1 Food Choices and Human Health

IF NOTHING ELSE, MY STUDENTS SHOULD LEARN…

1. That numerous factors will influence the food and dietary choices people make, and that the generation of sound nutritional guidelines will be influenced by such factors.
2. The basic six classes of nutrients (i.e., the macronutrients) and how they differ in terms of providing energy directly to the body or helping derive energy.
3. The different types of foods that are available to the Canadian consumer (e.g., fast food, processed food, functional food, etc.) and how to make sound choices in selecting from these different types.
4. The basic principles underpinning the scientific method and how they are utilized in studying the impact of nutrients on human health and disease.
5. That the science of nutrition is the study of the nutrients in foods and the body’s way of handling those nutrients.
6. That a complete nutrition assessment by a registered dietitian involves numerous health-screening tools.

LEARNING OBJECTIVES

Students should be able to:

* LO 1.1: Discuss how a particular lifestyle choice can either positively impact or harm overall health. *[Analyze/Evaluate]*
* LO 1.2: Define the term *nutrient* and list the six major nutrients. *[Remember]*
* LO 1.3: Recognize the five principles of a healthy diet and give suggestions for using them; and summarize how a particular culture or circumstance can impact a person’s food choices. *[Understand/Analyze]*
* LO 1.4: Describe and give an example of the major types of research studies. *[Understand/Analyze]*
* LO 1.5: Discuss why national nutrition survey data are important for the health of the population. *[Analyze/Evaluate]*
* LO 1.6: Discuss the importance of nutrient density in creating an effective diet plan. *[Understand]*
* LO 1.7: Recognize misleading nutrition claims in advertisements for dietary supplements and in the popular media. *[Remember/Understand]*

WHY IS THIS CHAPTER IMPORTANT TO SCIENTISTS AND HEALTH-CARE PRACTITIONERS?

* **Health-care practitioners** typically incorporate numerous pieces of information when performing a nutrition assessment. One very important part of this chapter deals with the numerous factors that influence people’s feeding behaviour and food choices. These factors, such as habit, social interactions, and tradition, will affect the success of a dietary-based intervention to manage health or disease. As an example, university students are very often subject to numerous responsibilities and social interactions during the course of their studies that often make it difficult to adhere to sound nutritional practices. It is easy to get into the habit of catching a quick bite (usually high in Calories) in between classes, followed by hours of sitting while studying. This habit, because it is so convenient, can have a strong effect on eating patterns.
* By understanding the basic science of the macronutrients (i.e., carbohydrates, lipids, and protein), the **health-care practitioner** can make science-based recommendations for dietary intakes for individuals concerned with improving their health and/or physical fitness. For instance, dietary lipids are recommended to form one of the lowest proportions of macronutrient intake given that they carry over twice the amount of energy (9 Cal/g) as protein and carbohydrates (4 Cal/g). The food choices that students make, due to convenience for example, will have a significant effect on their health.
* From a scientific perspective, understanding the basic energy provision of macronutrients will provide a solid starting point for understanding the impact of nutritional strategies on overall health. As discussed throughout the book, it is important for students to understand that it is the quantity *and* quality of the macronutrients that the **health-care practitioner** considers in making dietary recommendations.
* Because the scientific method is the fundamental basis of research in the area of nutrition, the **scientist** must understand the various elements within a research design that give a study credibility. Given the multitude of information available from both scientific and lay sources on nutrition, the **scientist** must be able to sift through the details and clearly evaluate the quality of research. For instance, a new study may suggest the importance of a novel type of dietary supplement to health, but important research elements such as sample size, double-blinding, and placebos will indicate to the **scientist** whether the study is valid.
* Nutritional genomics involves research integrating nutrition, the science of genetics, and molecular biology. The **scientist** engaging in research in this area focuses on the interaction between a person’s genetic make-up, nutrient intake, and health status. Anticipated benefits of this type of research include the ability to pinpoint specific nutrient needs for specific groups of individuals, including growing children, healthy adults, and individuals with chronic disease.

WHY SHOULD STUDENTS CARE?

* Students should be aware that our diets provide nutrients, but they are heavily influenced by factors that we don’t think about much (e.g., convenience, emotional satisfaction, peer pressure). These food choices will have direct (positive and negative) effects on the nutritional profile and health of students.
* Learning how nutrients in food support the growth, maintenance, and repair of the body enables students to understand that deficiencies, excesses, and imbalances bring on disease. A poor diet leads to malnutrition and chronic diseases: heart disease, diabetes, some cancers, dental disease, and adult bone loss (osteoporosis).
* Personal life choices, such as staying physically active or using tobacco or alcohol, also affect health, for better or worse. Other harmful factors include lack of sleep; stress; and negative home and job conditions, including the condition of air and water and other environmental factors. Positive health choices, such as being physically active and eating well, can benefit health.
* It is important for students to be aware that cultural traditions and social values revolve around people’s food choices. In addition, many factors other than nutrition drive food choices. By understanding these, and additional motivators such as availability, convenience, and economy, students will develop an overall appreciation of the factors influencing health and disease through nutrition.
* Students should be able to recognize what constitutes a nutritious diet. Foods come in a bewildering variety in the marketplace, but foods that form the basis of a nutritious diet are basic 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 in nutrients, is balanced with regard to food types, offers food energy that matches energy expended in activity, is moderate in unwanted constituents, and offers a variety of nutritious foods.
* Students should be aware that in addition to providing nutrients, food conveys emotional satisfaction and hormonal stimuli that contribute to health. Foods also contain phytochemicals that give them their tastes, aromas, colours, and other characteristics. Some phytochemicals may play roles in reducing disease risks.
* It is important for students to be aware that cultural traditions and social values revolve around food. Many factors other than nutrition drive food choices. A person’s heritage or culture is expressed through cuisines and foodways.
* On a daily basis, the popular media report on discoveries about the food we eat and the causes of disease. So students should develop an appreciation of the basic elements of the scientific method on which these discoveries are based. Misleading information can be easily deciphered if students have a solid understanding of the various elements of research studies and the factors that can affect their validity, such as the use of placebos, controls, and blinding.
* Canada’s Guidelines for Healthy Eating and other similar recommendations address the problems of over- and undernutrition. To be able to implement these guidelines requires seeking out whole grains, fruits, and vegetables and limiting intake of saturated fats, sugar, and salt. Moderating alcohol intake and performing regular exercise also play a role.

WHAT ARE COMMON STUDENT MISCONCEPTIONS/STUMBLING BLOCKS?

1. Students often do not think about why they choose the foods that they eat. Most, if not all, students have a general sense that nutrition plays an important role in the health and well-being of individuals. By understanding the numerous factors that influence eating patterns (e.g., habit, ethnic heritage, convenience), students can become more aware of how to develop sounder nutritional practices.
2. When new research is reported by the media, many people take the information as valid, including students. It is important for nutrition students to develop their understanding of the scientific method in order to be able to critically evaluate research findings for their validity. Providing links to scientific databases, such as PubMed, is a good first step for students to quickly determine the magnitude of research available on various topics.
3. Too much of a good thing isn’t always the best choice for people to make. If a nutritional supplement claims to help boost vision acuity (such as vitamin A), then taking lots of it will be better, right? Students should have a good understanding of the dietary reference intakes (DRI), which provide sound guidelines that protect people from nutritional toxicity and deficiency conditions.
4. Students often erroneously think that vitamin and mineral supplementation is the solution to an improper diet or conversely that supplementation is still necessary with a well-balanced diet.
5. The concepts of gene expression and genomics in relation to nutrition can be overwhelming to students who do not have a background in biology. It is best to avoid going into too much detail at this point in the course—simply introduce the concept that genes and nutrition interact with each other to affect health.
6. First-year undergraduate students typically have difficulty understanding what constitutes a peer-reviewed research article as well as how to write a well-researched paper on a topic in nutrition. It is often helpful to have a school librarian visit your class to discuss concepts related to a literature search and reviewing peer-reviewed manuscripts.

WHAT CAN I DO IN CLASS?

Many different activities can be done in class. Listed below are some activities that will help introduce the topic of nutrition, as well as acting as an icebreaker.

##### Classroom Activity 1–1: Students’ Burning Questions[[1]](#footnote-1)

Objective: Introduce the course Class size: Any

Instructions: On the first day of class, give each student three sticky notes. On each note, students are to write down a “burning” question they have about nutrition. While they are doing this, tape 15 large pieces of chart paper around the room, each with a title that roughly corresponds to a chapter of the text.

When they finish writing their questions, have them categorize their sticky notes according to the 15 topics by placing them on the piece of chart 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 sticky notes if necessary. As you begin a new chapter, bring the corresponding piece of chart paper to class, and read the questions aloud.

This activity helps reassure students, early on, that you will (or will not) 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.

##### Classroom Activity 1–2: Getting-Acquainted Activity

Objective: Icebreaker Class size: Small

Instructions: This activity allows students to learn more about each other and can provide an environment in which people practise listening skills. Instruct students to pair off with someone that they do not know very well. Give the students 10 to 15 minutes to converse and ask some general questions about each other. Have students ask each other if they know anyone who is a nutritionist or dietitian or if they know someone who might have had to use the assistance of a nutritionist or dietitian. You may also suggest that they exchange e-mail addresses or phone numbers and form study groups.

Bring the group back together in a large circle with each student sitting next to his or her partner. Ask each student to introduce and speak about what he or she has learned about this new friend.

##### Classroom Activity 1–3: Who Are You? Introduction Activity

Objective: Icebreaker Class size: Any

Instructions: Distribute index cards to each student and instruct them to record information about themselves on each card. Write on the board the information you are interested in obtaining. Some suggestions are name, address, phone number, e-mail, major, year in college, home town, professional goals, what they hope to learn from the class, reason for taking the class, and something interesting and/or unique about themselves. After students have recorded this information, you may ask them to introduce themselves to the class or you may simply collect the cards to help you learn more about your students. Instructors should be sensitive to the fact that some students may not be comfortable sharing certain pieces of personal information.

##### Classroom Activity 1–4: Chapter Opening Quiz[[2]](#footnote-2)

Objective: Introduce the chapter Class size: Any

Instructions: As a way of introducing any new chapter, give a “quiz” to the class. Students will moan initially, but they will enjoy the activity once you get underway and they realize that it is taken as a class and does not count toward their grade. The quiz asks 10 true or false or multiple-choice questions projected in Microsoft PowerPoint format or on an overhead from a transparency. Students are not allowed to talk during the quiz and must show their choice of answer by raising hands. Record using iClickers or mark the answer chosen by the majority of hands on the transparency. Then go over the correct answers (their curiosity is piqued!) and seize the “teachable moment.” Generally, they score about 55 percent and realize there is a lot to learn.

This “pretest” is valuable because it creates interest in the subject matter, challenges students’ erroneously held beliefs, and introduces new terms and concepts. It is valuable to instructors in assessing the level of knowledge and attitudes in the subject area and identifying the needs and the focus for the unit.

##### Classroom Activity 1–5: Scheduled Interruption: Think/Pair/Share

Objective: Reflect on content Class size: Any

Instructions: Examination of student attention levels throughout class indicates that they are the highest during the first five minutes of class, with levels slowly declining throughout a lecture. To enhance students’ attentiveness, teaching researchers suggest scheduled interruptions. One planned interruption is think, pair, 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 thoughts and feelings on 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.

##### Classroom Activity 1–6: Using the Internet as a Research Tool

Objective: Explore the Internet Class size: Any

Instructions: The Internet can be used as a valuable research tool in nutrition. Students can become familiar with the diversity of Internet resources and can learn to participate in online discussions about nutrition topics in class-based and listserves. Handout 1–1 provides a list of activities to help students acquire Internet skills.

##### Classroom Activity 1–7: Evaluation of a Published Research Article

Objective: Critically evaluate research Class size: Any

Instructions: Students need to learn how to critically evaluate the information they learn about. This take-home assignment (**Handout 1–2**) requires students to evaluate a published nutrition article. Students can then share their findings with other students in class or in a seminar.

##### Classroom Activity 1–8: Why Do You Eat What You Eat?

Objective: Self-reflect Class size: Any

Instructions: Ask students to record what they eat and drink for one day, noting amount and preparation. Have them look at the reasons for their choices through the day (convenience, taste, familiarity, cost). Next, have them review Table 1–4 in the text (page 9), which shows a glossary of food types. Have them compare: are there patterns in the chosen food types, or recurring items? Could they adjust their diets with more whole or enriched foods?

##### Critical Thinking Questions[[3]](#footnote-3)

These questions will also be posted to the book’s website so that students can complete them online and e-mail their answers to you.

**1. Clients of a registered dietitian often find it difficult to select, plan, and prepare a healthy diet for themselves or their families. Using yourself as an example, discuss the six basic principles of diet planning and how they apply to your dietary intake.**

**Answer:** The six diet-planning principles are adequacy, balance, Calorie (energy) control, nutrient density, moderation, and variety. Because students are using their dietary habits as an example of using these principles, the feedback will be individualized. However, this is an opportunity for the instructor to examine any irregularities in the students’ eating patterns, given that some nutrition students at one time or another suffer from eating disorders. Within the discussion of each principle, students should address the following:

Adequacy: The diet provides a sufficient quantity of Calories for energy and macro- as well as micronutrients to meet the needs of the individual and all individuals following the diet.

Balance: The diet has a sufficient balance of foods from each food category, which again serves to provide a broad spectrum of nutrients for growth and health as well as Calories for energy.

Calorie (Energy) Control: Dietary planning for one individual is quite different than planning for a group. When discussing this category, we are discussing Calories or energy to sustain one’s body needs as well as physical activity. When controlled, the individual will maintain a consistent body weight; when out of control, the individual will either gain or lose weight. Students should distinguish between planning for an individual and planning for a group of people.

Nutrient Density: This term refers to the nutrient quality and quantity relative to the amount of energy. The greater the nutrient quality and quantity and the lesser the number of Calories, the greater the nutrient density. For example, the nutrient density of a baked potato is greater than that of French fries. When developing a dietary plan, the greater the selection of nutrient-dense foods in the diet, the greater the likelihood that the diet will also follow the principles of adequacy, balance, and Calorie control.

Moderation: This is a key recommendation of the Dietitians of Canada and one that all individuals can benefit from. Individuals on a “diet” often feel deprived because they will (or a specific diet plan will) exclude certain foods, such as cakes and cookies. These are special foods that individuals particularly enjoy for a special occasion or event. If an individual’s mindset is that he or she should not have that food, then often one taste of it will lead to “bingeing,” or overeating, leading to a cycle of denial and overeating.

The approach that “all foods fit” allows individuals to recognize that it is not any particular food but the amount of the food that becomes a problem. The registered dietitian works with clients to help them understand that they can enjoy all the foods that they have always enjoyed (except if there are medical issues requiring restrictions); moderation is the key!

Variety: This term echoes the terms *balance* and *adequacy* above. An individual that emphasizes a variety of foods in the diet has, in general, a greater assurance that there is enough balance and adequacy of types of foods to provide for a diet rich in all macro- and micronutrients. A diet that is varied is also a diet that is colourful; has many types of textures and flavours; and sparks curiosity in the individual about new food customs, cultures, and cooking methods.

As the student and the client will see, using these six principles of diet planning can serve to make the process of meal planning fun, exciting, and interesting and add to many new cooking techniques in the kitchen! Enjoy.

**2. Consider the following statement regarding the importance of “nutrition”: “Your body uses the nutrients from (meals eaten) to make all its components, fuel all its activities, and defend itself against diseases.” Expand on this statement relative to the role of food in the lifestyle of the average Canadian consumer. If you were assessing a patient, what other questions might you ask about the patient’s diet and activities?**

**Answer:** In this question, students are asked to discuss the multiple factors that influence an individual’s food choices and eating patterns, beyond the single role of food as the body’s fuel. While students can respond to this question in an individual manner, their response should include some combination of the following.

A thorough dietary assessment should include:

1. Patient preferences—value systems such as vegetarian, religious, environmental, or political beliefs.

2. Patient dietary habits and exercise habits—multiple methods of assessment.

3. Ethnic and cultural traditions and importance to the patient’s dietary preferences.

4. Psychosocial assessment—body image issues, eating disorders, social eating versus preference to eat alone.

5. Economic abilities—the patient’s ability to purchase food, the type of cooking utensils and equipment they have to use in cooking, where they shop, and the value for money where they shop.

6. Nutritional knowledge—the patient’s knowledge about nutrition and food choices, serving sizes, and cooking styles, and who does the cooking.

If students refer to the idea that North Americans often lose sight of the role of food as fuel to our bodies because food has taken on so many other roles in their lives, they should get additional credit, as this statement rounds out a complete response to the question.

**3. Your text described six classes of nutrients and discussed the distinctions between them in several ways (Caloric density, organic/inorganic, size, and essentiality). Discuss each class of important nutrient to the body and what distinguishes it from the others. Discuss your concerns for a patient that might be undernourished or overnourished in each category. For example, in a broad sense, what problems would that cause the patient?**

**Answer:** Water is an essential nutrient that provides no energy. It is vital to the body for metabolic reactions, to carry waste away from the body, and to carry nutrients around the body. The body is over 65 percent water.

Patients that are undernourished can be dehydrated, resulting in them having a bodily environment that is inefficient in carrying out metabolic processes, removing waste, and carrying nutrients to the various organ systems. They might also have elevated levels of minerals and some vitamins that are stored in the body due to the dehydration. Undernourished patients need to break down protein for energy, given that glycogen and fat stores are no longer available. An undernourished patient’s risk for protein malnutrition, infection, and cardiac problems increases.

Overnourished patients may have difficulty circulating the water around their bodies because their heart has to work harder to pump the fluid around a bigger surface area.

Carbohydrate is an energy-yielding macronutrient that supplies 4 Calories/gram. Because carbohydrates contain carbon, they are considered an organic compound.

Undernourished patients’ bodies will turn to their body fat and then their body protein for energy and metabolic functions. Most undernourished patients have consumed all their body glycogen from carbohydrates and their body fat and are now using their body protein for energy and are thus in protein-energy malnutrition.

In overnourished patients, excess carbohydrates are stored as fat, leading to obesity.

Protein is an energy-yielding macronutrient that supplies 4 Calories/gram. Protein is also an organic compound whose primary functions are tissue repair, growth, and maintenance.

If the patient becomes undernourished, protein stores (muscle) are used. If nourishment is the only issue with this patient, it can be provided. Remember that many organs, such as the heart, are also muscle tissue; therefore, organ compromise can occur over time in situations of protein-energy malnutrition.

Many athletes seek the optimum amount of protein to take to enhance protein building and thus muscle mass. While research demonstrates that protein needs are higher for athletes than sedentary individuals, there is an upper limit for protein intake. Beyond that, excess protein is converted to fat, because there is an excess in Caloric intake. High protein intake is also hard on the kidneys and should be discouraged.

Fat is an energy-yielding macronutrient that supplies 9 Calories/gram. This organic compound has twice the amount of energy as other energy nutrients, given its density.

Undernourished individuals do not have a protective layer of fat tissue, which is needed to protect the body organs as well as to provide the body with a thermal shield. Some body fat is also required for normal hormonal functioning. Undernourished individuals will need to be provided with a fatty acid source for hormonal synthesis and other body protections.

As we well understand in this country, overconsumption of fat means excess Calories and excess weight.

Vitamins are organic compounds that facilitate release of energy and participate in many activities in the body. Each has a different function, e.g., vision, controlling bleeding time, or making hormones. Vitamins need to be handled carefully, as many environmental properties can destroy a vitamin, e.g., sunlight or heat.

There are two types of vitamins, fat soluble and water soluble. Fat-soluble vitamins are stored in the body, while most water-soluble vitamins are not stored to a significant extent. Depending on the degree of undernourishment, an individual may have some stored fat-soluble vitamins; however, he or she will probably not absorb an appreciable amount of fat-soluble vitamins because the presence of fat is necessary in the diet to absorb these types of vitamins. The person may be able to absorb appreciable amounts of water-soluble vitamins, depending on the situation. If the body is lacking some of the vitamins, its ability to absorb is enhanced. With others, there are dependent mechanisms for absorption.

The overnourished individual runs the risk of excess storage of some of the fat-soluble vitamins. Given that most fat-soluble vitamins are found in more nutrient-dense foods, it is not likely that an overnourished individual is at risk of an excess of fat-soluble vitamins if consuming an energy-dense, nutrient-poor diet.

Minerals are inorganic substances that do not provide energy to the body but do serve as cofactors in many reactions in energy metabolism. Several minerals are essential. Minerals are found in fluids within the body and thus can influence the properties of fluids (e.g., sodium, potassium). Minerals are inert, so they are not easily destroyed; however, they can be bound to other substances, such as phytates.

An undernourished individual risks missing many essential mineral elements in the diet, resulting in potentially insufficient quantities for metabolic functions.

While the overnourished individual may gain more minerals in his or her diet from excess consumption, most minerals are found in nutrient-dense foods such as fruits and vegetables, which are not generally foods that result in overnourishment. Therefore, this individual may also run a risk of deficiency of some minerals.

**4. As noted in Chapter 1, the science of nutrition is young but growing rapidly. Without scientific studies, nutrition could not grow and flourish as it does. It will be important for you not only to understand how to read scientific studies but also to be involved in them. Describe a nutrition-related topic that you are interested in studying. Attempt to write a simple question that could be answered with a research study. How would you differentiate between the experimental and control groups, how many subjects do you think you would need for a good sample size, and what do you want to know before making conclusions? What other specifics should you know or integrate into your research design to optimize its validity? What should your readers know when it is published?**

**Answer:** In this question, students should select a research topic that they are interested in studying.

A simple research question should be as succinct as possible and include the following: the type of study, the study population, and the time period of the study. Think “measurable” when putting together a research question. For example:

The efficacy of vitamin D in relieving pain will be studied in 50 pain-management patients over a one-year period.

The focus of the study: The efficacy of vitamin D in relieving pain

The study population: 40 pain management patients

The time period: One year

The experimental group is the group receiving the treatment; the control group is the placebo group or the group that does not receive treatment. A control group is needed to distinguish whether the treatment participants react differently than participants receiving no treatment.

A good sample size is determined by power statistics.

Before making any conclusions, the researcher must fully understand the research and how it relates to other researchers’ work in the same field of research. The researcher needs to fully understand the statistics and what they mean, what they don’t mean, and what the data may be “saying” relative to other work in the field.

To optimize the validity of a study, the researcher will take time to make sure that the study question is measurable and the study design is consistent with the study question and achievable over the determined study period.

A published research article should include why it was important to study the topic, information on other researchers that have studied the topic, a brief outline of how to carry out the research to enable other researchers to replicate it, the results of the study, and why the results or findings are important to nutrition and dietetics professionals.

**5. You are about to perform a nutrition assessment on a patient. State specifically, and in detail, what types of assessment information you will collect and why.**

**Answer:** It is important to perform a historical review with the patient, in which the dietitian will ask the patient about his or her health history, including details about any medical conditions, problems, or medications. The dietitian also wants to know about the patient’s family background, cultural and ethnic background, work history, and living conditions, including where the patient and family shop and who cooks the meals. It is also important to retrieve a detailed diet history and food frequency, and conduct some psychosocial assessment of the patient.

Next, the dietitian should collect anthropometric data regarding height, weight, body fat, bone mass, and lean body tissue.

The dietitian should compare his or her findings, including dietary analysis, with laboratory tests performed by the physician as well as the results of the physical examination.

The above nutrition assessment provides the dietitian with background on the patient’s health history, which may have affected the present dietary intake. Medications previously and currently taken are important, as they affect intake and can result in drug–nutrient interactions. It is also important for the dietitian to know of any previous problems the patient has had with a practitioner, diagnosis, medication, or condition. In this way, the dietitian can avoid unnecessary problems for the patient. As discussed earlier, the more the dietitian knows about patients’ lifestyles, the more he or she can provide dietary advice, counselling, and recommendations to patients that will allow them to stay close to their normal regime.

A thorough diet analysis from multiple perspectives provides the dietitian with the best picture of the patient’s intake. A single method of diet analysis can be unreliable; therefore, multiple methods increase the dietitian’s ability to accurately determine what the client is really eating.

Anthropometric measures are taken to establish appropriate weight-for-height measures as well as body fat measures. These are compared with established norms and allow the dietitian to set goals for the patient.

Laboratory tests are objective measures that can be compared against some of the more subjective measures, such as medical history, to provide a complete picture to the dietitian of the patient’s overall health and dietary status.

**6. Chronic disease is a significant health problem in Canada. Millions of health-care dollars are spent on chronic disease, yet, in reality, little is done about the role of nutrition in the prevention of or recovery from chronic disease. If you were in charge of health-care spending, what might be your first proclamation and why?**

**Answer:** This is an open question for students to explore the role of nutrition in the prevention or treatment of chronic disease. Students can direct this question either way. Students should give specific examples of a chronic disease and the nutrients and dietary habits that would prevent the disease or help in its management. It is also important for students to demonstrate that they understand that research is important in making any proclamation at the federal level. Therefore, any decision that they make must be supported by sound evidence.

**7. (a) Nutrition assessment is the diagnostic tool of the registered dietitian. In performing a nutrition assessment, a registered dietitian asks many specifics about diet—in detail. Why? (b) The registered dietitian also asks for much detail about an individual’s behaviours, culture, financial status, etc. Why would the registered dietitian delve into the patient’s personal history in such detail, and what does this have to do with diet? (c) Is it appropriate for a registered dietitian to ask about the patient’s health status? Why or why not? (d) If the registered dietitian had questions about a disease or issue, where might he or she go to find additional information?**

**Answer:** (a) The registered dietitian needs a great deal of specific, detailed information about the patient’s diet because it is important to understand servings or volume, all condiments or extraneous items a patient might use on a specific food, cooking procedures, food preferences, and cultural or ethnic habits. Several different questions regarding food habits also allow the registered dietitian to assess the reliability of the dietary data being collected.

(b) Culture and finances have much to do with dietary habits. Culture is the basis of eating habits, and finances are critical to the ability to purchase food.

(c) Yes, as health status is the foundation for how the registered dietitian will counsel the patient. Perhaps problems with the patient’s health status sent the patient to the registered dietitian, or perhaps there are new issues. Either way, the registered dietitian should know of the patient’s health background and medications to appropriately counsel him or her.

(d) It is important for the registered dietitian to be familiar with the medical library and professional journals where he or she can search for information. Clearly a registered dietitian can turn to a colleague for a quick question, but the inquiry should always be followed up with a review of the professional literature.

**8. There are a variety of health professionals in addition to the physician and the nurse. The health-care consumer is often confused about who does what and whom to listen to. It seems like everyone is providing nutrition information these days, and other than the physician and the registered nurse, why should you trust anyone else? You are a registered dietitian in a community hospital and your patient, Mr. X, says when you come into his room that several individuals have already visited him to talk about diet. You find out that the respiratory therapist, physical therapist, speech pathologist, physician, and registered nurse have all talked to Mr. X about his diet. Discuss the differences among the many health-care professionals with regard to their nutrition training and scope of practice, and then briefly discuss how you might approach your patient to help him understand how your skills are different from those of the other health-care professionals.**

**Answer:** Many health-care professionals are involved in patient care; therefore, when they are accessible, patients will turn to them for nutrition advice, not knowing any different. It is important to understand that the public does not always understand the difference among all the types of health-care professionals. The majority of health science professionals do not receive any nutrition training, except for the occasional nutrition content specific to certain areas. The exception to this is nursing, which does require one nutrition course in a four-year curriculum. Physicians may or may not receive a nutrition course in a four-year curriculum, as it is not mandated by the accrediting body. Therefore, it is really important for the registered dietitian to collaborate with other health-care professionals for the best of patient care.

When talking to Mr. X, take a positive approach by indicating that you are glad he is interested in finding out how he can improve his diet. Then explain your role in the hospital, clinic, etc., as the registered dietitian and health-care professional who is the diet and nutrition expert, providing a business card and information for the patient to easily contact you as the registered dietitian. Finally, help Mr. X understand all details of his diet and answer all questions in full detail. Do not discuss any other health-care professional negatively. This is unprofessional!

**Case Study[[4]](#footnote-4)**

Mary P. is a 57-year-old operating room nurse who works full time at a local hospital. She is 65 inches tall and weighs 160 pounds. She has a family history of diabetes and heart disease and was recently diagnosed with high blood cholesterol. She has declined the cholesterol-lowering medication her doctor prescribed, and says she would like to explore other methods for lowering her cholesterol first. For the past few weeks, Mary has been taking a tablespoon of coconut oil every day after reading on the Internet that this will lower her cholesterol. She admits she has little time or energy to exercise. Her diet history reveals she often skips breakfast or has a doughnut or bagel with cream cheese at work. She drinks several cups of coffee each morning with cream and sugar. Lunch is a salad with crackers and iced tea with sugar in the hospital cafeteria. She occasionally drinks one or two glasses of wine in the evening, especially after a stressful day at work. She lives alone and relies on frozen dinners or other convenience foods in the evening. An analysis of her diet reveals an average daily intake of 80 grams of fat, 200 grams of carbohydrate, and 50 grams of protein.

1. Taking into account her current lifestyle and personal food preferences, what eating habits might be difficult for Mary to change?
2. How might her emotions contribute to her food and drink choices?
3. Calculate Mary’s average daily Calorie intake.
4. What percentage of her daily Calories is provided by fat? Carbohydrates? Protein?
5. Compare the composition of Mary’s diet with the Acceptable Macronutrient Distribution Ranges (AMDR).
6. How would you use the information above to make dietary recommendations for Mary?
7. How would you direct her to valid nutrition research for lowering blood cholesterol?

**Answers:**

1. Skipping breakfast, snacking on doughnuts at work, use of convenience foods, use of alcohol to calm emotions.

2. Alcohol and foods high in carbohydrates tend to calm emotions in times of stress; caffeine (coffee) may help ease her feelings of tiredness.

3. (80 g fat × 9 Cal/g = 720 Cal) + (200 g carbohydrates × 4 Cal/g = 800 Cal) + (50 g protein × 4 Cal/g = 200 Cal) = 1720 Cal.

4. Fat: 720/1720 = 42%; Carbohydrates: 800/1720 = 46%; Protein: 200/1720 = 12%.

5. Her diet is high in fat (42% versus 20–35% AMDR), adequate in carbohydrates (46% in an acceptable range of 45–65%), and adequate in protein (12% in a range of 10–35%).

6. Help her find major sources of fat in her diet to decrease or eliminate. Help her find lower-fat choices of usual foods such as lower-fat cream cheese and convenience foods.

7. Explain the evidence from peer-reviewed research publications for eating a diet lower in saturated fat for lowering blood cholesterol. Direct her to the “red flags of nutrition quackery” and explain how to determine if a website is reliable.

## Handout 1–1

## Research Assignment Using the Internet

For this research project, students will use the Internet as a research tool. Students will be expected to become familiar with the diversity of Internet resources. Students will also be expected to participate in online discussions about nutrition and related topics in class-based listserve groups. The purpose of this project is to develop Internet and online participation skills.

1. Obtain your username and password. Change your password (if necessary) to one that cannot be hacked. Log on to your e-mail. Send your instructor an e-mail message. Print it off and attach it to the assignment.
2. Log on to your class listserve (WebCT, Blackboard, or other server). Demonstrate that you have made at least three comments over the semester. Print these off and attach to your assignment.
3. Go online to find a site related to nutrition. Document how you accessed the web and the address of the website accessed. Print off and discuss what you found. Attach this to the assignment.
4. Enter your library computer system. Use the system to conduct a literature search on a topic (for example, vitamin A). Discuss your findings (1–2 pages).
5. Once at your library website, download a recent edition of an Internet journal (related to nutrition). Browse through it and report on what you found.
6. Borrow a book about the Internet from your library. List 10 items that are most important for education and research and explain why (1–2 pages).

## Handout 1–2

**Literature Critique: Critical Evaluation of Published Nutrition Information—**

**“Should I Believe What I Just Read?”**

Assignment for discussion: Carefully read a journal article and answer the following questions.

1. Summarize the basic idea of the article in a short paragraph.
2. a. What are the credentials of the author(s)? What do the abbreviations after the name(s) mean? Do they enhance the authors’ credibility? Explain.

b. Is the author 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?

1. a. Is scientific research being presented or discussed? Is the research current?

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?

1. 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.

1. a. Design and describe in depth additional research that could more decisively test the hypothesis identified. Pay particular attention to details and controls.

b. Indicate what will be measured.

c. State the type of experimental design and type of experiment.

1. Identify the statements in the article that you believe and those that you do not believe, and discuss why or why not for each.
2. What sources other than those listed in the periodical would you refer to if you were to research the article’s topic further?

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

WHAT OTHER RESOURCES ARE AVAILABLE?

#### You can look up information about government policy as well as any health condition that you are interested in learning more about. Consult the following websites to get reliable information:

**Government agencies responsible for nutrition and physical activity policies:**

* Canadian Fitness and Lifestyle Research Institute: http://www.cflri.ca/
* Canadian Institutes of Health Research (CIHR): http://www.cihr-irsc.gc.ca/
* Health Canada’s Office of Nutrition Policy and Promotion (ONPP): http://www.hc-sc.gc.ca/ahc-asc/branch-dirgen/hpfb-dgpsa/onpp-bppn/index-eng.php
* Public Health Agency of Canada (PHAC)—Physical Activity Unit: http://www.phac-aspc.gc.ca/pau-uap/fitness/
* Statistics Canada (StatsCan): http://www.statcan.gc.ca/start-debut-eng.html

**Websites focusing on chronic diseases (including some nutritional interventions):**

* The Canadian Cancer Society: http://www.cancer.ca

#### The Canadian Medical Association: http://www.cma.ca

#### The Canadian Public Health Association: http://www.cpha.ca

#### Dietitians of Canada: http://www.dietitians.ca

* The Canadian Diabetes Association: http://www.diabetes.ca
* The Heart and Stroke Foundation of Canada: http://www.heartandstroke.ca
* The Public Health Agency of Canada: http://www.publichealth.gc.ca
* The Registered Nurses’ Association of Ontario: http://www.rnao.ca

1. Activity provided by Caroline Roberts, R.D., M.P.H.—Nutrition Education Specialist for California Department of Education and Instructor at Sierra College. [↑](#footnote-ref-1)
2. Activity provided by Lin Brown, Shasta College, Redding, CA. [↑](#footnote-ref-2)
3. Contributed by Kathleen Rourke. [↑](#footnote-ref-3)
4. Contributed by Barbara Quinn. [↑](#footnote-ref-4)