

Chapter 1

Food Choices and Human Health

Purpose and Perspective of the Chapter

The purpose of this chapter is to introduce and educate students on how their food choices play a significant role in impacting their overall health and lifetime well-being. Nutritious foods are superior to supplements, and a well-planned diet can provide the body with the essential nutrients to support healthy bodies. As students read this chapter, have them consider how their current food choices are influencing their health and risk of chronic diseases.

Chapter Objectives

The following objectives are addressed in this chapter:

- LO 1.1 Discuss how a particular lifestyle choice can either positively impact or harm overall health.
- LO 1.2 Define the term *nutrient* and list the six classes of nutrients.
- 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.
- LO 1.4 Describe and give an example of the major types of research studies.
- LO 1.5 Discuss why national nutrition survey data are important for the health of the population.
- LO 1.6 Explain the significance of behaviour change in improving a person's diet.
- LO 1.7 Discuss the importance of nutrient density in creating a healthy diet.
- LO 1.8 Recognize credible nutrition information sources.

Key Terms

Food: medically, materials, usually of plant or animal origin, that contain essential nutrients such as carbohydrates, fats, proteins, vitamins, or minerals and 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: the study of the nutrients and other biologically active compounds in foods and in the body; sometimes also the study of human behaviors related to food.

Diet: the foods (including beverages) a person usually eats and drinks.

Nutrients: components of food that are indispensable to the body's functioning. They provide energy, serve as building material, help maintain or repair body parts, and support growth. Nutrients include water, carbohydrates, fat, protein, vitamins, and minerals.

Malnutrition: any condition caused by excess or deficient food energy or nutrient intake or by an imbalance of nutrients. Nutrient or energy deficiencies are forms of undernutrition; nutrient or energy excesses are forms of overnutrition.

Chronic diseases: degenerative conditions or illnesses that progress slowly, are long in duration and lack an immediate cure. Chronic diseases limit functioning, productivity, and the quality and length of life. Examples include heart disease, cancer, and diabetes.

Anemia: 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) 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. The study of genomes is *genomics*.

Genes: units of a cell's inheritance; sections of the larger genetic molecule DNA (deoxyribonucleic acid). Each gene directs the making of one or more of the body's proteins.

DNA: an acronym for deoxyribonucleic (dee-OX-ee-RYE-bow-nu-CLAY-ick) acid, the threadlike molecule that encodes genetic information in its structure; DNA strands coil up densely to form the chromosomes (Chapter 3 provides more details).

Nutritional Genomics: The integration of nutrition, genomic science, and molecular biology. Scientists in this area are describing how nutrients affect the activities of genes and how genes affect the activities of nutrients. Also called *nutigenomics*.

Energy: the capacity to do work. The energy in food is chemical energy; it can be converted to mechanical, electrical, heat, or other forms of energy in the body. Food energy is measured in calories, defined below.

Organic: carbon containing. Four of the six classes of nutrients are organic: carbohydrates, fat, protein, and vitamins. Organic compounds include only those made by living things and do not include compounds such as carbon dioxide and a few carbon salts.

Grams (g): metric units of weight, defined as the mass of a cubic centimetre (cc) or millilitre (mL) of water under defined conditions of temperature and pressure. About 28 grams equal an ounce. A *milligram* is one-thousandth of a gram. A *microgram* is one-millionth of a gram.

Energy-yielding nutrients: the nutrients the body can use for energy: carbohydrates, fat (also called *lipids*), and protein. These also may supply building blocks for body structures.

Essential nutrients: 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.

Fibre: a collective term for various indigestible plant materials, many of which bear links with human health. See also Chapter 4.

Calories: units of energy. In nutrition science, the unit used to measure the energy in foods is a kilocalorie (also called *kcalorie* or *calorie*): it is the amount of heat energy necessary to raise the temperature of a kilogram (a liter) of water by one degree Celsius. This course follows the common practice of using the lowercase term *calorie* (abbreviated *cal*) to mean the same thing.

Dietary supplements: pills, liquids, or powders that contain purified nutrients or other ingredients.

Elemental diets: diets composed of purified ingredients of known chemical composition; intended to supply, to the greatest extent possible, all essential nutrients to people who cannot eat foods.

Nonnutrients: a term used in the textbook to mean compounds other than the six nutrients that are present in foods and have biological activity in the body.

Phytochemicals: bioactive compounds in plant-derived foods (*phyto*, pronounced FYE-toe, means "plant").

Enriched foods: foods to which nutrients have been added back that were lost during processing.

Fortified foods: the intentional addition of vitamins, minerals, or other nutrients to foods in sufficient quantities and not in excess.

Fast foods: restaurant foods that are available within minutes after customers order them—traditionally, hamburgers, French fries, and milkshakes; more recently, salads and other vegetable dishes as well. These foods may or may not meet people's nutrient needs, depending on the selections provided and on the energy allowances and nutrient needs of the eaters.

Functional foods: a marketing term for foods believed to provide health benefits, such as reduced disease risks, beyond the benefits that their nutrients confer. However, all nutritious foods support health in some ways.

Natural foods: a term that has no legal definition but is often used to imply wholesomeness.

Organic foods: understood to mean foods grown without synthetic pesticides or fertilizers. In chemistry, however, all foods are made mostly of organic (carbon-containing) compounds.

Processed foods: foods subjected to any process, such as milling, alteration of texture, addition of additives, cooking, or others. Depending on the starting material and the process, a processed food may or may not be nutritious.

Staple foods: foods used frequently or daily—for example, rice (in East and Southeast Asia) or potatoes (in Ireland). Many of these foods are sufficiently nutritious to provide a foundation for a healthful diet.

Ultra-processed foods and beverages: highly palatable manufactured food and beverage products often high in ingredients such as sodium, sugars or saturated fat. Examples of ultra-processed foods and beverages include sugary, refined breakfast cereals, candies, cookies, fried chicken nuggets, sweetened or flavoured milk- or soy-based products, snack chips and crackers, commercial soups and soft drinks.

Whole foods: vegetables; fruits; grains; dairy products; meats and similar foods such as fish and poultry; plant-based proteins including dried beans, peas, lentils. These foods are generally considered to form the basis of a nutritious diet.

Adequacy: the dietary characteristic of providing all of the essential nutrients, fibre, and energy in amounts sufficient to maintain health and body weight.

Balance: the dietary characteristic of providing foods of a number of types in proportion to each other, such that foods rich in some nutrients do not replace foods that are rich in other nutrients. Also called proportionality.

Calorie control: the dietary characteristic of controlling energy intake; a feature of a sound diet plan.

Moderation: the dietary characteristic of providing constituents within set limits, not to excess.

Variety: the dietary characteristic of providing a wide selection of foods—the opposite of monotony.

Legumes: (leg-GOOMS, LEG-yooms) plants of the bean, pea, and lentil family that have roots with nodules containing special bacteria. These bacteria can trap nitrogen from the air in the soil and make it into compounds that become part of the plant's seeds. The seeds are rich in protein compared with those of most other plant foods. Also defined in Chapter 6.

Cuisines: styles of cooking.

Foodways: the sum of a culture's habits, customs, beliefs, and preferences concerning food.

Ethnic foods: foods associated with particular cultural subgroups within a population. The term "ethnic foods" is sometimes seen as offensive. This could be used for a class discussion.

Omnivores: people who eat foods of both plant and animal origin, including animal flesh.

Vegetarians: people who exclude animal flesh and possibly other animal products such as milk, cheese, and eggs from their diets.

Blind experiment: an experiment in which the subjects do not know whether they are members of the experimental group who receives treatment or the control group who receives the placebo. In a *double-blind experiment*, neither the subjects nor the researchers know to which group the members belong until the end of the experiment.

Case studies: a study of individuals. When in clinical settings, researchers can observe treatments and their apparent effects. To prove that a treatment has produced an effect requires simultaneous observation of untreated similar subjects (*case-control studies*).

Control group: a group of individuals who are similar in all possible respects to the group being treated in an experiment but who receive a sham treatment instead of the real one. Also called *control subjects*.

Randomized controlled trial: an experiment in which one group of subjects (the **experimental group**) receives a treatment and a comparable group (the **control group**) receives an imitation treatment; outcomes for the two are then compared. Ideally, neither subjects nor researchers know who receives the treatment and who gets the placebo (a double-blind study).

Correlation: the simultaneous change of two factors, such as the increase of weight with increasing height (a *direct* or *positive* correlation) or the decrease of cancer incidence with increasing fibre intake (an *inverse* or *negative* correlation). A correlation between two factors suggests that one may cause the other but does not rule out the possibility that both may be caused by chance or by a third factor.

Epidemiological studies: studies of populations; often used in nutrition to search for correlations between dietary habits and disease incidence; a first step in seeking nutrition-related causes of diseases.

Experimental group: the people or animals participating in an experiment who receive the treatment under investigation. Also called *experimental subjects*.

Intervention studies: studies of populations in which observation is accompanied by experimental manipulation of some population members—for example, a study in which half of the subjects (the *experimental subjects*) follow diet advice to reduce fat intake, while the other half (the *control subjects*) do not, and both groups' heart health is monitored.

Laboratory studies: studies that are performed under tightly controlled conditions and are designed to pinpoint causes and effects. Such studies often use animals as subjects.

Placebo: a sham treatment often used in scientific studies; an inert, harmless medication. The *placebo effect* is the healing effect that the act of treatment, rather than the treatment itself, often has.

The Canadian Community Health Survey: National survey of 20,000 Canadians' eating habits.

Nutrient density: a measure of nutrients provided per calorie of food. A *nutrient-dense* food provides needed nutrients with relatively few calories.

Advertorials: lengthy advertisements in newspapers and magazines and their websites that read like feature articles but are written for the purpose of touting the virtues of products and may or may not be accurate.

Anecdotal evidence: information based on interesting and entertaining, but not scientific, personal stories.

Critical thinking: the mental activity of rationally and skillfully analyzing, synthesizing, and evaluating information.

Fraud or quackery: the promotion, for financial gain, of devices, treatments, services, plans, or products (including diets and supplements) that claim to alter a human condition without proof of safety or effectiveness. (The word *quackery* comes from the term *quacksalver*, meaning a person who quacks loudly about a miracle product—a lotion or a salve.)

Infomercials: feature-length television commercials that follow the format of regular programs but are intended to convince viewers to buy products and not to educate or entertain them. The statements may or may not be accurate.

Urban legends: stories, usually false, that may travel rapidly throughout the world via the internet, gaining the appearance of validity solely on the basis of repetition.

Academy of Nutrition and Dietetics (AND): the professional organization of dietitians in the United States (formerly the American Dietetic Association). The Canadian equivalent is the Dietitians of Canada (DC), which operates similarly.

Accredited: approved; in the case of universities, certified by an agency such as a provincial ministry of education.

Dietitian: a person trained in the science of nutrition and dietetics. See also *registered dietitian/nutritionist* or *professional dietitian* or *diététiste professionnelle*. The name given depends on the province in which the dietitian practices. See Table C1-5 for details.

Diploma mill: an organization that awards meaningless “degrees” without requiring students to meet educational standards.

Medical nutrition therapy (MNT): evidence-based nutrition services administered by registered dietitian nutritionists in the treatment of injury, illness, or other conditions; includes assessment of nutrition status and dietary intake and corrective applications of diet, counseling, and other nutrition services.

Dietetic Technician (diet tech): assists dietitians in both administrative and clinical responsibilities and works under the guidance of the dietitian. Diet techs complete a

two-year academic degree from an accredited college or university and an approved dietetic technician program.

Nutritionist: someone who studies or advises others on nutrition, and who may or may not have an academic degree in nutrition.

Registration Board: a professional organization that requires specific course work, experience, and passing of an examination.

Chapter Outline

I. **A Lifetime of Nourishment**

Discuss how a particular lifestyle choice can either positively impact or harm overall health. (LO 1.1)

- a. The nutrients in food support growth, maintenance, and repair of the body. If foods consumed provide too little or too much of one or more nutrients every day for years, then in later life one may suffer severe disease effects.
- b. Deficiencies, excesses, and imbalances of energy and nutrients bring on the diseases of malnutrition.
- c. Nutrition profoundly affects health. Chronic diseases such as some cancers, heart disease, strokes, and diabetes, along with dental disease, and adult bone loss all have a connection to poor diet.
- d. Life choices such as being physically active can improve health while using tobacco or alcohol can damage health.
- e. A nutritious diet also influences the immune system.
- f. Diet influences long-term health within the range set by genetic inheritance.
- g. Nutrition exerts little influence on some diseases but strongly affects others.
- h. Anemia caused by sickle-cell disease is purely hereditary and is largely unrelated to nutrition. Iron-deficiency anemia, on the other hand, most often is a result of undernutrition.

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

Define the term *nutrient* and list the six classes of nutrients. (LO 1.2)

- a. The energy-yielding nutrients are carbohydrates, fat (lipids), and protein. These nutrients contribute to the calories one consumes.
- b. The regulator nutrients are vitamins and minerals. These nutrients are known as micronutrients because they are present in tiny amounts in living tissues.
- c. Foremost among the nutrients in food is water. If water is not replaced constantly throughout the day, then the body's cells cannot function.
- d. Essential nutrients in the diet prevent deficiencies. The body cannot produce these nutrients, and essential nutrients must be ingested.
- e. Food energy is measured in calories; nutrient quantities are often measured in grams. The most energy-rich nutrient is fat, which contains 9 calories in each gram. Protein and carbohydrates each contain only 4 calories in a gram.
- f. Nutritious food is superior to supplements for maintaining optimal health.

- g. Most healthy people who eat a nutritious diet do not need supplements at all.

III. **The Challenge of Choosing Foods**

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. (LO 1.3)

- a. Foods that form the basis of a nutritious diet are whole foods, such as basic dairy products; meats, fish, and poultry; vegetables and dried peas and beans; fruits; and grains. Whole foods are foods in their natural state.
- b. A well-planned diet is adequate, balanced, moderate in energy, moderate in unwanted constituents, and offers a variety of nutritious foods.
- c. Cultural traditions and social values often revolve around foodways. One must develop cultural competence to help others achieve a nutritious diet.
- d. Many factors other than nutrition drive food choices. Taste is the number-one factor driving people's food choices, with price following closely behind. Other factors that influence people's food choices include advertising, availability, economy, emotional comfort, habit, personal preference and genetic inheritance, positive or negative associations, region of the country, social pressure, values or beliefs, weight, and nutritional value.

IV. **The Science of Nutrition**

Describe and give an example of the major types of research studies. (LO 1.4)

- a. Nutrition is a young, fast-growing science. Most nutrition research has been conducted since 1900.
- b. Scientists ask questions and then design research experiments to test possible answers.
- c. Researchers follow the scientific method and apply it to various research study designs.
- d. Single studies must be replicated before their findings can be considered valid. The only source of valid nutrition information is slow, painstaking, well-designed, unbiased, repeatable scientific research.
- e. A theory is developed when results from follow-up studies with a variety of research designs support it. Follow-up studies could include case studies, epidemiological studies, intervention studies, or laboratory studies.
- f. News media often sensationalize single-study findings and so may not be trustworthy sources.
- g. National nutrition research projects such as the Canadian Community Health Survey provide data on Canadian food consumption and nutrient status. National nutrition surveys involve asking people what they have eaten and recording measures of their health status.

V. **Dietary Guidelines and Nutrition Objectives**

Discuss why national nutrition survey data are important for the health of the population. (LO 1.5)

- a. Many of Canada's Dietary Guidelines are embedded in Canada's Food Guide.

- b. One example includes eating a variety of healthy foods each day from the three food categories in the Food Guide. This will allow Canadians to obtain necessary nutrients that contribute to overall health and vitality and reduce the risk for the development of chronic diseases.
- c. Other examples include planning what and you will eat and taking time to eat; enjoying your food with others; consuming more plant proteins; limiting highly processed foods; consuming water as first choice; reading food labels; and being aware of food marketing.

VI. Changing Behaviors

Explain the significance of behaviour change in improving a person's diet. (LO 1.6)

- a. Behavior change follows a multistep pattern. Stages of behavior change include precontemplation, contemplation, preparation, action, maintenance, and adoption/moving on.
- b. Setting goals and monitoring progress facilitate behavior change.

VII. Food Feature: How Can I Get Enough Nutrients and Achieve My Daily Energy Needs

Discuss the importance of nutrient density in creating a healthy diet. (LO 1.7)

- a. No particular foods must be included or excluded in the diet.
- b. The way you combine foods into meals and arrange meals to follow one another over days and weeks determines how well you are nourishing your body.

VIII. Controversy 1: Sorting Impostors from the Real Nutrition Experts

Recognize credible nutrition information sources. (LO 1.8)

- a. Identifying nutrition misinformation requires gathering accurate information and developing skills in critical thinking.
- b. The credentials of Canadian Dietitians differ by province, and each has their own provincial dietetic regulatory body.

Discussion 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?* (LO 1.3)

An adequate diet prevents deficiency diseases and allows the body's systems to function properly. Because essential nutrients are found in different foods, dietary balance helps to achieve adequacy. Balance and moderation together prevent excessive intake 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 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 parent who is working two jobs to support two young children. What factors will likely influence their choices of foods for themselves and the family? (LO 1.3)*

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

It is possible for a person who has limited time to eat well if they have received nutrition education. For example, they could be taught about the importance of a nutritious eating plan for themselves and their children and encouraged to choose wholesome staple foods. They will receive information on how to make the healthiest and easiest choices based on their individual needs and constraints. Low finances make eating healthy extremely difficult. With nutrition education, they can learn how to purchase and prepare foods at a lower cost and be referred to centres that provide more economical foods or foods at no cost.

3. *Nutrition researchers want to study the link between a high-fibre diet and the reduced risk of colon cancer. Describe how they could carry out each of the following types of studies: intervention, epidemiological, and laboratory. (LO 1.4)*

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 fibre per day. The experimental group would eat a diet that includes more high-fibre 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-fibre intake 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 high-fibre diet versus a group of people who regularly eat a low-fibre 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-fibre diet and the other group would receive a low-fibre 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 fibre 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: The Stages of Behavior Change. (LO 1.6)*

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 benefits of eating more nutrients with fewer calories. You also consider 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 $\frac{1}{2}$ to 1 cup of 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 sometimes don't meet your goal. You keep track of your produce intake and 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 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? (LO 1.7)*

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 fibre, vitamins, or minerals but fewer calories. For example, instead of sugar-sweetened apple sauce, you can have a sliced apple including the skin, which has fewer calories and sugar with more fibre. You can compare the nutrient density of foods at the grocery store by reading the labels and selecting the food that has more fibre, 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 1-5: Rethinking Challenges to Eating Well? (LO 1.3)*

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 a 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 a few times a week. If you eliminate these foods altogether, you will crave them. People are more successful if they add healthy foods instead of taking away unhealthy foods. If you are craving potato chips, have a smaller bowl of chips with some vegetables like sweet bell peppers and carrots. If you are craving ice cream, have one scoop instead of two and add some fresh strawberries.

Too little money: At the grocery store, compare the price of produce (fruits and vegetables) with processed or snack foods. You may want to buy only 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. Vitamin pills cannot make up for consistently poor food choices.

Additional Activities and Assignments

1. "Find a Person Who" Introduction Activity for the Classroom (LO 1.1)

Total Time: 15 minutes

Objective: Enhancing emotional classroom environment. Class size: All sizes. Materials needed: Copy of form described below (developed by instructor) for each student.

Instructions: Students sometimes enjoy classes more when they are acquainted with other students. One way to assist this process is by providing students with a "Find a Person Who" form. Develop a form several columns wide and several rows long that lists a variety of traits in each square such as enjoys cooking, recycles, has a pet, is a nutrition major, eats foods from a different culture than you, etc. Instruct students to walk around the class, introduce themselves to each other, and try to find a person who fits the categories described on the sheet. When they find someone who fits a category, have them write person's first name in that category. The goal is to complete the sheet. You may also suggest that they exchange e-mail addresses or phone numbers and form study groups. This activity works best for small to medium-sized classes.

2. Reducing Disease Risk Activity Classroom/Online Activity (LO 1.3):

Total Time: 20 minutes

Maria is a 57-year-old operating room nurse who works full-time at a local hospital. She is 165 cm tall and weighs 72.6 kg. 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, Maria 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 donut or bagel with cream cheese at work. She drinks several cups of coffee each morning with cream and sugar. Lunch in the hospital cafeteria is a salad with crackers and iced tea with sugar. 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 200 g carbohydrates, 50 g protein, and 80 g fat.

- 1) Considering her current lifestyle and personal food preferences, what food habits might be difficult for Mary to change?
- 2) How might her emotions contribute to her food and drink choices?
- 3) Using Table 1-3 (Energy-Yielding Nutrients), calculate Maria's average daily kcalorie intake from carbohydrates, protein, and fat. Add these figures together to arrive at her total daily kcaloric intake.
- 4) What percentage of her daily kcalories is provided by carbohydrates? Protein? Fat?
- 5) How would you use the information above to make dietary recommendations for Maria?
- 6) What are some credible sources of nutrition information from Table C1-2: Credible Sources of Nutrition Information that Maria could consult to learn how to lower her blood cholesterol?

3. Brief Research Report on Milk Classroom/Online Activity (LO 1.8)

Total Time: 45 minutes

The advertisements for milk report "It does a body good". Do students think this is correct or are they being swayed by "tainted" marketing or sensationalized social media? 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 for you milk is. Include the different types of milk (whole milk vs. 2% vs. 1% vs. skim)." When students search for data, remind them what is considered a credible source under LO 1.8. If they are searching for peer reviewed data, remind them to look for review articles to help them reach a conclusion in the 45-minute activity. You can also ask if they agree that milk should not be an individual food group and be included in the Proteins portion of the Canada's Food Guide plate.

4. Nutrition Quackery Classroom/Online Activity (LO 1.8)

Total Time: 30 minutes

Refer to Figure C1-1 for this class activity. Watch this video for weight loss using an exotic rice recipe https://www.youtube.com/watch?v=S_14w-ZHKR0. Ask them why it is likely a form of quackery based on the boxes in Figure C1-1.

Additional Resources

External Videos or Playlist

- What Is Diet Quality? (LO 1.3) <https://www.youtube.com/watch?v=SVa0D81yalo>
- Using the Scientific Method in the Nutrition Field (LO 1.4) <https://www.youtube.com/watch?v=U9pNx03Xcww&list=PLQrJd5CIElTjXVHvL5dECuil-yFVrVsw&index=2>
- Approaches to Behavior Change (Health Education England) (LO 1.6) <https://www.youtube.com/watch?v=8BmhtlmaO-4>
This video was produced in Britain where different approaches to behaviour change have been attempted on an individual, environmental and policy level. Discuss with the class which would be effective approaches in Canada.
- Mayo Clinic Minute: Why Nutrient-Dense Food Is So Good for You (LO 1.7) <https://www.youtube.com/watch?v=qzFHuhlw-xc&list=PLQrJd5CIElTjXVHvL5dECuil-yFVrVsw&index=4>
- Amanda highlights the difference between a dietitian and a nutritionist in Canada (LO 1.8) <https://www.youtube.com/watch?v=trOtJZlzyro>

Internet Resources

- Canada's Food Guide food-guide.canada.ca/
- Canadian Institute for Health Information www.cihi.ca/en
- Canadian Medical Association www.cma.ca
- Centers for Disease Control and Prevention (CDC) www.cdc.gov
- Dietitians of Canada www.dietitians.ca
- Dietitians of Canada www.unlockfoods.ca
- Health Canada www.canada.ca/en/public-health.html
- National Institutes of Health (NIH) www.nih.gov
- Canadian Society for Exercise Physiology www.csepguidelines.ca
- Canadian Cancer Society www.cancer.ca
- Diabetes Canada www.diabetes.ca

- Food and Agriculture Organization of the United Nations (FAO) <http://www.fao.org/home/en/>
- World Health Organization (WHO) <https://www.who.int/>
- Heart and Stroke Foundation www.heartandstroke.ca
- Hypertension Canada www.hypertension.ca
- Canadian Digestive Health Foundation www.cdhf.ca
- International Food Information Council www.foodinsight.org
- Academy of Nutrition and Dietetics www.eatright.org
- *American Journal of Clinical Nutrition* <https://academic.oup.com/ajcn>
- *Journal of the Academy of Nutrition and Dietetics* www.andjrnl.org
- *New England Journal of Medicine* www.nejm.org
- *Nutrition Reviews* www.ilsj.org
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