**Chapter 1**

**Food Choices and Human Health**

## Quick List: IM Resources for Chapter 1

* **Class preparation resources:** Chapter learning objectives and key points, learning activities and project ideas, lecture outline
* **Assignment materials: Related LO**
* Critical thinking questions (with answer key) ...……………………. 1.4, 1.5, 1.6, 1.7
* Controversy critical thinking questions (with answer key) ………………………. 1.8
* Worksheet 1-1: Palak Paneer Label Analysis……………………………….....1.3, 1.4
* Worksheet 1-2: Intake Analysis—Diet Planning ……………………………1.4
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* Worksheet 1-4: Making Food Choices[[1]](#footnote-1)..………………………………………….. 1.4
* Worksheet 1-5: Evaluation of Published Nutrition Information[[2]](#footnote-2) .…………… 1.5, 1.8
* Worksheet 1-6: Crossword Puzzle
* **Enrichment materials:**
* Handout 1-1: Can Diet Help Manage Chronic Disease? ………………………. 1.1

## Chapter Learning Objectives and Key Points

1.1. Describe the ways in which food choices impact a person’s health.

* The nutrients in food support growth, maintenance, and repair of the body.
* Deficiencies, excesses, and imbalances of energy and nutrients bring on the diseases of malnutrition.
* Nutrition profoundly affects health.
* Diet influences long-term health within the range set by genetic inheritance.
* Nutrition exerts little influence on some diseases but strongly affects others.
* Life choices, such as being physically active or using tobacco or alcohol, can improve or damage health.

1.2. List seven major categories of nutrition and weight-related objectives included in the publication *Healthy People 2020*.

* Each decade, the U.S. Department of Health and Human Services sets health and nutrition objectives for the nation.

1.3. Name the six classes of nutrients.

* The energy-yielding nutrients are carbohydrates, fats (lipids), and protein.
* The regulator nutrients are vitamins and minerals.
* Foremost among the nutrients in food is water.
* Essential nutrients in the diet prevent deficiencies.
* Food energy is measured in calories; nutrient quantities are often measured in grams.
* Nutritious food is superior to supplements for maintaining optimal health.
* Most healthy people who eat a nutritious diet do not need supplements at all.

1.4. Give examples of the challenges and solutions to choosing a health-promoting diet.

* Foods that form the basis of a nutritious diet are whole foods, such as ordinary milk and milk products; meats, fish, and poultry; vegetables and dried peas and beans; fruits; and grains.
* A well-planned diet is adequate, balanced, moderate in energy, and moderate in unwanted constituents and offers a variety of nutritious foods.
* Cultural traditions and social values often revolve around foodways.
* Many factors other than nutrition drive food choices.

1.5. Describe the science of nutrition.

* Nutrition is a young and fast-growing science.
* Scientists ask questions and then design research experiments to test possible answers.
* Researchers follow the scientific method and apply it to various research study designs.
* Single studies must be replicated before their findings can be considered valid.
* A theory is strengthened when results from follow-up studies with a variety of research designs support it.
* News media often sensationalize single-study findings and so may not be trustworthy sources.
* National nutrition research projects, such as NHANES, provide data on U.S. food consumption and nutrient status.

1.6. Describe the characteristics of the six stages of behavior change.

* Behavior change follows a multistep pattern.
* Setting goals and monitoring progress facilitate behavior change.

1.7. Explain how the concept of nutrient density can facilitate diet planning.

1.8. Evaluate the authenticity of any given nutrition information source.

## Worksheet 1-1: Palak Paneer Label Analysis

**Instructions:** Use the label for frozen palak paneer to answer the questions that follow on a separate sheet of paper.

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| **Directions:** (Do not thaw)**Microwave Oven:**1. Remove tray from carton and puncture film 3-4 times.2. Heat on high setting for 3 minutes.3. Remove film completely.4. Gently stir contents, turn dish and heat for additional 2 minutes.5. Gently stir before serving.**Conventional Oven:** See side panel.**Ingredients:** Spinach, paneer (milk, part skim milk, vinegar, salt), tomatoes (tomatoes, tomato juice, salt, calcium chloride, citric acid), cream, onions, tomato puree (water, tomato paste, citric acid), milk, canola oil (expeller pressed), water, spices, sea salt, garlic, green peppers, turmeric, bay leaves, citric acid.***Allergens: Milk*****Made in a facility that processes peanuts, tree nuts, soy, milk and wheat.****Cheery Chef Foods, Inc.**Belmont, CA 94002 |

|  |
| --- |
| **Nutrition Facts** |
| Serving Size 5 oz. (142g) |
| Servings Per Container 2 |
| **Amount Per Serving** |
| **Calories** 170 | Calories from Fat 130 |
|  | **% Daily Value\*** |
| **Total Fat** 14g | **22**% |
|  Saturated Fat 6g | **31**% |
|  *Trans* Fat 0g |  |
| **Cholesterol** 35mg | **12**% |
| **Sodium** 600mg | **25**% |
| **Total Carbohydrate** 6g | **2**% |
|  Dietary Fiber 2g | **9**% |
|  Sugars 1g |  |
| **Protein** 6g |  |
| Vitamin A 35% | • | Vitamin C 30% |
| Calcium 8% | • | Iron 10% |
| \* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs. |

 |

**Questions**

1. Who is the manufacturer of your product?
2. What is the serving size of your product?
3. Does this serving size seem reasonable to you based on your perception of portion sizes?
4. How many servings are in each container of your product?
5. How many grams of total fat are in your product?
6. How many calories does this amount of fat represent?
7. What total calorie intake per day diet is the label information based on?
8. How can this product be prepared?
9. Which ingredient is present in the highest amount? (Hint: The ingredients are listed from most to least abundant in the food.)
10. Why might this information be important to know?
	1. What ingredient is present in the least amount?
	2. Is this ingredient a nutrient?
11. What percentage of the Daily Value for vitamin A is contained in this product?

**Answers to the Questions**

1. Cheery Chef Foods, Inc.

2.

a. 5 ounces (142 grams)

b. Open question (answers will vary)

3. 2 servings

4.

a. 14 grams per serving or 28 grams per package

b. Per serving: 130 kilocalories based on the label, or 126 kilocalories based on calculation

5. 2,000 kilocalories

6. By heating in the microwave or conventional oven

7.

a. Spinach

b. It is reassuring to know that a product with the word spinach in the name (palak = spinach) has spinach as the main ingredient instead of another artificial ingredient.

8.

a. Citric acid

b. No

9. 35% of the DV of vitamin A is provided by one serving of this product.

## Worksheet 1-2: Intake Analysis—Diet Planning

|  |  |
| --- | --- |
| **Eating Plan A (1 Day’s Intake)** | **Eating Plan E (1 Day’s Intake)** |
| 1 cup of Corn Flakes cereal1 cup of 1% fat milk2 cups of coffee2 slices of whole-wheat bread2 ounces thinly sliced baked ham2 ounces cheddar jalapeño cheese8 ounces chocolate milk3 12-ounce beers2 beef and cheese enchiladas | ¾ cup Nature’s Path flax cereal½ cup soy milk½ cup acai juice + seltzer water1 medium banana12 ounces coffee6 ounces 6-grain yogurt½ cup blueberries¾ cup raspberries2 Mushroom Lover’s Veggie Burgers1 cup roasted carrot soup½ cup sweet green peppers6 carrot sticks2 whole-wheat wasa crackers8 ounces fruit juice8 ounces soy milk1 peanut butter Fiber One Bar6 ounces grilled salmon10 cooked asparagus spears6 ounces white wine½ cup olives½ cup sun-dried tomatoes½ cup whole-wheat angel hair pasta¼ cup mixed nuts |

**Instructions:** Look at eating plans A and E and answer the following questions:

1. What types of foods could you add to Eating Plan A to increase its adequacy?

2. What foods could you reduce in Eating Plan A to help ensure moderation?

3.

a. What are the strengths of Eating Plan A in terms of nutritional adequacy?

b. What are the strengths of Eating Plan A in terms of representation of the major food groups?

c. What are the weaknesses of Eating Plan A based on your findings in 3 a. and 3 b. above?

4.

a. What are the strengths of Eating Plan E?

b. What are its weaknesses?

**Answers to the Questions**

1. Fruits, vegetables, and whole grains
2. Beer and one enchilada instead of two

3.

a. Milk, whole-wheat bread, cereal, and meat

b. It has a lot of grains and dairy products

c. No fruit, few vegetables, and too much beer

4.

a. Lots of fruits, vegetables, and whole grains

b. A bit light on complex carbohydrates

## Worksheet 1-3: Why Do You Eat What You Eat?

**Instructions:** Record what you eat and drink for 1 day in the spaces provided below. Note what helped you decide to pick a particular food. Some examples could be convenience, taste, familiarity, cost, or other reasons.

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| --- | --- | --- | --- | --- |
|  | **Food** | **Preparation Level** | **Amount** | **Reason** |
| **Breakfast:** |  |  |  |  |
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| **Snack:** |  |  |  |  |
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| **Lunch:** |  |  |  |  |
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| **Snack:** |  |  |  |  |
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| **Dinner:** |  |  |  |  |
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| **Snack:** |  |  |  |  |
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Table 1-5 in the textbook shows a glossary of food types. Compare your food types recorded with the food types described.

1. Do you see any patterns in the food types that you choose?

2. Do you eat any one type of food type more often than others and, if so, what factors may influence you to select this type of food more often?

3. How could you adjust your food choices to include more whole foods or fortified foods?

Students’ answer to these questions will vary.

## Worksheet 1-4: Making Food Choices

We decide what to eat, when to eat, and even whether to eat for a variety of reasons. Examine the factors that influence your food choices by keeping a food diary for 24 hours. Record the times and places of meals and snacks, the types and amounts of foods eaten, and a description of your thoughts and feelings when eating. Now examine your food record and consider your choices.

1. Which, if any, of your food choices were influenced by emotions (happiness, boredom, or disappointment, for example)?

2. Was any particular social pressure a factor in any food decisions that you made on this day?

3. Which, if any, of your food choices were influenced by marketing strategies or food advertisements?

4. What is the role of food availability, convenience, and economy in your food choices?

5. How might your age, ethnicity, or health concerns influence your food choices?

6. At what times did you eat because you were truly hungry? How often did you think of health and nutrition when making food choices?

7. Were these food choices based on your level of hunger or on your appetite?

8. If you were to record your intakes for 3-5 days instead of one day, do you think that there would be a time of day that you would consistently eat more based on your appetite?

Compare the choices you made in your 24-hour food diary to the USDA Food Patterns recommendation for your age, gender, and activity level (see Table 2-3 on page 44).

|  |  |  |
| --- | --- | --- |
| **Food Groups** | **Suggested Quantity** | **Quantity Consumed** |
| Fruits |  |  |
| Vegetables |  |  |
| Grains |  |  |
| Protein foods |  |  |
| Milk |  |  |
| Oils |  |  |
| Solid fats and added sugars | Limit intakes |  |

9. Do you eat appropriate amounts of food from each of the five major groups daily?

10. Do you try to vary your choices within each food group from day to day? If not, suggest some foods that you would be willing to eat regularly to increase the variety.

11.

a. What dietary changes could you make to improve your chances of enjoying good health?

b. What choices can you make within each food group to improve your chances of enjoying good health?

Students’ answer to these questions will vary.

## Worksheet 1-5: Evaluation of Published Nutrition Information

**Assignment for discussion:** Carefully read a nutrition article and answer the following questions on a separate sheet of paper:

1.

a. What type of information source did you use to find this article?

b. Summarize the basic idea of the article in a short paragraph.

2.

a. What are the credentials of the author(s)? What do the initials, signifying degrees, after the name(s) mean? Do they enhance the authors’ credibility? Explain.

b. Is the author(s) affiliated with an organization or institution? Does the affiliation with the organization or institution enhance the authors’ credibility? Briefly explain.

c. Does the periodical have an editorial board? Do the editors’ credentials enhance the article’s credibility? Where does one look in a periodical for the editorial board?

d. Does the website that you used (if applicable) have a .gov, .edu., or .org URL? These types of websites often use information that has been published and scrutinized by experts.

3.

a. Is scientific research being presented or discussed? Is the research current (from within the last 3-5 years)?

b. If so, what specific kinds of research or data are presented or cited to support the ideas?

c. Were references listed to allow readers to investigate the information’s original source? Were full citations provided?

4.

a. What is the underlying hypothesis (if/then, cause/effect, etc.)?

b. What are the article’s conclusions/recommendations?

c. Are the conclusions or recommendations supported by the research discussion? Explain briefly why or why not.

5.

a. Develop and describe potential additional research that could more decisively test the hypothesis identified. Describe any control measures that you would use in your study.

b. Indicate what variables will be measured.

c. State the type of experimental design and type of experiment that is being described in your article.

6. Identify the statements in the article that you believe and those that you do not believe, and discuss why or why not for each.

7. What sources other than those listed in the periodical would you refer to if you were to research the article’s topic further?

Students’ answer to these questions will vary.

Source: Adapted with permission of Deborah Fleurant, MOE Thesis, University of New Hampshire, 1989 (Thesis Advisor Sam Smith)

## Worksheet 1-6: Crossword Puzzle

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(clues on following page)

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| **Across** | **Down** |
| 1. A nutrient that must be taken in through the diet4. Most current objectives of nutrition for the nation 5. Studies in which an experimental variable is manipulated by the researchers 8. The subject group that does not receive the real treatment is called a \_\_\_\_\_. 11. Studies that examine correlations between dietary intakes and disease in populations 14. The act of making a new behavior part of everyday life15. A tentative answer to a question or explanation of a relationship between 2 variables 16. Facet of a nutritious diet that ensures all nutrients are present in the necessary amounts | 2. Regularly eaten foods that make up a large part of a diet such as rice or potatoes3. Foods that provide a lot of vitamins and minerals but few calories are \_\_\_\_\_.6. Carbon containing and made by living things7. Foods that have nutrients added to them 9. A unit of weight equal to that of a cubic centimeter or milliliter of water10. A dietary facet that emphasizes foods of a number of types in proportion to each other12. Units used to measure energy from foods13. Element found in protein but not in the other energy nutrients |

**Answers to the Crossword**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. Essential2. Staple foods3. Nutrient dense4. *Healthy People 2020* | 5. Intervention6. Organic7. Fortified8. Control group | 9. Gram10. Balance11. Epidemiologic12. Calories | 13. Nitrogen14. Maintenance15. Hypothesis16. Adequacy |

**Learning Activities and Project Ideas**

1. **Activity 1-1: Brief Research Report on Milk[[3]](#footnote-3)** (LO 1.5)

Most students don’t understand that there are harmful effects of everyday foods, along with “tainted” marketing. This project helps students to discover the truth in marketing foods for themselves. Explain: “I’d like to see some current research on how good milk is for you. Certainly, you should include the different types of milk (whole milk vs. 2% vs. skim) along with the organic varieties. Be sure to include the good and the bad. Your citations should be from either this year or last year.”

1. **Activity 1-2: Students’ Burning Questions[[4]](#footnote-4)**

The first day of class, give each student three “Post-It” notes. Students are to write down a “burning” question they have about nutrition on each note. While they are doing this, tape fifteen large pieces of construction paper around the room, each with a title that roughly corresponds to chapters of the text.

When they finish writing their questions, have them categorize their Post-It notes according to the fifteen chapters by placing their notes on the piece of construction paper that relates to their question. When they finish, ask them to take turns reading the questions that they have generated. Before the next class, check the categorization of their questions and rearrange the Post-It notes so that they are placed with the appropriate chapter sheet if necessary. As you begin a new chapter, bring the corresponding piece of construction paper to class, and read the questions aloud.

This activity helps reassure students, early on, that you will (or won’t) be covering some of their “burning” questions. It also helps show students the relevance of the information you’re covering in class and helps show instructors the interests of the students.

1. **Activity 1-3: Scheduled Interruption—Think/Pair/Share[[5]](#footnote-5)**

Examination of student attention levels throughout class indicate that students’ attention levels are the highest during the first five minutes of class, then slowly decline throughout a lecture. To enhance students’ attentiveness, teaching authorities suggest scheduled interruptions. One planned interruption is think, pair, and share. The purpose of this activity is to encourage the participation of all students, especially those who are quiet. Pose a statement, problem, or situation. Instruct students to quietly write their comments including their thoughts and feelings regarding this topic. Next, pair students with a partner and instruct them to share their comments. Circulate while students are talking. After they have shared with their partner, ask for comments to be shared with the entire class.

1. **Activity 1-4: Controversies Presentations Project[[6]](#footnote-6)** (LO 1.8)

For controversies, divide the students into two teams per chapter to present the controversies. Instruct the students to look for peer-reviewed journal articles that include points in favor and points against. Students should also interview 15 people outside of their nutrition class to get the general public opinion. Afterwards, the two teams will present the two sides of the issue and the rest of the class will discuss and then vote. The leader of each team will receive extra points.

## Lecture Outline

**I. Introduction**

* **Food** is scientifically, materials, usually of plant or animal origin, that contain essential nutrients, such as carbohydrates, fats, proteins, vitamins, or minerals, and that are ingested and assimilated by an organism to produce energy, stimulate growth, and maintain life; socially, a more limited number of such materials defined as acceptable by a culture.
* **Nutrition** is defined as the science of how food nourishes the body.
* **Diet** is defined as the foods (including beverages) a person usually eats and drinks.
* This chapter addresses the following “why,” “what,” and “how” questions about nutrition:
* Why care about nutrition?
* Why be concerned about the **nutrients** in one’s foods?
* Why not just take supplements?
* What are the nutrients in foods, and what roles do they play in the body?
* What are the differences between vitamins and minerals?
* What constitutes a nutritious diet?
* How can people choose foods wisely, for nutrition’s sake?
* What factors motivate your choices?
* How do people know what they know about nutrition?
* How does nutrition science work, and how can a person keep up with changing information?

**II. A Lifetime of Nourishment**

**A. The Diet-Health Connection**

* + - One’s choice of diet profoundly affects one’s health, both today and in the future.
		- The **chronic diseases**—heart disease, diabetes, some kinds of cancer, dental disease, and adult bone loss—all have a connection to poor diet.
* These diseases cannot be prevented by a good diet alone; they are to some extent determined by a person’s genetic constitution, activities, and lifestyle.
	+ - See Handout 1-1: Can Diet Help Manage Chronic Disease?

**B. Genetics, Nutrition, and Individuality**

* + - **Anemia** is a blood condition in which red blood cells, the body’s oxygen carriers, are inadequate or impaired and so cannot meet the oxygen demands of the body.
		- **Genome** (GEE-nome) is the full complement of genetic information in the chromosomes of a cell. In human beings, the genome consists of about 35,000 genes and supporting materials.
		- **Genes** are units of a cell’s inheritance; sections of the larger genetic molecule DNA (deoxyribonucleic acid).
		- **DNA** an abbreviation for deoxyribonucleic (dee-OX-ee-RYE-bow-nu-CLAY-ick) acid, the thread-like molecule that encodes genetic information in its structure; DNA strands coil up densely to form the chromosomes.

**C. Other Lifestyle Choices**

* + - Tobacco use and alcohol and other substance abuse can destroy health.
		- Physical activity, sleep, emotional stress, and other environmental factors can also modify the severity of some diseases.

**III. The Nation’s Nutrition Objectives**

* The U.S. Department of Health and Human Services has set specific 10-year objectives to guide national health promotion efforts.
* In 2015, the nation’s health report was mixed: more adults reported spending the recommended amount of leisure time in physical activity; at the same time, most people’s diets still lacked vegetables, and obesity rates were creeping higher.
* To fully meet the *Healthy People* nutrition goals, our nation must change its eating habits.

**IV. The Human Body and Its Food**

* **Energy** is the capacity to do work.
* The body requires six kinds of nutrients—families of molecules indispensable to its functioning—and foods deliver these.
* Four of the six classes of nutrients are **organic**: carbohydrate, fat, protein, and vitamins.

**A. Meet the Nutrients**

* + - When considering quantities of foods and nutrients, scientists often measure them in **grams** or fractions of grams, units of weight.

**The Energy-Yielding Nutrients**

* The nutrients the body can use for energy: carbohydrate, fat (also called lipids), and protein.
* **Macronutrients** is another name for the energy-yielding nutrients.

**Vitamins and Minerals**

* The fourth and fifth classes of nutrients are the vitamins and the minerals, sometimes referred to as **micronutrients** because they are present in tiny amounts in living tissues.

**Water**

* Water is foremost in quantity among the six classes of nutrients in the body.
* The body constantly loses water, mainly through sweat, breath, and urine, and that water must constantly be replaced.

**The Concept of Essential Nutrients**

* **Essential nutrients** are the nutrients the body cannot make for itself (or cannot make fast enough) from other raw materials; nutrients that must be obtained from food to prevent deficiencies.
* Essential nutrients are found in all six classes of nutrients.
* **Fiber** is a collective term for various indigestible plant materials, many of which bear links with human health.

**Calorie Values**

* **Calories** are units of energy.
* Scientists have calculated the amounts of energy and nutrients various types of people need—by gender, age, life stage, and activity.
* **Dietary supplements** are pills, liquids, or powders that contain purified nutrients or other ingredients.

**B. Can I Live on Just Supplements?**

* + - Scientists are becoming skilled at making **elemental diets**—life-saving liquid diets of precise chemical composition for hospital patients and others who cannot eat ordinary food.
		- Lately, marketers have taken these liquid supplement formulas out of the medical setting and have advertised them heavily to healthy people of all ages as “meal replacers” or “insurance” against malnutrition.

**Food Is Best**

* Hospitalized clients who are fed nutrient mixtures through a vein often improve dramatically when they can finally eat food.
* Eating offers both physical and emotional comfort.

**Complex Interactions**

* In addition to their nutrients, foods contain **phytochemicals**, compounds that confer color, taste, and other characteristics to foods.
* Some may be **bioactive** food components that interact with metabolic processes in the body and may affect disease risks.

**V. The Challenge of Choosing Foods**

**A. The Abundance of Foods to Choose From**

* A list of the foods available 100 years ago would consist mostly of **whole foods**—foods that have been around for a long time, such as vegetables, fruit, meats, milk, and grains.
	+ - * These foods have been called basic, unprocessed, natural, or farm foods.
			* By any name, these foods form the basis of a nutritious diet.
* All types of food—including **fast foods**, **processed foods**, and **ultra-processed foods**—offer various constituents to the eater, some more health-promoting than others.
* **Functional foods** is a marketing term coined to identify those foods containing substances, natural or added, that might lend protection against chronic diseases.

**B. How, Exactly, Can I Recognize a Nutritious Diet?**

* + - A nutritious diet is really an **eating pattern**, a habitual way of choosing foods, with five characteristics.
			* First is **adequacy**: the foods provide enough of each essential nutrient, fiber, and energy.
			* Second is **balance**: the choices do not overemphasize one nutrient or food type at the expense of another.
			* Third is **calorie control**: the foods provide the amount of energy you need to maintain appropriate weight—not more, not less.
			* Fourth is **moderation**: the foods do not provide excess fat, salt, sugar, or other unwanted constituents.
			* Fifth is **variety**: the foods chosen differ from one day to the next.
			* A nutritious diet is an eating pattern that follows the A, B, C, M, V principles.

**Adequacy**

* The essential nutrient, iron is nutrient that could demonstrate the importance of dietary adequacy.
* Meat, fish, poultry, and **legumes** are rich in iron, and an easy way to obtain the needed iron is to include these foods in your diet regularly.

**Balance**

* To appreciate the importance of dietary balance, one can consider a second essential nutrient, calcium.
	+ Most foods that are rich in iron are poor in calcium.
	+ To obtain enough of both iron and calcium, people have to balance their food choices among the types of foods that provide both nutrients.

**Calorie Control**

* *Calorie control* ensures that energy intakes from food balance energy expenditures required for body functions and physical activity.

**Moderation**

* Intakes of certain food constituents such as saturated fats, added sugars, and salt should be limited for health’s sake.
* Moderation also means that limits are necessary, even for desirable food constituents.

**Variety**

* As for variety, nutrition scientists agree that people should not eat the same foods, even highly nutritious ones, day after day, for a number of reasons.
* Relying solely on the principle of variety to dictate food choices could easily result in a low-nutrient, high-calorie eating pattern with a variety of nutrient-poor snack foods and sweets.

**C. Why People Choose Foods**

* + - Each day, people choose from the available foods, prepare the foods, and decide where to eat, which customs to follow, and with whom to dine.

**Cultural and Social Meanings Attached to Food**

* Like wearing traditional clothing or speaking a native language enjoying traditional **cuisines** and **foodways** can be a celebration of your own or a friend’s heritage.
* Sharing **ethnic foods** can be symbolic: people offering foods are expressing a willingness to share cherished values with others.
* Developing **cultural competence** is particularly important for professionals who help others to achieve a nutritious diet.
* Today, some people are ceasing to be omnivorous and are becoming vegetarians.

**Factors That Drive Food Choices**

* Many other factors—psychological, physical, social, and philosophical—also influence people’s food choices.
* A list of other factors are as follows:
	+ - * Advertising
			* Availability
			* Cost
			* Emotional comfort
			* Habit
			* Nutrition and health benefits
			* Personal preference and genetic inheritance
			* Positive or negative associations
			* Region of the country
			* Social norms
			* Values or beliefs
			* Weight
			* Nutrition and health benefits

**VI. The Science of Nutrition**

**A. The Scientific Approach**

* + - Scientists obtain facts by systematically asking honest, objective questions.
		- Following the scientific method (outlined in Figure1–5 of the text), researchers attempt to answer scientific questions.
		- Researchers design and conduct various experiments to test for possible answers (see Figure 1–6, and Table 1–7 on p. 16).
		- Finally, the work is published in scientific journals where still more scientists can read it.
			* The news reporters read it and write about it, and the public can read about it, too.

**B. Scientific Challenge**

* + - An important truth in science is that one experiment does not “prove” or “disprove” anything.
		- When a finding has stood up to rigorous repeated testing in several kinds of experiments performed by several different researchers it is finally considered confirmed.
		- Strictly speaking, science consists not of facts that are set in stone but of theories that can always be challenged and revised.
		- A nutrition fact to be true because it has been supported, time and again, in experiments designed to rule out all other possibilities.
			* It might be supported by case studies, epidemiological studies, intervention studies (**controlled clinical trials**), laboratory studies, and meta-analysis of previous studies.

**C. Can I Trust the Media for Nutrition Information?**

* + - Real scientists are trend watchers.
		- Scientists evaluate the methods used in each study, assess each study in light of the evidence gleaned from other studies, and modify little by little their picture of what may be true.
		- Sometimes media sensationalism overrates the importance of even true, replicated findings.
			* For example, the media eagerly report that oat products lower blood cholesterol, a lipid indicative of heart disease risk.

**D. National Nutrition Research**

* + - A national food and nutrient intake survey, called *What We Eat in America*, reveals what we know about the population’s food and supplement intakes.
			* It is conducted as part of a larger research effort, the **National Health and Nutrition Examination Surveys (NHANES)**, which also conducts physical examinations and measurements and laboratory tests.
			* Boiled down to its essence, NHANES involves the following:
* Asking people what they have eaten and
* Recording measures of their health status.

**VII. Changing Behaviors**

* Nutrition knowledge is of little value if it only helps people to make A’s on tests.
* The value comes when people use their nutrition knowledge to improve their diets.
* To act on knowledge, people must change their behaviors, and although this may sound simple enough, behavior change often takes substantial effort.

**A. The Process of Change**

* + - Psychologists often describe the six stages of behavior change, offered in Table 1–9.
		- When offering diet help to others, keep in mind that their stages of change can influence their reaction to your message.

**B. Taking Stock and Setting Goals**

* + - Tracking food intakes over several days’ time and then comparing intakes to standards can reveal all sorts of interesting tidbits about strengths and weaknesses of your eating pattern.
		- Once a weakness is identified, setting small, achievable goals to correct it becomes the next step to making improvements.

**C. Start Now**

* + - As one progresses through this text, one may want to change some of one’s own habits.
		- To help one, little reminders entitled “Start Now” close each chapter’s Think Fitness section with an invitation to visit this book’s website (See page 21 of the text).
			* One can take inventory of one’s current behaviors, set goals, track progress, and practice new behaviors until these behaviors become as comfortable and familiar as the old ones were.

***Food Feature: Nutrient Density: How to Get Enough Nutrients without Too Many Calories?***

* + - **Nutrient density** is a measure of nutrients provided per calorie of food.
		- Among foods that often rank high in nutrient density are the vegetables, particularly the nonstarchy vegetables such as dark leafy greens (cooked and raw), red bell peppers, broccoli, carrots, mushrooms, and tomatoes.
		- Other convenience selections, such as most potpies, many frozen pizzas, ramen noodles, and “pocket”-style pastry sandwiches, are less nutritious overall because they contain too few vegetables and too many calories, making them low in nutrient density.

***Controversy 1: Sorting Imposters from Real Nutrition Experts***

**A. More Than Money at Stake**

* + - When scam products are garden tools or stain removers, hoodwinked consumers may lose a few dollars and some pride.
		- When the products are ineffective, untested, or even hazardous “dietary supplements” or “medical devices,” consumers stand to lose the very thing they are seeking: good health.

**B. Information Sources**

* + - More often, though, **infomercials**, **advertorials**, and **urban** **legends** (defined in Table C1–1 of the text) pretend to inform but in fact aim primarily to sell products by making fantastic promises of health or weight loss with minimal effort and at bargain prices.
		- Some quackery is easy to identify—like the claims of the salesman in Figure C1–1—whereas other types are more subtle.

**C. Nutrition on the Net**

* + - One of the most trustworthy Internet sites for scientific investigation is the National Library of Medicine’s PubMed website, which provides free access to over 10 million abstracts (short descriptions) of research papers published in scientific journals around the world.
			* Figure C1–2 introduces this resource.

**D. Who Are the True Nutrition Experts?**

* + - Fortunately, a credential that indicates a qualified nutrition expert is easy to spot—you can confidently call on a **registered dietitian nutritionist** **(RDN)**.
		- Table C1–4 defines nutrition specialists along with other relevant terms.

**E. Detecting Fake Credentials**

* + - In contrast to RDNs and other credentialed nutrition professionals, thousands of people possess fake nutrition degrees and claim to be nutrition counselors, nutritionists, or “dietists.”

**Educational Background**

* + - * In some cases, schools posing as legitimate institutions are actually diploma mills—fraudulent businesses that sell certificates of competency to anyone who pays the fees, from under a thousand dollars for a bachelor’s degree to several thousand for a doctorate.

**Accreditation and Licensure**

* + - * Lack of proper accreditation is the identifying sign of a fake educational institution.
			* To guard educational quality, an accrediting agency recognized by the U.S. Department of Education certifies those schools that meet the criteria defining a complete and accurate schooling, but in the case of nutrition, quack accrediting agencies cloud the picture.

**A Failed Attempt to Fail**

* + - * A writer enrolled in a nutrition diploma made every attempt to fail, intentionally giving all wrong answers to the examination questions.
			* Even so, she received a “nutritionist” certificate at the end of the course, together with a letter from the “school” officials explaining that they were sure she must have misread the test.

**Would You Trust a Nutritionist Who Eats Dog Food?**

* + - * In a similar stunt, Mr. Eddie Diekman was named a “professional member” of an association of nutrition “experts” (see Figure C1–3).
			* Eddie is a cocker spaniel.
			* His owner, Connie B. Diekman, then president of the American Dietetic Association, paid Eddie’s tuition to prove that he could be awarded the title “nutritionist” merely by sending in his name.

**Staying Ahead of the Scammers**

* + - * To stay one step ahead of the nutrition quacks, check a provider’s qualifications.
			* One can look for the degrees and credentials listed after the person’s name (such as MD, RDN, MS, PhD, or LD).

## Critical Thinking Questions

1. *Why is it important to develop an eating plan that incorporates adequacy, balance, calorie control, moderation, and variety in order to prevent or delay the development of a nutrition-related chronic condition?*

An adequate diet prevents deficiency diseases and allows the body’s systems to function properly. Dietary balance helps to achieve adequacy, since essential nutrients are found in different foods. Balance and moderation together prevent excessive intakes of nutrients that should be limited to reduce disease risk, such as saturated fat, salt, and added sugars. Calorie control permits maintenance of a healthy weight and body composition (body fat versus lean tissue). Dietary variety, like balance, assists with achieving adequacy, and also increases intakes of a range of nutrients and beneficial phytochemicals, which promote health, while preventing overconsumption of potentially harmful toxins and contaminants present in certain foods.

2. *Imagine someone in this situation: a single mother who is working two jobs to support herself and her two young children. What factors will likely influence her choices of foods for herself and for her family?*

She is likely on a budget, so she will choose foods that are inexpensive. She may not have much free time and will look for foods that are easy to prepare. She may also choose foods that are familiar to her since she doesn’t have time to investigate new foods, or because they provide emotional comfort when she is feeling stressed. This could lead to her choosing fast foods or processed foods, which are inexpensive, easy to prepare, and familiar.

It is possible for a person who has limited time and finances to eat well if she/he has received nutrition education. For example, this woman could be taught about the importance of a nutritious eating plan for herself and her children and encouraged to choose inexpensive but wholesome staple foods.

3. *Nutrition researchers want to study the link between a high-fiber diet and the reduced risk of colon cancer. Describe how they could carry out each of the following types of studies:*

The research could be carried in one of the following ways:

* Intervention study

The researchers could feed groups of people a preplanned diet for a given amount of time. The control group would eat a typical diet that provides 10-15 grams of fiber per day. The experimental group would eat a diet that includes more high-fiber foods, providing 25-30 grams per day. The researchers could have the subjects fill out questionnaires or perform colonoscopies to see the effects of high fiber intakes on the walls of their colons. The results for the two groups would then be compared.

* Epidemiological study

The researchers would observe a group of people who regularly eat a higher-fiber diet versus a group of people who regularly eat a lower-fiber diet. The researchers would compare rates of colon cancer diagnosis to determine whether either group’s diet can be correlated with a higher or lower risk of colon cancer.

* Laboratory study

The researchers would work with animals such as rats or mice in the lab and would manipulate their diets. One group of animals would receive a high-fiber diet and the other group would receive a low-fiber diet. After a given amount of time, the researchers could examine the colons of each group of animals for signs of cancer. By manipulating the animals’ diets, the researchers could determine whether changing the level of fiber in the diet reliably changes the likelihood of colon cancer.

4. *You decide that you want to increase your intake of fruits and vegetables up to three cups a day for both. Describe how you would work towards this goal using the 6 steps to behavior change listed in Table 1-9.*

In the precontemplation stage, you would either be unaware that your intake of fruits and vegetables is lower than recommended for health or not believe that your low intake is a problem.

You transition to the contemplation stage when you either learn about the importance of eating produce or recognize that your low intake could harm your health over time. You then think about whether you want to start eating more fruits and vegetables. You consider the pluses such as eating more nutrients with fewer calories. You also consider the minuses such as the fact that fruits and vegetables cost more and don’t last as long as other foods.

When you decide that you want to increase your produce intake, you move to the preparation stage. Here, you decide which fruits and vegetables you like and are willing to prepare. You also consider how you can eat more of these while you are at work. You are making plans to change your eating behaviors.

You then start to add ½ to 1 cup of the fruits and vegetables to your daily meals. You are actively involved in your new behavior; this is the action stage. You note how you feel as you add more produce to your diet.

You continue with your new behavior, but you sometimes don’t meet your goal. You keep track of your produce intake and you also note what obstacles interfere with your progress. You are in the maintenance stage of your behavior change. You may have setbacks, but you keep acting on your behavior change.

Eventually, eating three cups of fruits and vegetables each day becomes a normal part of your eating behavior. You now wish to increase your whole grain intake. So, you have moved on to new goals and are in the adoption stage as far as eating more fruits and vegetables each day is concerned.

5. *How can the concept of nutrient density of foods help you to develop a healthier eating pattern?*

Nutrient density describes the essential nutrient contents of a food relative to its calorie content. A food that is more nutrient dense will have more nutrients such as fiber, vitamins, or minerals but fewer calories. For example, instead of having fried chicken with a lot of calories, you can have baked chicken, which has fewer calories with the same key nutrients, such as protein and vitamin B12. You can compare the nutrient density of foods at the grocery store by reading the labels and selecting the food that has more fiber, minerals, and vitamins and less saturated and *trans* fat and sugar. Eating nutrient-dense foods will help you achieve adequacy with calorie control in your eating plan.

6. *What strategy could you develop to overcome each of the excuses for not eating well that are listed in Table 1-6?*

**No time to cook:** You could try cooking a few meals on the weekend and then freezing them into smaller portions for easy reheating during the week. There are also many healthy options for convenience meals that serve one person. Just check the labels for calories, sugar, salt, and saturated fat.

**Not a high priority:** You could ask any healthcare provider what chronic diseases could be caused by a poor diet. You could also talk with people who have these conditions to see how their quality of life has been impacted.

**Crave fast food and sweets:** It may work well to allow yourself a small serving of fast food once a week or of sweets each day. If you eliminate these foods all together, you will crave them. You can also make small, simple substitutions of a piece of fruit for sweets or pretzels or unsalted nuts for potato chips.

**Too little money:** You should go to the grocery store and compare the price of produce (fruits and vegetables) with processed or snack foods. You may only want to buy a couple of pieces of fruit at a time so that you will eat them before they spoil. You could also try growing fruits or vegetables in your own garden or as part of a community garden.

**Take vitamins instead:** You could try eating several cups of fruits and vegetables daily in place of a less healthy choice and see how you feel over time as compared with taking a supplement.

## Controversy Critical Thinking Questions

1. *A friend has started taking ginseng, a supplement that claims to help with weight loss. You are thinking of trying ginseng, but you want to learn more about the herb and its effects before deciding. What research would you do, and what questions would you ask your friend to determine if ginseng is a legitimate weight loss product?*

Students’ answers will vary. However, they should include the following points in their answers. First, they will check the websites for more information about the ginseng supplement and ask the following questions:

How quickly you lose your weight?

Is it any side effects of this supplement?

What are the benefits of taking this supplement?

2. *Recognizing a nutrition authority that you can consult for reliable nutrition information can be difficult because it is so easy to acquire questionable nutrition credentials. Read the education and experience of the “nutrition experts” described as follows and put them in order, beginning with the person with the strongest and most trustworthy nutrition expertise and ending with the person with the weakest and least trustworthy nutrition expertise:*

1. *A nutrition and dietetics technician, registered (NDTR) working in a clinic*
2. *A highly successful athlete/coach who has a small business as a nutrition counsellor and sells a line of nutrition supplements*
3. *An individual who has completed 30 hours of nutrition training through the American Association of Nutrition Counseling*
4. *A Registered Dietitian Nutritionist (RDN) associated with a hospital*

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**Figures/Tables from the 13th Edition**

The Anatomy of a Research Article

Here’s what you can expect to find inside a research article:

|  |
| --- |
| Abstract: The abstract provides a brief overview of the article. |
| Introduction: The introduction clearly states the purpose of the current study. |
| Review Literature: A review of the literature reveals all that science has uncovered on the subject to date. |
| Methodology: The methodology section defines key terms and describes the procedures used in the study. |
| Results: The results report the findings and may include summary tables and figures. |
| Conclusions: The conclusions drawn are those supported by the data and reflect the original purposes stated in the introduction. Usually, they answer a few questions and raise several more. |
| References: The references list relevant studies (including key studies several years old as well as current ones). |

## Handout 1-1: Can Diet Help Manage Chronic Disease?

A chronic disease cannot be cured, but it can progress. The disease can be due to genetic factors or lifestyle choices (or a combination of the two). Why do some people with chronic diseases seem more active or more able to function than others with a similar chronic disease? Could it be due to their genetic make-up? Could their food choices affect their ability to cope with their condition? Can a person’s diet help him to manage his condition by allowing him to function more fully or be able to use a lower dose of medicine or fewer medicines?

You can look up information about any condition that you are interested in learning more about. You can consult the following web sites to get reliable information about a variety of chronic conditions:

* + Mayo Clinic (<http://www.mayoclinic.org/>)
	+ American Diabetes Association (<http://www.diabetes.org>)
	+ American Cancer Society (<http://www.cancer.org>)
	+ American Heart Association ([www.heart.org](http://www.heart.org))
	+ ([www.eatright.org](http://www.eatright.org/))
	+ Eat Right Academy of Nutrition and Dietetics (<http://www.nih.gov>)
	+ American Medical Association (<http://www.ama-assn.org>)

There are other websites that you can get to by using a general search engine such as Google or Yahoo and typing a key word to access your site of interest. Be sure to look for a .gov, .edu, or .org website as these sites use reliable sources of information.

After you select a condition of interest, you can research whether a certain food may help you cope with a particular condition. For example, people with rheumatoid arthritis are encouraged to eat fish in order to get essential fatty acids. These polyunsaturated acids may play a role in reducing inflammation and pain. You can also find out if a certain food is an accepted part of a treatment plan for a chronic condition by consulting more than one website that has reliable information about that particular condition. If any food is recommended by more than one reliable website, it is relatively likely to be considered by several experts to be an acceptable part of a treatment plan for a chronic condition.

1. Contributed by Sharon Rady Rolfes [↑](#footnote-ref-1)
2. Adapted with permission of: Deborah Fleurant, MOE Thesis, University of New Hampshire, 1989 (Thesis Advisor Sam Smith) [↑](#footnote-ref-2)
3. Contributed by Peter C. DuBois, M.Ed., Lorain County Community College [↑](#footnote-ref-3)
4. Contributed by Caroline Roberts, R.D., M.P.H., Nutrition Education Specialist for California Department of Education and Instructor at Sierra College [↑](#footnote-ref-4)
5. Contributed by Lori W. Turner, Ph.D., R.D., University of Alabama [↑](#footnote-ref-5)
6. Contributed by Nancy J. Correa-Matos, Ph.D., R.D., University of North Florida [↑](#footnote-ref-6)