Nutrition for Healthy Living 4th edition Schiff Solutions Manual

SKU: 9780078021381-SOLUTIONS

CHAPTER 2
EVALUATING NUTRITION INFORMATION

OVERVIEW

Chapter 2 focuses on the generation and dissemination of nutrition knowledge. The scientific method is presented as the basis for nutrition research, and basic research methods are discussed. Various sources of nutrition information are evaluated, including peer-reviewed scientific journals, popular media, the Internet, and registered dietitians. The chapter places a strong emphasis on the importance of being a critical and educated consumer of nutrition information. The *Nutrition Matters* section provides information on dietary supplements and complementary and alternative medicine.

TEACHING STRATEGIES

1. Evaluating nutrition information on the Internet.
   Students search the Internet for a website that promotes dietary supplements or a nutrition-related device. The site should include nutrition information. Students use Table 2.1 and the information on pages 45-47 to judge the truthfulness of each claim or statement. In a paper or class presentation, students should explain why the site is or is not a reliable source of nutrition information.

2. Using Dietary Supplements: What Happened?
   When preparing to discuss dietary supplements, ask students to bring in their dietary supplement bottles. Have students explain why they took the supplement(s) and whether they experienced any benefits or were harmed by using the product(s). Ask if any of the students experienced the "placebo effect"? If students do not have the dietary supplement containers, they can check Table 2.2 to determine whether they have used one or more of the products listed.

3. Applying the Scientific Method
   Ask students to select a nutrition topic that is of interest to them, such as obesity, diabetes, or vitamin C. Students learn to use the National Library of Medicine's, *PubMed* website http://www.ncbi.nlm.nih.gov/pubmed/ to search for articles that relate to their topic. Students should note the number of articles that are available concerning the topic, and choose one article from a peer-reviewed journal published within the past five years to read. Students should analyze the article. Is it a review article or a report of a study? If the article is about a study, did the study involve animals or humans? How many? Did the investigators follow the steps of the scientific method? Were there controls? What were the credentials and professional affiliations of the author(s)? Does the article reveal the source(s) of financial support for the research?

4. Designing a Study
   Have students form groups of 5 to 7 people. Provide each group with a hypothesis that relates to human nutrition, such as "Eating sugar makes people obese," "Eating grapefruit facilitates weight loss," "Taking vitamin B-6 supplements reduces the signs and symptoms of PMS," or "Taking thiamin supplements protect against mosquito bites. " Ask the students to use the scientific method to design an experimental or observational study involving human subjects that investigates their hypothesis. The study designs should include a review of literature, number of subjects, time frame, controls (if experimental), etc.

Copyright © 2016 McGraw-Hill Education. Permission required for reproduction or display.

Nutrition for Healthy Living 4th edition Schiff Solutions Manual

5. Have students search the Internet to find a website that offers nutrition information. Students should read the information at the site and identify any "red flags" for misinformation (see pages 46-47). Have students evaluate the quality of the information presented on the website. In their report to the class, students should identify the URL of the site and its sponsorship. Students summarize the information, including claims; evaluate the site for bias; and search the site for any disclaimers. Students are to determine whether the site is a reliable source of nutrition information, and explain why it is or is not.

6. Have students contact a local health care facility to determine whether registered dietitians are on the staff. After locating dietitians, individual students or groups of students arrange to interview an RD concerning his or her job. Students should ask the RD why he or she decided to major in dietetics and what they like and dislike about their profession. Instructors can also invite a registered dietitian to visit the class and answer questions from students about his or her background and the profession of dietetics.

7. Have students visit www.fda.com to learn more about the drug approval process. Students should compare the way the FDA regulates prescription drugs with the regulation of dietary supplements.

8. Have students read the "Did You Know?" feature on page 36. Ask students to determine whether Dr. Joseph Goldberger applied the scientific method in his research. What steps did he include? Why did the scientific community largely ignore his findings?

CHAPTER OUTLINE

I. Nutrition: Science for Consumers
   A. Introduction
      1. Much of the information from popular literature is not evidence-based (not supported by scientific evidence).
      2. Consumers are challenged to understand how scientists collect evidence about nutrition and health, and how to analyze the information to determine whether it is factual and based on solid evidence (reliable) or misinformation that is not supported by the facts.
      3. The goal is to become a more critical and careful consumer.
   B. Understanding the scientific method
      1. Recommendations based on conventional beliefs, traditions, or anecdotes are rejected when they are no longer supported by scientific evidence.
      2. The scientific method is used to conduct research:
         a. Make observations.
         b. Formulate hypotheses.
         c. Review current literature.
         d. Design studies, perform tests, collect data.
         e. Analyze data, draw conclusions.
         f. Report findings.
         g. Conduct more research to confirm or refute previous findings.
   C. Laboratory experiments
      1. An experiment is a systematic way of testing a hypothesis.

Copyright © 2016 McGraw-Hill Education. Permission required for reproduction or display.

a. *In vivo* experiments use whole living organisms.
b. *In vitro* experiments use cells or other components derived from living organisms.

2. The scientific method illustrated in Fig. 2.1 is followed in lab experiments.
3. Experiments usually involve two groups: treatment and control; this allows the researcher to determine the effects of the treatment.
4. Many variables can influence the outcomes of an experiment.
5. Researchers must be careful when applying the results of animal or *in vitro* studies to people due to physiological differences.

D. Human research: experimental (intervention) studies
1. These studies are conducted in order to gain information about the effects of specific dietary practices on health conditions.
2. A two-group design is generally used: treatment and control.
3. Control group participants receive a placebo; members of the treatment group receive the actual treatment.
a. The placebo effect occurs when someone reports a positive or negative effect of the treatment when they have in fact received a "fake treatment."
b. Placebos can produce beneficial physiological or psychological effects.
4. Did You Know? The idea that something missing in a diet could cause a nutrient deficiency disease was not widely accepted in early 1900s.
a. Dr. Joseph Goldberger observed that people who developed pellagra were poor and their diets did not regularly include meat, milk, and fresh vegetables.
b. Dr. Goldberger's work led to the future discovery that pellagra was the result of niacin deficiency.

E. Double-blind studies
a. Studies are usually double-blind; neither the researcher or the participant is aware of group assignment.
b. This procedure is necessary in order to preserve the integrity of the study.

F. Human research: epidemiological studies
1. Epidemiology is the study of disease rates among different population groups, factors associated with the occurrence of diseases, and how diseases spread in a population.
a. Data for epidemiological studies may be obtained by physical examinations or surveys.
b. These studies are conducted in order to gain information about the effect of specific dietary practices on health conditions.
c. The National Nutrition and Health Examination Survey (NHANES) data helped scientists determine the prevalence of major diseases, their risk factors, and national standards for measurements associated with health status, including height, weight, and blood pressure.
2. Observational epidemiological studies
a. Case-control
i. Individuals with a health condition are matched to similar persons who do not have the condition.
ii. Detailed information is collected on both groups of participants and factors associated with the health condition are identified.
b. Cohort
i. Information is collected on a large group of people over time.
ii. Cohort studies can be *retrospective* or *prospective.*

Copyright © 2016 McGraw-Hill Education. Permission required for reproduction or display.

Nutrition for Healthy Living 4th edition Schiff Solutions Manual

iii. Scientists use these types of studies to identify links between exposures and disease occurrence.
iv. Data from the Framingham Heart Study identified risk factors for heart disease: elevated blood cholesterol levels, cigarette smoking, and hypertension.

3. Limitations of epidemiological studies
   a. Epidemiological studies can suggest hypotheses, but cannot establish causation.
   b. A correlation is a relationship between variables; two variables change together over the same period of time.
      i. Direct (positive) correlation: two variables change in the same direction.
      ii. Inverse (negative) correlation: two variables change in opposite directions.
   c. Correlations may occur by mere chance and have nothing to do with the variables being studied.

G. Analyzing data, drawing conclusions, and reporting findings
   1. Statistical methods are used to test relationships between the variables under study.
      a. Researchers summarize and seek to publish findings.
      b. During peer review, investigators who were not part of the study critically analyze the research design, conduct of the study, and determine whether the results are fairly represented.
   2. Research bias may occur when the scientists or their funding agencies have certain expectations about the research outcomes; authors are often required to disclose their affiliations and financial support to help readers interpret the reliability of the findings.
   3. Spreading the news
      a. Media (e.g., newspapers, television, popular magazines, Internet) may sensationalize or oversimplify scientific findings.
      b. Nutrition information reported by the media may be faulty or biased, as it is generally not subject to peer review.
      c. Popular (non-peer reviewed) magazines generally have colorful, attractive covers with short, easy-to-read articles.

H. Confusion and conflict
   1. Confusion, discouragement, and mistrust among the public may result from the conflicting scientific evidence reported by the media.
   2. Conflicting findings arise from differences in study design, subject characteristics, assessment methods, and statistical analysis.
   3. The science of nutrition is constantly evolving; change is to be expected.

II. Nutrition Information: Fact or Fiction

A. Introduction
   1. A testimonial is a personal endorsement of a product; endorsers are usually paid for the testimonial.
   2. Anecdotal experience is not the same as scientific evidence.

B. Be skeptical of claims
   1. It is prudent to be skeptical about nutrition information until you have investigated the credibility of its sources.
   2. The U.S. Constitution guarantees freedom of press and freedom of speech, but does not protect the public against misinformation.
   3. The U.S. Food and Drug Administration regulates health claims on supplement labels, but does not regulate information contained in pamphlets, books, or websites.
   4. Promoters of supplements/diets may employ pseudoscience.

Copyright © 2016 McGraw-Hill Education. Permission required for reproduction or display.

Nutrition for Healthy Living 4th edition Schiff Solutions Manual

a. Citing scientific studies to support their claims, whereas these studies may not be credible or may not be representative of all data (i.e., may not include contradictory findings).
b. Using complex, scientific-sounding terms.

5. Nutrition misinformation capitalizes upon the public's mistrust of the scientific and medical community; scare tactics fuel this mistrust.
6. The decision-making responsibility lies with the consumer; it is prudent to seek opinions of a medical professional.

C. Ask questions
1. What motivates the authors, promoters, or sponsors to provide the information? Do you think they are more interested in your health and well-being or selling their products?
2. Is the research source from a peer-reviewed journal?
3. If a study is cited, how was the research conducted? Did the study involve humans or animals? If people participated in the study, how many subjects were involved in the research? Who sponsored the study?
4. To provide scientific support for claims, does the source cite respected nutrition or medical journals or mention reliable experts?
a. Providing nutrition information and advice without proper training and licensing is illegal.
b. Quackery promotes useless medical treatments; see www.quackwatch.org.

D. Look for red flags:
1. Promises of quick and easy remedies for health-related problems
2. Claims that sound too good to be true.
3. Scare tactics
4. Personal attacks on conventional scientists and health care practitioners.
5. Statements about the superiority of natural dietary supplements and unconventional medical practices
6. Testimonials and anecdotes
7. Information that promotes a product's benefits while overlooking its risks.
8. Vague, meaningless, or scientific-sounding terms
9. Sensational statements without citing complete references of sources.
10. Recommendations based on a single study.
11. Information concerning nutrients or human physiology that is not supported by reliable scientific evidence.
12. Results disclaimers in small difficult-to-read print

E. Using the Internet wisely
1. Investigate the credibility of the source or sponsor.
2. Be wary of the objectivity of information found on sites designed to sell a specific product.
3. Look for disclaimers.
4. Sites sponsored by nationally recognized health associations, non-profit organizations, government agencies, or academic institutions generally present reliable information.
5. Federal Trade Commission (FTC) enforces consumer protection laws that relate to health information presented on the Internet.
6. Table 2.1 presents more tips for searching nutrition information on the Internet.

III. Reliable Nutrition Experts
A. Introduction

Copyright © 2016 McGraw-Hill Education. Permission required for reproduction or display.

1. There is no standard legal definition for the term “nutritionist.”
2. A registered dietitian is a college-trained expert in nutrition.

B. Becoming a registered dietitian or registered dietitian nutritionist
1. There are three major divisions of dietetics:
   a. Clinical dietetics
   b. Community nutrition
   c. Food service systems management
2. An RD or RDN has completed a BS degree in an accredited school.
3. Courses for dietetics students include food and nutrition, chemistry, biology, physiology, food service systems management, business, and communications.
4. Student dietitians must also complete a supervised practice program at a health care facility.
5. After completing a supervised practice program, student dietitians are eligible to take a national certification exam to become an RD or RDN.
6. RDs and RDNs must continually update their knowledge by obtaining continuing education credits.

IV. Nutrition Matters –What are Dietary Supplements?

A. Introduction
1. Almost 50% of U.S. adults report taking one or more dietary supplements regularly.
2. The DSHEA defines a dietary supplement as a product that adds to a person’s intake and contains one or more dietary ingredients; is taken by mouth; and is not promoted as a conventional food.
3. Dietary supplements include nutrient pills, protein powders, herbal supplements, and energy drinks and bars.
4. Table 2.2 provides information on popular supplements.

B. What is complementary and alternative medicine?
1. CAM includes a variety of health care practices and products not accepted by conventional health care providers.
2. CAM includes chiropractics, homeopathy, naturopathy, and massage therapy.
3. There is little evidence to support the efficacy of most nonnutrient dietary supplements.
4. NCCAM, a part of NIH, funds research on alternative medicine.

C. How are dietary supplements regulated?
1. The FDA is responsible for the safety and efficacy of medications and other health-related products.
2. The FDA regulates dietary supplements as foods, not drugs.
3. Most of the strict FDA regulations do not apply to supplement manufacturers.
4. If the FDA determines that a supplement poses a risk to consumers, then an alert and recall of the product is initiated.

D. Using dietary supplements wisely
1. Some herbal supplements are made from plants that have toxic parts.
2. Some herbal supplements may induce an allergic reaction.
3. Herbal supplements may interact with prescription or OTC medications.
4. Precautions should be taken with all dietary supplements.
5. A physician or registered dietitian should be consulted before using any supplement.
6. Any signs or symptoms of serious illness should immediately be reported to the physician.
7. Dietary supplements are not substitutes for nutritious foods.
8. Any negative side effects experienced should be reported to FDA’s MedWatch program.

Copyright © 2016 McGraw-Hill Education. Permission required for reproduction or display.