# SOLUTIONS MANUAL

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6e

# NUTRITION
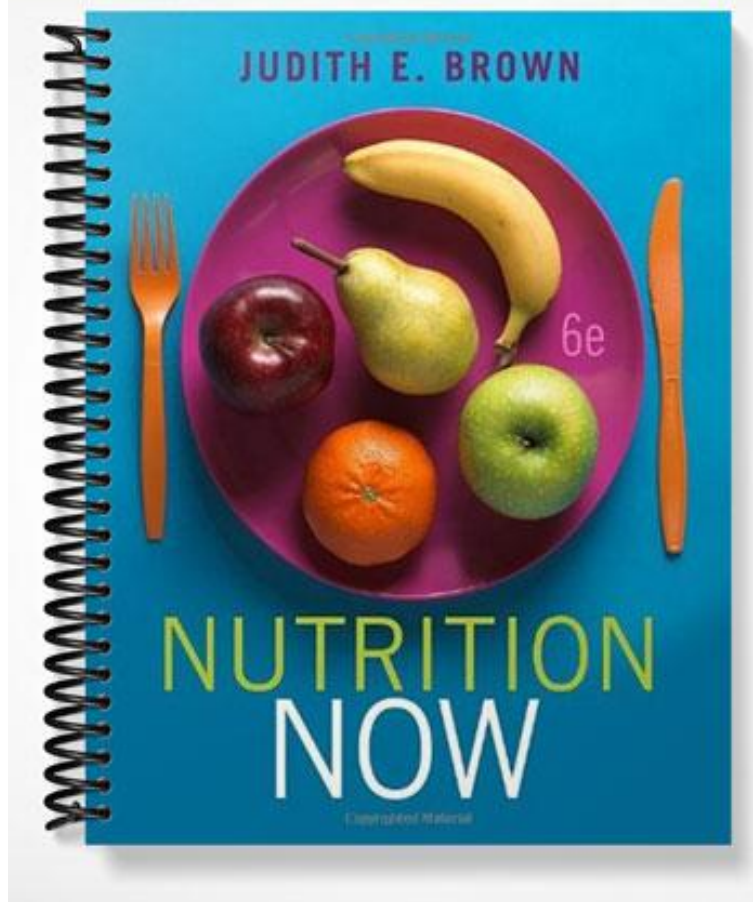## NOW

# Instructor's Manual for Unit 2 –
# The Inside Story about Nutrition and Health

## Class Preparation Materials in This Manual for Unit 2

- Learning objectives
- Chapter outline
- Critical thinking questions/answers
- Activity 2-1: Comparison of Early Human and Present-Day Diets—Discussion
- Activity 2-2: The Modern Western-Type Diet—Calculation, Computer Exercise
- Activity 2-3: Chronic and Deficiency Diseases—Individual or Group Library or Web Activity
- Activity 2-4: Nutrition Knowledge Survey—Individual Assignment Followed by Group Discussion (uses Handout 2-1)
- Handout 2-1: Nutrition Knowledge Survey

## Learning Objectives

After completing Unit 2, the student should be able to:

1. Explain how nutrition affects immunity, quality of life, susceptibility to diseases, degenerative diseases, and longevity.
2. Explain how health and longevity are affected by diet and lifestyle, genetic makeup, environment, and quality of health care.
3. Describe changes in foods eaten by modern humans (compared to early humans) related to today's leading health problems.
4. Explain how health status changes as diets change.
5. Describe national studies used to periodically evaluate diets and health of Americans.

## Brief Lecture Outline[1]

I. Nutrition in the context of overall health
   A. The nutritional state of the nation
      1. Shared dietary risk factors
      2. Chronic inflammation and oxidative stress
      3. Nutrient-gene interactions and health
   B. The importance of food choices
II. Diet and diseases of western civilization
   A. Our bodies haven't changed
      1. Then...
      2. ...and now
   B. Changing diets, changing disease rates
   C. The power of prevention
III. Improving the American diet
   A. What should we eat?

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[1] A detailed outline is available in PowerPoint format on the Power Lecture CD-ROM for this text (ISBN 0538739622).

B. Nutrition surveys: tracking the American diet

## Critical Thinking Questions/Answers[2]

1. Consider the food environment of many urban/inner-city areas. What factors may contribute to the greater prevalence of obesity that exists in many inner cities today?

   *Inner cities are often called "food deserts" because most inner cities in large urban areas have few full-service grocery stores. As a result, fresh produce, in particular, is often hard to come by. Consequently, residents of urban areas often consume large amounts of fat- and calorie-laden foods from the myriad of fast-food franchises that are prevalent in these areas.*

2. Identify one type of chemical component of foods that increases the risk of both heart disease and chronic inflammation.

   *Diets high in either saturated or* trans *fats increase the risk of both heart disease and chronic inflammation.*

3. Lifestyle factors play the biggest role in determining the relative risk of death for those who are less than 75 years of age. In what way might this information actually be encouraging?

   *The observation that lifestyle factors are overwhelmingly the dominant factors that influence the risk of mortality before 75 years of age means that each individual can significantly reduce their risk of an early death by making appropriate changes in their lifestyle.*

4. The impact that dietary changes likely have on the increased risk of chronic disease that occurs when Japanese individuals immigrate to the United States is discussed in the textbook. However, other factors could also contribute to this increased risk. Review the conditions that are associated with an increased risk of early death presented in Illustration 2.1. What other factors could contribute to this increased risk of mortality, and what factor cannot be responsible for this change? Explain your answer.

   *In addition to diet, physical activity is another aspect of lifestyle that also affects mortality risk. It is possible that Japanese immigrants to the United States may be less physically active. Furthermore, access to health care and environmental exposures are other conditions that contribute to the risk of death. It is also possible that poorer access to quality, affordable health care could also contribute to the increased mortality rates observed. The one condition that clearly does not play role in the increased risk of mortality is genetics—the genetics of the individual was not altered as a result of immigration.*

## Classroom Activities

**Activity 2-1: Comparison of Early Human and Present-Day Diets—Discussion**
Compare, in detail, the foods pictured in the two photographs in textbook Illustration 2.6. Ask student volunteers to list items from each photograph in two columns on the board, with food group choices from each basket parallel to each other. For example:

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[2] These questions are also available for students to complete online (and print or e-mail their answers) at the *Nutrition Now* student companion site (www.cengage.com/nutrition/brown/nutritionnow6e).

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| Hunter-Gatherer Diet (Left) | Modern, Western-Type Diet (Right) |
|---|---|
| bird's eggs | hot dogs, bologna |
| wild cucumbers | nothing—no vegetables |

Discuss the two sets of food choices relative to:
   a.  the *Dietary Guidelines* (see
       http://www.health.gov/dietaryguidelines/dga2005/document/html/executivesummary.htm)
   b.  MyPyramid (textbook Table 2.5)

Feedback: Almost every guideline and every recommendation of MyPyramid are violated by the selections in the basket on the right. For example, the basket on the right has high-fat, salt, and sugar and low-fiber choices. The hunter-gatherer diet on the left has only unprocessed, whole foods such as fresh vegetables, nuts, and berries.

**Activity 2-2: The Modern Western-Type Diet—Calculation, Computer Exercise**
Have students individually, or in groups, calculate the nutrient content of the items in the basket on the right in Illustration 2.6. Calculations may be made manually (Appendix A) or with a computer. Use *Diet Analysis +* or go to a Web calculation site (e.g., http://www.ars.usda.gov/Services/docs.htm?docid=17032).

Feedback: See feedback for 2-1.

**Activity 2-3: Chronic and Deficiency Diseases—Individual or Group Library or Web Activity**
Ask the students to find and print or photocopy current pictures of people with severe *deficiency* diseases. Some pictures of severe deficiency diseases are in the text. The challenge is to find timely, current examples of deficiencies. Students should be prepared to describe the disease and its causes, and to discuss any contributing circumstances (e.g., war, poverty and limited access to foods, geographic limitations). Pictures of currently prevalent diseases, such as marasmus, may be found in news magazines or on the Web. Pictures of uncommon diseases, such as pellagra, may be found in dictionaries, encyclopedias (available on the Web through many university library sites), or basic nutrition texts. You may find pictures of deficiencies at www.emmf.com/dompics.htm or www.icrc.org (International Committee of the Red Cross). Students could also try the United Nations site and the World Health Organization site.

Provide pictures of people with *chronic* diseases including heart disease, high blood pressure, cancer, diabetes, obesity, and dental disease. Ask students to be prepared to describe these diseases and their causes. You can discuss any contributing circumstances relevant to the individuals in the pictures you bring to class. (Relatives and friends may be the subject of these pictures.)

Feedback: The comparison of the pictures and the discussion of causes should provide a graphic reminder that:
   a.  Severe deficiency diseases usually are visible; chronic diseases frequently are not. You cannot always tell by looking at someone whether they suffer from a chronic disease. These chronic diseases are almost always related to diet and lifestyle, but they are usually associated with dietary excess rather than dietary deficiency. Iron-deficiency anemia and osteoporosis are examples of exceptions.
   b.  Deficiency diseases have been largely eliminated in the U.S.; chronic diseases are prevalent!
   c.  When we think about diet-related health problems, we are more likely to think about deficiency diseases, which are a minor problem in this country; we are less likely to think about chronic diseases, which are a major problem worldwide.

**Activity 2-4: Nutrition Knowledge Survey—Individual Assignment Followed by Group Discussion**
Have students take the "Nutrition Knowledge Survey" (Handout 2-1) as an extension of the "Nutrition Up Close" feature. Then have each student administer the test to three classmates not enrolled in the course. Grade and compile results for the class and for students not taking the class. More than one answer may be correct.

Feedback: Discuss the relationship between diet and health. Emphasize the role of diet in the development of chronic diseases (refer to Activity 2-3 above). These diseases are the leading causes of death in this country *and* among the leading causes of reduced quality of life as we age.

**Answer Key for Handout 2-1: Nutrition Knowledge Survey**

1. e
2. b (see textbook Table 2.1)
3. b
4. e
5. b
6. b
7. b
8. b
9. c
10. f
11. b
12. See textbook Table 2.4.

# Handout 2-1: Nutrition Knowledge Survey

1. What is the leading cause of death in the United States?
   a. cancers
   b. diabetes
   c. accidents
   d. strokes
   e. heart disease

2. Which of the causes of death listed in question 1 are related to diet?
   a. a, b, c, e
   b. a, b, d, e
   c. b, c, d,
   d. d and e

3. Which food group is the best source of calcium?
   a. meats
   b. dairy products
   c. fruits and vegetables
   d. grains and cereals

4. Which food groups are good sources of fiber?
   a. meats
   b. dairy products
   c. fruits and vegetables
   d. grains and cereals
   e. c and d

5. What is a recommended daily intake of fiber?
   a. 5-10 grams per day
   b. 25-40 grams per day
   c. 45-55 grams per day
   d. at least 80 grams per day

6. What is the average daily intake of fiber in the U.S.?
   a. 5 grams per day
   b. 15 grams per day
   c. 28 grams per day
   d. 38 grams per day

7. Which food contains the most sodium?
   a. a 1-ounce serving of potato chips
   b. a dill pickle
   c. a 1-ounce serving of peanuts
   d. 1 cup of milk
   e. 2 ounces of cheese

8. What kind of exercise is most helpful in preventing osteoporosis?
   a. swimming
   b. walking
   c. riding a bicycle
   d. rowing

9. What is the first, and possibly the most important, section of the key recommendations of the *Dietary Guidelines for Americans*?
   a. Food groups to encourage
   b. Fats
   c. Adequate nutrients within calorie needs
   d. Carbohydrates

10. What is an important nutritional problem with the following meal: hamburger on a white-bread bun with mayonnaise, french fries, and 16 ounces of cola beverage?
    a. too much fat
    b. too many "empty" (not nutrient-dense) calories
    c. very little dietary fiber
    d. low mineral content
    e. low vitamin content
    f. all are important problems with the meal

11. The current American diet is generally healthy according to government surveys.
    a. true
    b. false

12. Name one important improvement that should be made in the typical American diet.