Understanding Nutrition (Canadian) 2nd edition Whitney Solutions Manual

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Chapter 2
Planning a Healthy Diet

IF NOTHING ELSE, MY STUDENTS SHOULD LEARN…

1. The fundamental concepts underpinning the basic concepts of nutritional planning: adequacy, balance, energy control, nutrient density, moderation, and variety.
2. That dietary guidelines apply principles of good eating and offer practical advice about healthy eating.
3. That one tool for diet planning is *Canada's Food Guide*. This plan sorts food into four major food groups (grain products, vegetables and fruit, milk products, meat and alternatives) based on nutrient contents. Food labels containing nutrition facts provide reliable information to help consumers select their food choices.
4. The major nutrients that are contained within the four groups outlined by *Canada's Food Guide*.
5. How to read the nutrient label on commercial food items. With the knowledge gained in their nutrition course, students will find that the elements contained within the nutrient label will be much more meaningful and can be interpreted.

LEARNING OBJECTIVES

Students should be able to:

- LO 2.1: Explain how each of the diet-planning principles can be used to plan a healthy diet. *[Remember/Apply]*
- LO 2.2: Use *Canada's Food Guide* to design a nutritious meal plan. *[Apply]*
- LO 2.3: Compare and contrast the information on food labels to make selections that meet specific dietary goals. *[Understand]*
- LO 2.4: Develop a well-balanced vegetarian meal plan. *[Apply]*
- LO 2.5: Explain how each of the diet-planning principles can be used to plan a healthy diet. *[Understand]*

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

"Of special interest to..." symbol key:

 = Health-Care Practitioners  = Science Majors

- In order to provide appropriate nutritional counselling, **health-care practitioners** rely upon the basic diet planning principles (adequacy, balance, energy control, nutrient density, moderation, and variety) as the basis for sound recommendations. For instance, by incorporating variety in their diet, patients will be more likely to achieve balance and adequacy of the required macro- and micronutrients. 

- *Canada's Food Guide* incorporates the basic elements of food categories in making easy-to-understand recommendations for a healthy diet that can be understood by Canadians. In promoting dietary independence, **health-care practitioners** can utilize the guide along with specific dietary planning to improve the health and well-being of their patients. 

- The **health-care practitioner** should take into consideration the fact that many patients have longstanding dietary patterns based upon their ethnicity. By understanding how various ethnic foods can be effectively incorporated into the **health-care practitioner's** dietary recommendations, students will gain an appreciation of extending *Canada's Food Guide* into different populations. 

- With the vast amount of food available to the Canadian consumer, the **health-care practitioner** can make effective use of exchange lists to develop a healthy diet plan while still catering to the ethnicity and tastes of individuals. Based upon a popular meal-planning guide, *Beyond the Basics: Meal Planning for Healthy Eating, Diabetes Prevention and Management*, effective dietary advice can be provided to Canadians that extend the basic elements in *Canada's Food Guide.* 

- In developing foods that provide a maximum of nutrient density, the **scientist** will take great interest in understanding the basic structure of a wheat plant and how the different components are removed or altered during the course of harvesting and processing. These processes form the basis of understanding common nutritional terms such as enriched, refined, and fortified. 

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WHY SHOULD STUDENTS CARE?

- The simple principles of practising variety, moderation, and balance are highly effective for Canadians to incorporate into their lives when trying to develop healthy eating patterns.
- Students should know that following *Canada's Food Guide* helps people eat well. *Canada's Food Guide* specifies the amounts of foods from each food group that Canadians should consume in order to meet their nutrient requirements without exceeding their caloric allowances. *Canada's Food Guide* is a flexible tool and can be used by different individuals.
- Students should know that in order to avoid consuming too many calories, people must pay attention to the sizes of their food servings. This is one aspect of *Canada's Food Guide* that can be helpful to the average Canadian.
- Learning about exchange lists is important for the study of nutrition. Careful diet planning is required for those wishing to control calories, those with diabetes, and those who need to control their intake of fat. Exchange lists facilitate calorie control by providing an understanding of how much carbohydrate, fat, and protein are in each food group.
- The ingredients that are included in the food that we purchase, as well as the amounts of macro- and micronutrients, are indicated in the nutrient labels on these items. It is important for students to learn how to read these food labels effectively so that informed decisions can be made about people's food choices. These nutrient labels are important to understand so that consumers can make an independent evaluation of a particular food without relying on potentially misleading claims.
- Canadian consumers are bombarded with many labels on foods, such as refined, whole grain, enriched, and fortified. The understanding of these various terms will be more meaningful if students develop a keen sense of the structure of a wheat plant and how the different parts of it are used or removed during the processing of food.

WHAT ARE COMMON STUDENT MISCONCEPTIONS/STUMBLING BLOCKS?

1. Accurately estimating the proper portion sizes of foods is difficult for students. To overcome this, you can bring in models or actual food portions that can be displayed in class or during a seminar.
2. Students sometimes have difficulty understanding and applying exchange lists when developing sound nutritional diets. By working different examples

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of exchanging various amounts of macronutrients students will gain a better appreciation and competency in using exchange lists.

3. One of the challenges students face when reading nutritional labels is how various % Daily Values are calculated and can be applied. It is important first to establish the basic information that nutritional labels provide through the absolute amounts of nutrients and to emphasize that the % Daily Values are based on a standard 2000 kcalorie diet so that different food items can be compared.

4. Establishing an understanding of the structure of the wheat plant and its different components will serve as a solid foundation for students to understand the meaning of various terms used on food items (e.g., refined, whole grain, enriched, and fortified).

WHAT CAN I DO IN CLASS?

There are a variety of activities that can be done in class. Listed below are some activities that will help introduce the topic of nutrition, and the students to each other.

Classroom Activity 2-1: Compare Your Food Intake to *Canada's Food Guide*

Key concept: Evaluating food intake Class size: Any

Materials needed: Worksheet 2-1: Compare Your Food Intake to *Canada's Food Guide*

Instructions: Instruct students to record everything they ate on the previous day, including beverages and snacks. Assist them with estimating food portions and translating their food selections into food groups. Have them complete their total food group intakes for the entire day and compare this to those recommended in the food guide. Discuss ways that they can improve their dietary habits.

Classroom Activity 2-2: Estimation of Food Portions and Serving Sizes[1]

Key concept: Food portions Class size: Small/seminar

Materials needed: Pre-measured portions of commonly consumed foods and various-sized bowls, cups, plates, etc., such as cooked beef patty, salad, various vegetables, pasta, rice, ready-to-eat cereal, chips, popcorn, margarine, peanut butter, jam.

Instructions: Have students estimate actual food portions in class. Place the foods around the room and have students walk around the room and try to estimate the

[1] Activity provided by Caroline Roberts, Nutrition Education Specialist, California Department of Education, and Instructor, Sierra College, Rocklin.

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portion sizes. At the same time, discuss how to record food portions: millilitres (mL) versus cups, weight versus volume, etc. Then discuss the portion sizes.

Classroom Activity 2-3: Discuss Nutrient Density

Key concept: Nutrient density Class size: Any

Instructions: Reinforce the concept of nutrient density by using the comparison of selected nutrients of equal kcalorie amounts of orange juice and oranges. There is considerably more fibre, calcium, iron, and riboflavin in oranges than in orange juice.

Classroom Activity 2-4: Label Analysis[2]

Key concept: Analyzing food labels Class size: Small/seminar

Instructions: Have students bring in boxes, cans, or any package with a label. Examine and discuss the Nutrition Facts panel and ingredients. This activity helps students become more aware of the terms on labels. For example, on the Milky Way II bar label, the cocoa substitute, added to reduce kcalories, is caprenin (a lipid) that is composed of medium and long chain triglycerides. When students bring in the labels, they usually become more deeply involved in learning. Also, many times they bring in new products the instructor may not have seen yet, which facilitates learning for the instructor as well as the students.

Classroom Activity 2-5: An International Luncheon[3]

Objective: Introduction to international foods Class size: Small/seminar

Instructions: Try an international luncheon to teach students about food habits of Canadians of different ethnic groups. Have students in your class research the food habits of a foreign country or group of new Canadians who are of particular interest to them and present an oral report to the class. Alternatively, foreign students or students of different ethnic groups may present and discuss food native to their home. A supplementary activity that students enjoy is to have them bring a food prepared at home to a potluck luncheon or dinner. This activity introduces native foods and traditional customs of countries around the world. Everyone is encouraged to sample all foods.

Classroom Activity 2-6: Discuss How Advertisements Influence Food Choices

Key concept: Food advertisements Class size: Large/small

Instructions: The campaign to enhance the public image of milk is the "Got Milk" campaign and advertisements featuring celebrities wearing a "milk mustache." Encourage students to name other food campaigns (e.g., Uncle Ben's rice, POM drinks, V8, Cheerios, SmartPop! Popcorn) and discuss their nutrition merits.

[2] Activity provided by Pat Rogers, Allan Hancock College.
[3] Activity provided by Ruth Thornley of West Shore Community College.

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Classroom Activity 2-7: A Nutrition Fair to Promote *Canada's Food Guide*[4]

Objective: Application of knowledge Class size: Large

Instructions: Most effective nutrition educational presentations are those that involve active participation. According to Confucius: "I hear and I forget; I see and I remember; I do and I understand." Have students develop a nutrition fair using *Canada's Food Guide* as a theme. Select a date and location and instruct students to organize activities and materials for different booths to teach about *Canada's Food Guide*. Each booth must have an activity. Some suggestions for activities include an exercise quiz, a healthy eating quiz board, a food group puzzle, an alcohol trivia quiz, and a saturated/*trans* fat reduction program. This activity is beneficial in that it incorporates active participation, self-assessment, and intention to change. This activity can be done individually or in groups.

Classroom Activity 2-8: Newspaper Articles[5]

Objective: Class discussion Class size: Any

Instructions: Have students collect current newspaper articles about nutrition and post them on the classroom bulletin board. This activity encourages discussion of current nutrition topics, which helps bring the lectures and readings into the students' lives. A public health nurse or dietitian is also an excellent resource for nutrition information. Ask him or her to discuss various public health nutrition initiatives or conduct a food demonstration for the class.

Classroom Activity 2-9: Review—Canada Food Guide Jeopardy![6]

Objective: Review and application Class size: Any

Instructions: Create a Jeopardy! game board with four category columns. Each column should have a category name (e.g. Vegetables and Fruits). Under each category name have five game cards, each with a different question that is relevant to the particular category of interest. Have the game cards increase in "point" value. Each game card should contain an answer. The students are required to state their answer in the form of a question. If this process is too involved for your class, you can write the questions on the cards and allow the students to provide the simple answer. This activity can be conducted in large classes in which teams compete or in small groups. This activity can also be adapted for other nutrition, wellness, and activity topics. Try this game with *Canada's Food Guide*. It creates an atmosphere for application and fun!

[4] Adapted from M. Link-Mullison, and N.L. Anderson, Hands-on activities to increased learning about the Dietary Guidelines, *Journal of Nutrition Education*, (1995) p. 27.
[5] Activity provided by Cathy M. Pippin of Northeast Mississippi Junior College.
[6] Activity provided by Don Simpson, University of Arkansas, Fayetteville.

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Classroom Activity 2-10: Do It Yourself—Crafting Consumer Tips[7]

Objective: Applying knowledge Class size: Any

Instructions: Have students imagine that they are creating a marketing campaign to sell *Canada's Food Guide* to consumers. They should develop a list of specific tips to guide and motivate their audience into complying with each of the recommendations. Have them create their own tips customized to the needs, likes, and dislikes of their particular audience. Emphasize that the more focused and individualized their messages are the more likely consumers will act on them.

They can boost the effectiveness of their tips by using these guidelines:

- Keep tips positive, short, and simple.
- Be specific; describe an action (where appropriate). As a supporting tip for the message, "Balance calories from foods and beverages with calories expended," you might write, "Walk the dog; don't just watch the dog walk."
- Don't assume consumers always know the payoff or benefit. Consider continuing the above tip with, "You'll feel good and have more energy, too," which resonates more strongly.
- Make it manageable. For instance, the tip "Try one new fruit or vegetable each month" was well received by consumers as part of "Eat a variety of foods."
- Provide concrete, measurable results.
- Don't overpromise; show realistic outcomes.
- Include examples of foods and activities that reflect the lifestyle, preferences, and culture of your audience.
- Use humour when possible and appropriate.
- Incorporate time-saving tips whenever possible, since consumers cite "lack of time" as one of the biggest barriers to good health.

Critical Thinking Questions[8]

These questions will also be posted to the book's website so that students can complete them online and email their answers to you.

1. Patients will often approach the RD bewildered as to how 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.

2. Discuss the key recommendations of the *Dietary Guidelines for Americans 2005* and differentiate these guidelines from the *Canadian Guidelines for Healthy Eating*. Do you have a preference as to which one you would use with patients?

3. MyPyramid is a popular graphic source for nutrition information. In fact, it is so popular that it has been duplicated as a graphic for exercise information,

[7] Dietary Guidelines Alliance, Chicago, IL.
[8] Contributed by Kathleen Rourke.

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vegetarian diets, etc. Given its popularity, it would appear that MyPyramid is the best pictorial to teach consumers nutritional information. Would you agree or disagree? Why? After you have stated your own personal argument, consider the other perspective and discuss why someone would take this perspective.

4. Food manufacturing and technology continue to grow in sophistication. While one can certainly debate the pros and cons of such growth, there is no doubt that consumers are often confused about the different labels given to the different types of processed foods! (a) In a few sentences, describe each of the following: fortified, refined, enriched, whole grain, and textured vegetable protein. (b) What are your thoughts on how these types of foods fit into the diet of the Canadian consumer?

5. To fully gain command of their dietary intake, consumers should know how to read food labels. Many find reading food labels very confusing. Why do you personally believe that consumers find food labels hard to read? Describe how you would educate your patient on reading a food label if you were an RD. What do you think would be your priority point of education for your patient?

6. As noted in your readings, describing a vegetarian diet is somewhat like describing a typical Canadian diet: there are many varieties. Describe the types of vegetarian diets one might come into contact with and provide a short synopsis on the food plan that would be followed.

7. Discuss the rationale of why consumers select to pursue a vegetarian dietary plan as well as the health benefits of following a vegetarian diet.

8. Discuss the nutrients that an RD should be careful to assess for and discuss with a patient pursuing a vegetarian program to ensure that his or her dietary plan allows for sufficient quantities of that nutrient.

Case Study[9]

Sarah T. is a 20-year-old university student who is ovo-vegetarian. She is 1.70 metres (5′ 7″) tall, weighs 63.5 kilograms (140 pounds), and is physically active most days, riding her bike to and from her apartment off-campus. Sarah's mother is concerned she is not getting the nutrients she needs to support her health and energy needs. Her usual daily diet includes toast or cereal with soy milk for breakfast, a peanut butter sandwich for lunch, and pasta or vegetable pizza for dinner. She snacks frequently on chips or cookies and drinks one or two diet pops each day.

1. Using information from Table H2-1, what key nutrients are likely to be inadequate in Sarah's diet?
2. What additions to her diet would you recommend to increase her intake of these key nutrients?

[9] Contributed by Barbara Quinn.

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3. What food-planning tool would be useful to help Sarah select a diet that provides all the necessary nutrients for her growth and development?
4. Using information from this chapter, estimate Sarah's daily kcalorie needs and recommended daily amounts of foods that she needs from each food group. Include discretionary kcalories.
5. What key concept does Sarah need to remember when selecting reasonable alternatives to milk?
6. Write a sample one-day meal plan for Sarah that provides meals and snacks that meet her nutrient needs.

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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 on the following:

- For more information on *Canada's Food Guide,* visit http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php
- Check out Health Canada's website for advisories, warnings, and recalls at http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/index_e.html
- For more information on nutrition labelling, go to: http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/index-eng.php
- For information on food labelling and advertising, go to the Canadian Food Inspection Agency Guide to Food Labelling and Advertising: http://www.inspection.gc.ca/english/fssa/labeti/guide/toce.shtml
- To learn more about how to help diabetics choose the right food and portions to help them manage their blood glucose and maintain a healthy weight, go to the website for the Canadian Diabetes Association (http://www.diabetes.ca) and enter search term: carbohydrate counting.
- To learn more about how to assess your own diet with an online assessment tool, EATracker, visit: http://www.eatracker.ca/default.aspx
- For more information on phytochemicals, visit the Natural and Non-prescription Health Products Directorate (for nutraceuticals) at: http://www.hc-sc.gc.ca/dhp-mps/prodnatur/applications/licen-prod/lnhpd-bdpsnh-eng.php

ANSWER KEY FOR ALL INSTRUCTOR'S MANUAL ACTIVITIES

Critical Thinking Questions[10]

These questions will also be posted to the book's website so that students can complete them online and email their answers to you.

1. **Answer:** The six diet planning principles are adequacy, balance, kcalorie (energy) control, nutrient density, moderation, and variety. In allowing the student to use their own dietary habits as an example in conjunction with 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.

[10] Contributed by Kathleen Rourke.

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Within the discussion of each principle, the student 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 consuming the dietary plan.

Balance: The diet retains 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.

kCalorie (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, one will either gain or lose weight. Students should distinguish between planning for an individual versus planning for a group of people.

Nutrient Density: This term refers to the significance of the nutrient quality and quantity relative to the amount of energy. The greater the nutrient quality and quantity for the lesser 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 retain the principles of adequacy, balance, and calorie control.

Moderation: This is a key phrase of the American Dietetic Association and one that all individuals can benefit from. Individuals who undergo a "diet" often feel deprived because they will (or a specific diet plan will) exclude certain foods such as cakes, cookies, etc. 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 any special food will lead to "binging" or overeating and a cycle of denial and overeating.

The approach that "all foods fit" allows individuals to recognize that it is not any particular food that is a problem but the amount of the food that becomes a problem. The RD works with patients to help them to 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 again echoes the above terms of balance and adequacy. 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, retains many types of textures and flavors, and sparks curiosity in the individual about new food customs, cultures, and cooking methods.

As the student and the patient 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.

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2. **Answer:** The recommendations of the *Dietary Guidelines for Americans 2005* are similar to those of the Canadian guidelines; however, the American guidelines are much more detailed and specific. The American guidelines do emphasize two areas that are quite different from the Canadian guidelines: Adequate Nutrients within Energy Needs and Food Safety.

   More specifically, the American guidelines include the following categories with specific details outlined in each category:

   Adequate Nutrients within Energy Needs – Consume a variety of nutrient-dense foods, think back to basics, and use moderation. Discourage *trans* and saturated fats, cholesterol, added sugars, salt, and alcohol.

   Weight Management – Maintain body weight. Prevent gradual weight gain by decreasing food and beverage kcalories and increasing physical activity.

   Physical Activity – Maintain regular physical activity to promote health and psychological well-being. Also include cardiovascular conditioning, strength training, and stretching exercises for flexibility.

   Food Groups to Encourage – Fruits, vegetables, and whole grains.

   Fats – Consume less than 10 percent of kcalories from saturated fats and less than 300 mg of cholesterol per day. Keep total fat intake to less the 35 percent of kcalories. Choose monounsaturated and polyunsaturated fats.

   Carbohydrates – Choose fibre-rich fruits, vegetables, and whole grains. Add little sugar. Reduce dental caries by regular visits to a dentist and good oral hygiene.

   Sodium and Potassium – Select and prepare foods with little salt and consume potassium-rich foods.

   Alcoholic Beverages – If you drink, do so in moderation. Some people should not drink.

   Food Safety – Keep foods safe; clean hands; and separate raw, cooked, and ready-to-eat foods. Cook foods to safe internal temperatures. Chill perishable food promptly. Avoid unpasteurized milk and products made from it, and raw or undercooked eggs, meat, poultry, fish, and shellfish.

   The Canadian guidelines, while simple, do cover most of these areas without the specific detail:

   - Enjoy a variety of foods.
   - Emphasize cereals, breads, other grain products, vegetables, and fruits.
   - Choose lower-fat dairy products, leaner meats, and foods prepared with little or no fat.
   - Achieve and maintain a healthy body weight by enjoying regular physical activity and health eating.
   - Limit salt, alcohol, and caffeine.

   Depending on how much detail you as the instructor are looking for, I would suggest that if the student can recall the broad categories and some of the other

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more detailed information in each category for the American guidelines, the answer would be credit worthy. Also, it is always good to have dietetics students address their preferences as to use of a particular product or instrument and to give some evidence-based rationale for their answer. This is the rationale for the final question.

3. **Answer:** Pros: Here students can discuss the pros and cons of MyPyramid from a slightly different approach. Moreover, this should help students understand another's thoughts when they do not generally agree with that person (perhaps a patient). In the discussion, students can simply use the discussion from the text or they can expand much further into the politics and environmental issues as well as other issues that influenced the final outcome of MyPyramid. The following are acceptable:

   MyPyramid is a quick and easy tool that can be used by a wide variety of practitioners to help teach patients about the basic principles of diet and dietary planning. As noted, it has been duplicated to be used in a variety of areas related to diet such as exercise, children's nutrition, ethnic foods, etc. This versatility is particularly helpful if there are language barriers. It is also a colourful and attractive presentation that can be used as a poster for motivational purposes in a gym, kitchen, etc. Because of its simplicity, pocket cards with some detail on the back can be used for grocery shopping as well.

   Simplicity is also important for individuals that may have difficulty in a variety of different concepts. Even the smartest individual can have difficulty understanding some of the basic principles of nutrition; therefore, this simple guide is helpful as a teaching tool for patients. As opposed to the prior Food Pyramid (for individuals who had seen it), this one does not put foods in a hierarchy, which was confusing to many individuals. Therefore, this aspect of MyPyramid is also much easier for the average consumer to understand and/or relate to.

   Cons: The simplicity of MyPyramid has its benefits and its disadvantages! Very little information is conveyed by MyPyramid, leaving much education work to the dietitian. This may be fine, but what happens when consumers decide not to go to the RD and to try to make sense of MyPyramid on their own? Then putting all the key information together with the schematic is much more difficult and leaves much room for poor dietary decisions. A good pictorial must come with specific and consistent information that consumers can understand and rely on as accurate information.

   The textbook points out that some foods are "underemphasized and others overemphasized." For students who followed the politics of the making of MyPyramid, they understand that much debate and political lobbying goes into the process prior to the final decision. While the overall goal is to assist the U.S. population in advancing their health status through nutrition, there are many roads to accomplish that goal. The federal government must be cognizant and open to all of these venues and ferret out the roads that are unacceptable.

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Therefore, while whole grains might deserve more attention, beef growers in America get more attention because of their political role in the American marketplace. It is helpful for the instructor to point out these factors to nutrition students while they are studying these concepts, as during their careers political forces will always be factors that the students will have to work with to advance their careers and their cause.

The role of MyPyramid is to address the dietary needs for health of the majority of the population. Therefore, any nuances in one's diet are not addressed. Again, for an uninformed consumer, this pictorial can be confusing and problematic because it lacks any detailed information. Some general areas here would be food allergies or intolerances, specific micronutrient needs, etc.

4. **Answer:** (a) Fortified: This process adds nutrients to improve the nutrient content of the product. Processing depletes some of the nutrients from the grains used for bread, etc. (water-soluble vitamins are very heat sensitive); therefore, the product is fortified with the nutrients lost in the processing. *Fortified* means that the food products would receive not only those nutrients lost but other nutrients as well.

   Refined: This indicates that the nutrients lost during the processing are not added back to the product. Foods are refined to aid in their "shelf life" or for storage capacity at the grocer or market.

   Enriched: This indicates that nutrients lost during food processing are added back. Individuals frequently use *enriched* and *fortified* interchangeably, but fortified foods do have additional nutrients other than those lost added into the food product.

   Whole grain: These products *must* be rich in fibre and retain all the nutrients found in the original grain.

   Textured vegetable protein: This is a soybean product that generally tastes like a meat product and is used for soy burgers, etc.

   (b) This question is searching for students to understand the concept that "all foods fit." Regardless of anyone's personal belief system, the RD will still come into contact with many types of consumers and their goal should be to move that consumer into a direction of healthy food choices and moderation of processed food products, when possible. Therefore, the instructor should be looking for students to discuss a consumer diet that is full of fruits and vegetables, lean meats, dairy products, and whole grains as well as processed foods for busy days (variations for vegetarians and medical therapeutic diets should also be considered). When processed foods are used in combination with other foods, and students create a diet with variety and healthful choices, they are learning to design a menu that includes nutrient-dense foods such as eggs, which contain a multitude of nutrients.

5. **Answer:** Here, students are about to take a variety of approaches to the same end. The first question concerning why they think consumers find reading food

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labels confusing or difficult is posed to get students thinking about how their patients will approach a task as opposed to them as nutrition students. There are of course many factors, such as many foreign terms, many terms that sound like math (which many individuals instantly "turn off to"), all sorts of numbers that appear to have no relationship to each other, and servings that are difficult to picture. Students can probably present many more factors.

Again, here students' approaches will be variable. However, their approach should be systematic. The student should begin with gaining a full understanding of the patient's ability to comprehend the terms, calculate simple equations, read, and write. It is important for students to know that we continue to retain a significant problem with illiteracy in our country. The more a student understands a patient's basic abilities, the greater the chance in being able to educate the patient. The student would also want to have assessed the patient's caloric needs and any medical nutrition therapy necessary. Then, it is very important that the patient has a very clear understanding of what a serving size is for each food group and type of food. This may be a session or more in itself before the student can begin to help the patient to understand each term and its importance. Much of this can also be done with the serving sizes and food models and then duplicated again for better recall. The student might use MyPyramid or the Exchange System to help the patient understand each food group, its serving size, and the nutrients acquired from that food group. Finally, the student can move into working with the patient on calculating personal Daily Values. For some patients, the student may only want to give some examples or estimates or what the patient should be looking for on the food label, as the patient may not be able to calculate his or her daily needs. This is why it is very important that the student be very familiar with the patient prior to undergoing this educational session.

This final question may be a bit variable, but knowing the serving size for each different food item is extremely important. It is very clear from the literature that most Canadians do not know appropriate portion sizes for food groups, particularly with the advent of the "biggie size" generation. This has been an area that has led to the dramatic rise in obesity.

6. **Answer:** Vegetarian diets fall into the following categories:

   Lacto-ovo-vegetarian: Use plant foods as well as milk and eggs in their diet. This diet is best able to supply protein and nutrient needs among the vegetarian dietary groups.

   Lactovegetarian: This group uses no milk products and therefore must use milk replacement products such as soy milk, rice milk, etc. and requires regular assessment of their calcium nutrition. Soy products are a good supplement for this group.

   Vegans: This group consumes no animal products of any type, including eggs and milk. Vegans must be watched for deficiency of vitamin B_{12} in addition to calcium.

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Macrobiotic diet: There are many versions of this diet, some that can be quite extreme, including nothing but rice and water. As outlined in the textbook, the macrobiotic diet is part of a spiritual journey that does include a better-rounded dietary plan of fish, fruit, nuts, and seeds, and its present-day version does support better health than its prior versions.

7. **Answer:** While there can be many personal or philosophical as well as religious reasons why an individual may select a vegetarian dietary plan, the majority of rationales fall into the following categories:

   - Sustainable agriculture or ecological responsibility
   - Animal rights or philosophical concerns
   - Physical health or lower-fat and higher-fibre diet
   - Financial or cost of meat and processed foods
   - Diet followed by one's spiritual belief system

   Significant literature has demonstrated that a well-balanced vegetarian diet can result in better weight control, lower blood pressure, and reduction of heart disease for individuals following the diet. In addition, a reduction in the incidence of cancer, most specifically in the colon, has been noted in individuals following a vegetarian diet. Dietary benefits have also been noted in diseases such as diabetes, osteoporosis, diverticular disease, gallstones, and rheumatoid arthritis.

8. **Answer:** When working with a vegetarian patient, the RD should be particularly attentive to their sources of food that provide for sufficient intake of the following nutrients: protein, iron, calcium, zinc, vitamin B_{12}, vitamin D, and omega-3 fatty acids. For the most part, well-planned vegetarian diets can provide these nutrients in sufficient supply.

   Iron and calcium are two nutrients that can bind to other nutrients and can be difficult to obtain in the lacto-vegetarian and vegan diets, respectively. However, both nutrients are absorbed by the body in greater quantity when the body reservoir is lower and absorption can be enhanced by other nutrients (in the case of iron, vitamin C, and in the case of calcium, phosphorus balance, lack of binders, and need). This, in addition to careful selection of iron- and calcium-dense foods, can support a healthy diet.

   Zinc is in plentiful supply in most plant sources, including legumes.

   Vitamin D is readily available or activated by sunlight. Given that most vegetarians are very active, vitamin D should not become a problem but should be assessed, particularly in the northern climates and homebound individuals.

   Omega-3 fatty acids found in algae, flaxseed, walnuts, and soybeans should be included in a vegetarian diet. Pay particular attention to dietary intake of these food products if the individual is not taking a dietary supplement.

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Case Study[11]

1. Protein, iron, zinc, calcium, vitamin B_{12}, vitamin D, and omega-3 fatty acids.
2. Add dark green leafy vegetables (iron and calcium) and whole-grain or fortified bread and cereal (protein, iron, zinc); snack on dried fruit and nuts or seeds (iron, calcium); use flaxseed, walnuts, and soybeans or these oils (omega-3).
3. USDA MyPyramid with tips for planning a vegetarian diet.
4. Estimated daily kcalorie needs (Table 2-2): 2350. Recommended daily amounts for 2350 kcal: 500 mL (2 cups) fruit, 750 mL (3 cups) vegetables, 250 mL (8 ounces) grains, 195 g (6 ½ ounces) meat and legumes, 750 mL (3 cups) milk, 35 mL (7 teaspoons) oil. Discretionary kcalories: 362.
5. Choose products that provide similar nutrients to milk, i.e., those that are fortified with calcium, vitamin D, and vitamin B_{12}.
6. Breakfast: whole-grain cereal with soy milk and fresh fruit. Lunch: whole-grain bread with peanut butter and banana, soy milk. Snack: walnuts and raisins. Dinner: scrambled egg with grilled spinach and other vegetables. Snack: soy yogurt.

Worksheet Answer Key

Worksheet 2-1: Compare Your Food Intake to Canada's Food Guide

Answers will vary.

Worksheet 2-2: Chapter 2 Crossword Puzzle

1.	variety	4.	moderation	7.	balance	10.	exchange lists
2.	daily values	5.	enriched	8.	refined		
3.	health claims	6.	adequacy	9.	fortified		

Worksheets 2-3 and 2-4

Answers will vary.

[11] Contributed by Barbara Quinn.

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WORKSHEET ACTIVITIES

Worksheet 2-1: Compare Your Food Intake to *Canada's Food Guide*

List food item and amount.

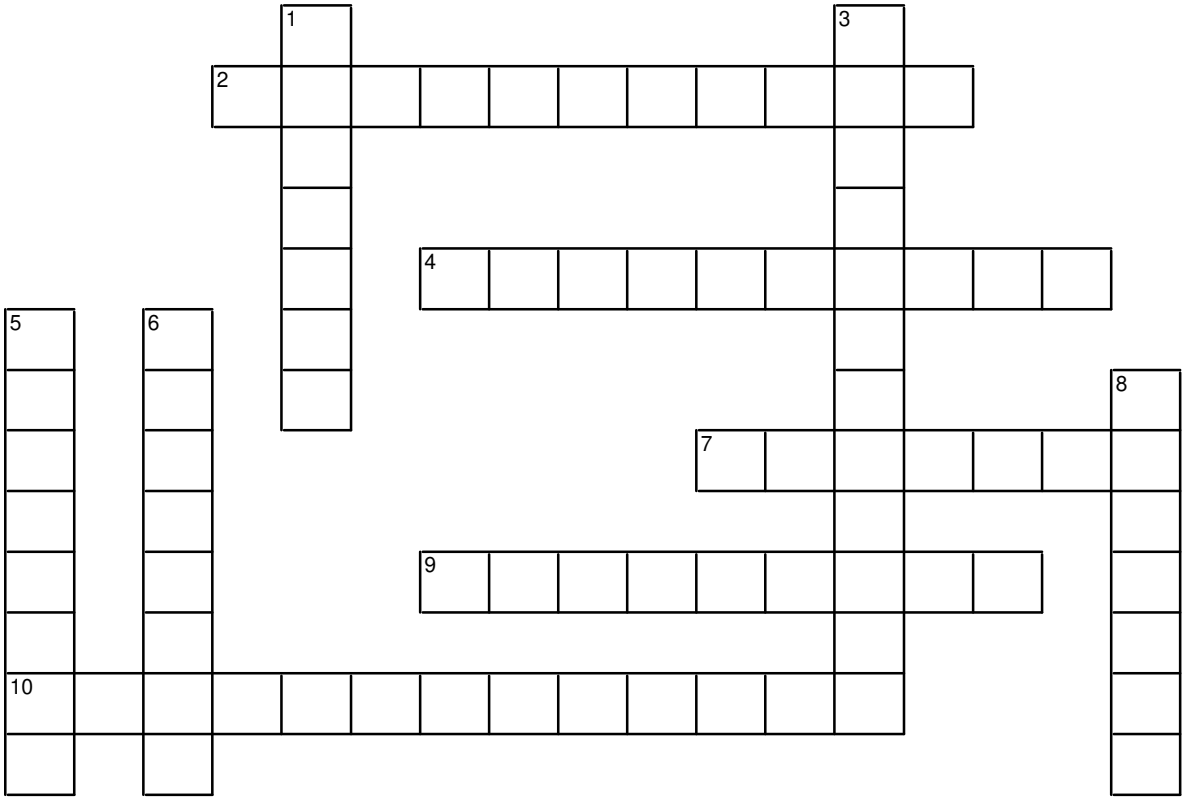
Food Item	Grain Products	Vegetables and Fruits	Milk Products	Meat and Alternatives
Breakfast:				
Snack:				
Lunch:				
Snack:				
Dinner:				
Snack:				
Total:				

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Worksheet 2-2: Chapter 2 Crossword Puzzle

by Mary A. Wyandt, PhD, CHES



Across	Down
2. Reference values developed by the U.S. FDA specifically for use on food labels 4. In relation to dietary intake, providing enough but not too much of a substance 7. Providing foods of a number of types in proportion to each other, such that foods rich in some nutrients do not crowd out the diet foods that are rich in other nutrients 9. The addition of nutrients that were either not originally present or present in insignificant amounts to a food 10. Diet-planning tools that organize foods by their proportions of carbohydrate, fat, and protein; foods on any single list can be used interchangeably	1. Eating a wide selection of foods with and among the major food groups 3. Statements that characterize the relationship between any nutrient or other substance in a food and a disease or health-related condition 5. Addition of nutrients to a food; adding nutrients that were lost during processing so that the food will meet a specified standard 6. Providing all the essential nutrients, fibre, and energy in amounts sufficient to maintain health 8. The process by which the coarse parts of a food are removed

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Worksheet 2-3: Guessing Portion Sizes— How Well Can You Do It?

1. Your instructor will set up food at stations around the classroom. You will be told what the food is but you will not be provided with the size or calories of the food shown.

2. You will be asked to estimate the size of the portions of food that you see at each station. There will be a card at each station that will specify the unit of measurement such as millilitres (mL) or kilograms (kg).

3. Estimate the portion on your own to the best of your abilities. Fill in the Estimated Size column of the table.

4. Take a guess at the number of calories for the food at each station as well. Record this in the Estimated Calories column of the table.

5. Your instructor can supply the actual size and calories for you to copy onto your table.

6. Answer the following questions based on your individual findings. Your answers do not need to be lengthy. Attach your answers to your filled-in table. You may be asked to hand in your answers in written form or your instructor may have you discuss your findings as a group.

Questions to Consider:

1. How did you decide on a portion size?

2. What type of visual aids in your everyday life may help you to estimate the portion size?

3. Did you overestimate or underestimate the portion sizes more often?

4. Which types of food did you overestimate? Which ones did you underestimate?

5. Did you have more difficulty measuring liquid or solid volumes?

6. Give an example of how your ability to estimate food portions affects your present diet.

7. What type of foods do you have difficulty estimating in your own diet? Why?

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Food Item	Estimated Size	Actual Size	Estimated Calories	Actual Calories

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Worksheet 2-4: Homemade or On-the-Go?

Do you have any idea how many calories are in a homemade hamburger versus a hamburger from McDonald's or Wendy's? You can find out! Fast food restaurants have websites that describe the nutritional content of their popular meals or sides. The following table contains the list for common fast food establishments and their websites.

Name	Website URL
Arby's	http://www.arbys.com
Burger King	http://www.burgerking.com
McDonald's	http://www.mcdonalds.com
Pizza Hut	http://www.keepitbalanced.com/
Subway	http://www.subway.com
Taco Bell	http://www.keepitbalanced.com/
Wendy's	http://www.wendys.com
KFC	http://www.keepitbalanced.com/

You can also use APPENDIX H of your textbook to find the nutritional content of most foods that you can prepare at home. The appendix also lists many brands of frozen, prepared foods that can be warmed at home.

Food	Source of Food	Total Calories	Total Fat (g)	Total Carbohydrate (g)

You can fill out the table to compare foods to each other for calorie, fat, or carbohydrate content. You can also compare the protein, vitamin, or mineral content of foods as well.

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Handout 2-1: Dietary Reference Intakes (DRIs)

RDA (Recommended Dietary Allowance): The intake that meets the nutrient need of almost all individuals (97 to 98 percent) in a group.

AI (Adequate Intake): The observed or experimentally derived intake by a defined population group that appears to sustain health—used when an RDA cannot be determined.

UL (Tolerable Upper Intake Level): The highest level of nutrient intake likely to result in no additional risk of adverse health effects for nearly all individuals in the group.

EAR (Estimated Average Requirement): The intake that meets the estimated nutrient need of half the individuals in a group.

AMDR (Acceptable Macronutrient Distribution Ranges): Values for carbohydrate, fat, and protein expressed as percentages of total daily caloric intake.

Note: Dietary Reference Intakes are expressed as intakes per day, but they are meant to represent intakes averaged over time.

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