insufficient diet. Both *undernutrition* and *overnutrition* are forms of malnutrition. Dietary surveys have shown that the average American diet is suboptimal. Intakes of fruits, vegetables, and dairy foods or dairy substitutes are lower than the recommended intake levels. Meanwhile, the average American intake of foods containing undesirable components such as saturated fat, alcohol, and added sugar is considerably higher than recommended. That does not necessarily mean that all of these individuals are undernourished. But it does indicate poor dietary choices and suboptimal nutritional intake. Some people can maintain health on somewhat less than the optimal amounts of various nutrients in a state of borderline nutrition. However, on average, someone who is receiving less than the desired amounts of essential nutrients has a greater risk for physical illness and compromised immunity as compared with someone who is receiving optimal nutrition. Such nutritionally deficient people are limited with

regard to their physical work capacity, immune system function, and mental activity. They lack the nutritional reserves to meet any added physiologic or metabolic demands from injury or illness or to sustain fetal development during pregnancy or proper growth during childhood. This state may result from many situations including poor eating habits, a continuously stressful environment with little or no available food, or a disease state.

Undernutrition

Undernutrition, a subcategory of malnutrition, appears when nutritional reserves are depleted and nutrient and energy intakes are not sufficient to meet daily needs or added metabolic stress. Many undernourished people live in conditions of poverty or illness. Such conditions influence the health of all involved but especially that of the most vulnerable populations: pregnant women, infants, children, and elderly adults. Undernutrition is most common in developing countries, though it still exist in the U.S., indicating that food security problems involve urban development issues, economic policies, and more general poverty issues.

Undernutrition sometimes occurs in hospitalized patients as well. For example, in case of acute trauma or chronic illness places added stress on the body, and the daily nutrient and energy intake may be insufficient to meet the needs of these patients. This is common despite the supply of nutritionally balanced meals and nutrition support provided by the hospital. Think about a patient you have seen before in a hospital—were they eager to eat? People are hospitalized because their health is in a state of serious distress. Illness and pain are often the cause for anorexia and decreased appetite. Thus, this form of malnutrition may result in patients that had a good nutritional standing before illness required hospitalization.

Overnutrition

Some people are in a state of overnutrition, which results from excess nutrient and/or energy intake over time. Overnutrition is another form of malnutrition, especially when excess caloric intake produces harmful body weight (i.e., morbid obesity; see Chapter 15). Harmful overnutrition can also occur among people who consistently use excessive amounts of dietary supplements, which can result in vitamin or mineral toxicities (see Chapters 7 and 8).

NUTRIENT AND FOOD GUIDES FOR HEALTH PROMOTION

Nutrient Standards

Most of the countries of the world have established nutrient standard recommendations. These standards serve as a reference for intake levels of the essential nutrients to meet the known nutrition needs of most healthy population groups. Although these standards are similar in most countries, they vary according to the philosophies of the scientists and practitioners with regard to the purpose and use of such standards. These standards are referred to as **Dietary Reference Intakes (DRIs)** in the United States, Canada and China; referred to as **Dietary Reference Values (DRVs)** in the United Kingdom.

U.S Standards: Dietary Reference Intakes

Since 1941, the **Recommended Dietary Allowances (RDAs),** which are published by the National Academy of Sciences, have been the authoritative source for setting standards for the minimum amounts of nutrients necessary to protect almost all people against the risk for nutrient deficiency. The U.S. RDA standards were first published during World War Ⅱ as a guide for planning and obtaining food supplies for national defense and for providing population standards as a goal for good nutrition. These standards are revised and expanded every 5 to 10 years to reflect increasing scientific knowledge.

Public awareness and research attention have shifted from the original goal of *preventing deficiency disease* to reflect an increasing emphasis on nutrient requirements for *maintaining optimal health*. Following World War Ⅱ, nutrient deficiencies were a major concern to the health of the nation. However, that is not the case today for the majority of the population. With food fortification and enrichment, few overt nutrient deficiencies exist in an otherwise balanced diet. This change of emphasis resulted in the DRIs project. This project was established to examine how much of a nutrient should be consumed to produce optimal health. For example, the original goal was to find out how much vitamin C had to be consumed in order to prevent the disease scurvy. The current DRIs represent an ideal amount of each nutrient that will maximize the health benefits of each nutrient (i.e., the optimal amount of vitamin C one should consume in order to receive all of the health benefits of that nutrient). For some nutrients, this shift in focus made a significant difference in the recommendations. And for others, the ideal intakes did not change.

The DRIs include recommendations for each gender and age group as well as recommendations

Dietary Reference Intakes (DRIs) reference values for the nutrient intake needs of healthy individuals for each gender and age group.

Recommended Dietary Allowances (RDAs) the average daily dietary intake level that is sufficient to meet the nutrient requirement of nearly all healthy individuals in a group.

for pregnancy and lactation. For the first time, excessive amounts of nutrients were identified as tolerable upper intakes. The DRIs encompass the following four interconnected categories of nutrient recommendations:

1. *Estimated Average Requirement.* This is the intake level that meets the needs of half of the individuals in a specific group. This quantity is used as the basis for the development of the RDA.
2. *RDA.* This is the daily intake of a nutrient that meets the needs of almost all (i.e., 97.5%) healthy individuals of a specific age and gender. Individuals should use the RDA as a guide to achieve optimal nutrient intake. RDAs are established only when enough scientific evidence exists about a specific nutrient.
3. *Adequate Intake.* The Adequate Intake is used as a guide when insufficient scientific evidence is available to establish the RDA. Both the RDA and the Adequate Intake may be used as goals for individual intake.
4. *Tolerable Upper Intake Level.* This indicator is not a recommended intake. Rather, it sets the maximal intake that is unlikely to pose adverse health risks in almost all healthy individuals. For most nutrients, the Tolerable Upper Intake Level refers to the daily intake from food, fortified food, and nutrient supplements combined.

Other Standards

Historically, Canadian and European standards have been similar to the U.S. standards. In less developed countries, where factors such as the quality of available food must be considered, individuals refer to standards such as those set by the Food and Agriculture Organization and World Health Organization. Nonetheless, all standards provide a guideline to help health care workers who work with a variety of population groups to promote good health and prevent disease through sound nutrition.

Food Guides and Recommendations

To interpret and apply nutrient standards, health care workers need practical food guides to use for nutrition education and food planning with individuals and families. A series of food-based dietary guidelines have been issued to help people make suitable choices when they select food.

MyPlate

The **MyPlate** food guidance system (Figure 1-3), which was released in June 2011 and revised in October 2016 by the U.S. Department of Agriculture, provides the public with a valuable nutrition education tool.This food guideline is a replacement of Food Guide Pyramid issued in 1992. The goal of MyPlate is to promote variety, proportionality, moderation, gradual improvements, and physical activity. Participants are encouraged to personalize their own plans via the public website www.choosemyplate.gov by creating a profile and entering their age, gender, weight, height, and activity level. The system will create a plan with individualized calorie levels and specific recommendations for serving amounts from each food group. In addition, the MyPlate site provides participants with worksheets, resources, and individualized tools such as the Food Tracker, Physical Activity Tracker, and Weight Manager. Other helpful information can be found on the plan's website, including the following:

- Tips for consuming more whole grains, fruits, and vegetables
- Serving size information
- Health benefits and nutrients associated with each food group
- Sample menus

Dietary Guidelines for Americans

The *Dietary Guidelines for Americans* were issued as a result of growing public concern that began in the 1960s and the subsequent Senate investigations studying hunger and nutrition in the United States. These guidelines are based on developing alarm about chronic health problems in an aging population and a changing food environment. An updated statement is issued every 5 years. This publication encompasses a comprehensive evaluation of the scientific evidence regarding diet and health in a report jointly issued by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services.

Figure 1-4 shows the five key recommendations of the *Dietary Guidelines for Americans 2015-2020.* The current guidelines continue to serve as a useful overall guide for promoting dietary and lifestyle choices that reduce the risk for chronic disease. Although no guidelines can guarantee health or well-being and although people differ widely with regard to their food needs and preferences, these statements are meant to help evaluate food habits and move toward general improvements. Good food habits that are based on moderation and variety can help to build healthy bodies.

The current DRIs, MyPlate guidelines, and *Dietary Guidelines for Americans* are in sync with one another. They reflect sound, although broad, guidelines for a healthy diet.

Dietary Guidelines for Chinese

China issued the first food based dietary guidelines set by Chinese Nutrition Society in 1989 and revised about every 10 years. The Guidelines for the general population are: Eat a variety of foods,

MyPlate a visual pattern of the current basic five food groups—grains, vegetables, fruits, dairy, and protein—arranged on a plate to indicate proportionate amounts of daily food choices.

USDA
United States Department of Agriculture

10 tips Nutrition Education Series

MyPlate MyWins

Based on the Dietary Guidelines for Americans

Choose MyPlate

Use MyPlate to build your healthy eating style and maintain it for a lifetime. Choose foods and beverages from each MyPlate food group. Make sure your choices are limited in sodium, saturated fat, and added sugars. Start with small changes to make healthier choices you can enjoy.

1 Find your healthy eating style

Creating a healthy style means regularly eating a variety of foods to get the nutrients and calories you need. MyPlate's tips help you create your own healthy eating solutions—"MyWins".

2 Make half your plate fruits and vegetables

Eating colorful fruits and vegetables is important because they provide vitamins and minerals and most are low in calories.

3 Focus on whole fruits

Choose whole fruits—fresh, frozen, dried, or canned in 100% juice. Enjoy fruit with meals, as snacks, or as a dessert.

Fruits

4 Vary your veggies

Try adding fresh, frozen, or canned vegetables to salads, sides, and main dishes. Choose a variety of colorful vegetables prepared in healthful ways: steamed, sauteed, roasted, or raw.

Vegetables

5 Make half your grains whole grains

Look for whole grains listed first or second on the ingredients list—try oatmeal, popcorn, whole-grain bread, and brown rice. Limit grain-based desserts and snacks, such as cakes, cookies, and pastries.

Grains

6 Move to low-fat or fat-free milk or yogurt

Choose low-fat or fat-free milk, yogurt, and soy beverages (soymilk) to cut back on saturated fat. Replace sour cream, cream, and regular cheese with low-fat yogurt, milk, and cheese.

Dairy

7 Vary your protein routine

Mix up your protein foods to include seafood, beans and peas, unsalted nuts and seeds, soy products, eggs, and lean meats and poultry. Try main dishes made with beans or seafood like tuna salad or bean chili.

Protein

8 Drink and eat beverages and food with less sodium, saturated fat, and added sugars

Use the Nutrition Facts label and ingredients list to limit items high in sodium, saturated fat, and added sugars. Choose vegetable oils instead of butter, and oil-based sauces and dips instead of ones with butter, cream, or cheese.

Limit

9 Drink water instead of sugary drinks

Water is calorie-free. Non-diet soda, energy or sports drinks, and other sugar-sweetened drinks contain a lot of calories from added sugars and have few nutrients.

10 Everything you eat and drink matters

The right mix of foods can help you be healthier now and into the future. Turn small changes into your "MyPlate, MyWins".

Center for Nutrition Policy and Promotion
USDA is an equal opportunity provider, employer, and lender.

Go to ChooseMyPlate.gov for more information.

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FIGURE 1-3 MyPlate food guidance system recommendations. (From the U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. *Choose MyPlate mini-poster* (website): <www.choosemyplate.gov>)

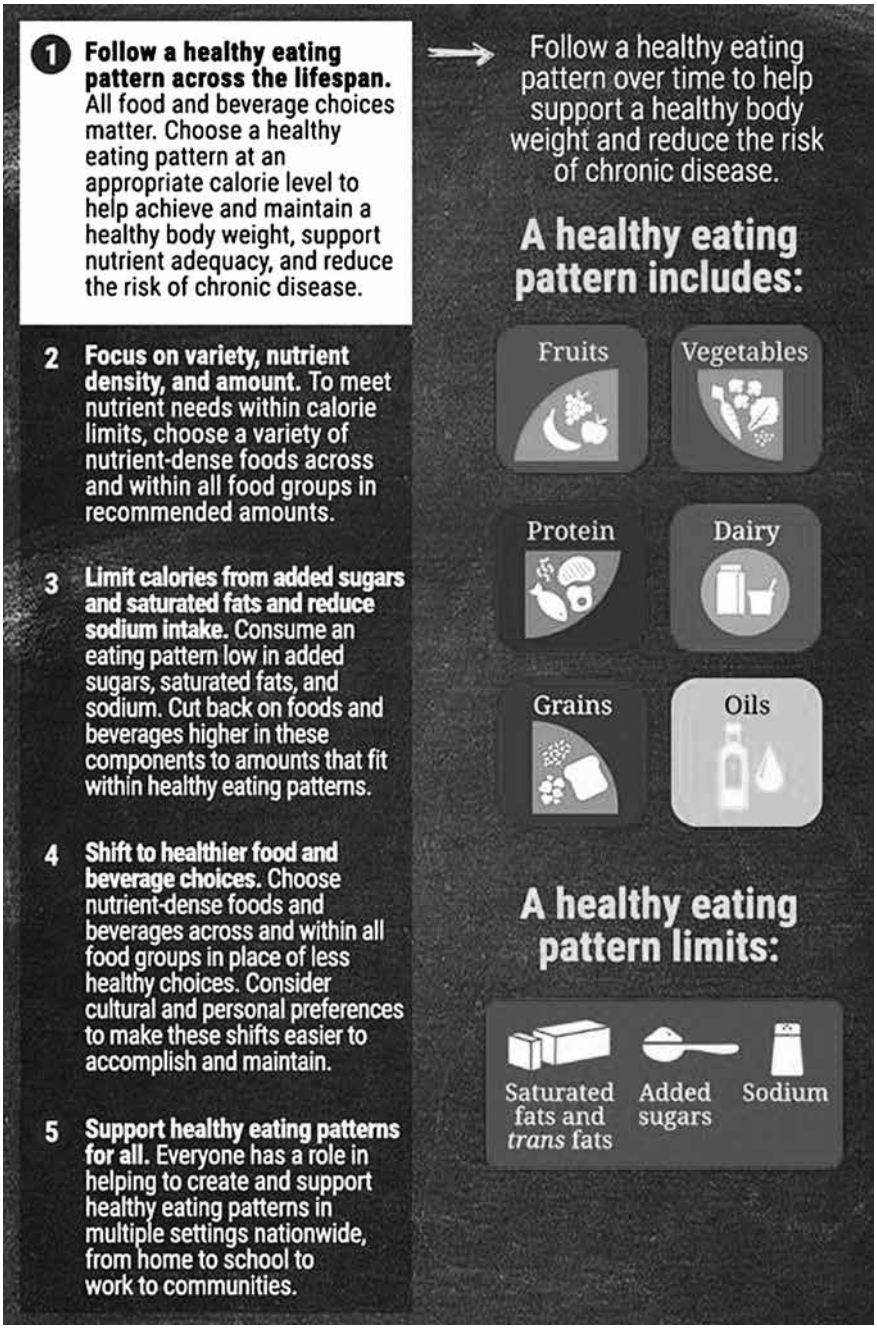

FIGURE 1-4 Summary of the *Dietary Guidelines for Americans, 2015-2020*. (From the U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2015-2020 Dietary Guidelines for Americans. 8th Edition. December 2015.* Available at http://health.gov/dietaryguidelines/2015/guidelines/.)

cereal based; be active to maintain a healthy body weight; eat plenty of vegetables, fruits, dairy products and soybeans; eat moderate amounts of fish, poultry, eggs and lean meats; limit salt, cooking oil, added sugar and alcohol; develop healthy eating habits, avoid food waste.

Daily food recommendations are presented in the form of Food Guide Pagoda to help consumers put the guidelines into practice. The Food Guide Pagoda visually illustrates what food groups and how much of each should be consumed in daily life. The five levels of the Pagoda contain all the major food groups in the Chinese daily diet. The details will be showed

in Chapter 14.

Individual Needs

Person-Centered Care

Regardless of the type of food guide or recommendations used, health care professionals must remember that food patterns vary with individual needs, tastes, habits, living situations, economic status, and energy demands. Cookie-cutter meal plans without regard to the individual's preferences are not useful. Food is a basic enjoyment of life and this should always be considered when implementing dietary changes for oneself or for a patient. Use the food guides to identify healthy food groups to choose from and then use a person-centered approach to more specifically select suitable foods within those food groups to meet the patient's needs.

Changing Food Environment

Our food environment has been rapidly changing in recent decades. American food habits appear to have deteriorated in some ways, with a heightened reliance on fast, processed, and prepackaged foods. However, people do recognize the relationship between food and overall health. More than ever, people are being selective about what they eat. Regardless of how much the food environment changes, the one thing that never goes out of style is the invention of food fads and popular diets. Health care professionals can address such concerns with a person-centered approach and ensure that the general dietary needs are still being met in accordance with the DRIs. Following a fad diet is a personal preference. If health care professionals dismiss such preferences in favor of a cookie-cutter meal plan, they are more likely to garner resistance from the patient instead of making any potential improvements. Most fad diets can provide an overall balanced diet with good judgment, guidance, and perhaps a few judgment.

(SUN Changhao)