DESIGNING HEALTHY DIETS

EPHE 155

2024

LEARNING OUTCOMES

- Explain how nutrition supports health.
- Distinguish among six groups of Dietary Reference Intakes for nutrients.
- Discuss the design and primary goals of three basic types of nutrition research.
- Explain how to discern the truth or fallacy of nutrition-related claims.
- List several professionals, government agencies, and organizations that are trustworthy sources of nutrition information.

HOW DOES NUTRITION SUPPORT HEALTH?

Undernutrition

Decline in body functions associated with a decline in nutrient status. With iron deficiency, iron-containing proteins and in turn oxygen supply to body tissues is reduced. This then leads to clinical symptoms, such as fatigue upon exertion.

Desirable Nutrition

Adequate stores of nutrients, such as iron, and adequate blood values, such as for iron-related compounds.

Overnutrition

Toxic damage to the body. In iron toxicity, liver cells in particular are affected.

WHAT IS A HEALTHFUL DIET?

A healthful diet provides the proper combination of energy and nutrients.

It is:

Adequate	Moderate	Balanced	Nutrient-dense	Varied

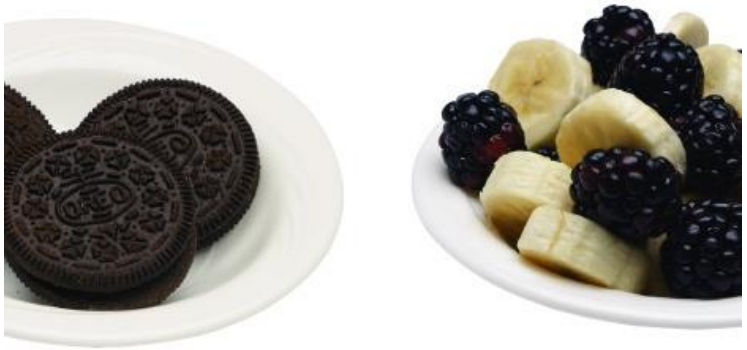
SO HOW WE CAN LOOK AT FOOD

CALORIE VERSUS cALORIE VERSUS KILOCALORIE

- calorie with a small c
  - Energy to raise 1 g of H2O by 1 degree C
  - Small calorie is rarely used outside of physics and chemistry
- Calorie with a large C = Kilocalorie
  - Energy to raise 1 kg of H_2O by 1 degree C
- Calories or kilocalories are used interchangeably in nutrition

NUTRIENT DENSITY

- Nutrient Density
  - Comparison of vitamin and mineral content with number of kcals
- Empty calories



ENERGY DENSITY

- Comparison of kcal content with weight of food
- High-energy-dense foods
- Low-energy-dense foods

Table 2-3 Energy Density of Common Foods (Listed in Relative Order)

Very Low Energy Density (less than 0.6 kcal per gram)	Low Energy Density (0.6 to 1.5 kcal per gram)	Medium Energy Density (1.5 to 4 kcal per gram)	High Energy Density (greater than 4 kcal per gram)
Lettuce	Whole milk	Eggs	Graham crackers
Tomatoes	Oatmeal	Ham	Fat-free sandwich cookies
Strawberries	Cottage cheese	Pumpkin pie	Chocolate
Broccoli	Beans	Whole-wheat bread	Chocolate chip cookies
Salsa	Bananas	Bagels	Tortilla chips
Grapefruit	Broiled fish	White bread	Bacon
Nonfat milk	Fat-free yogurt	Raisins	Potato chips
Carrots	Ready-to-eat breakfast cereals with 1% low-fat milk	Cream cheese	Peanuts
Vegetable soup		Cake with frosting	Peanut butter
		Pretzels	Mayonnaise
	Plain baked potato	Rice cakes	Butter or margarine
	Cooked rice		Vegetable oils
	Spaghetti noodles		

Data adapted from Rolls B, Barnett RA. Volumetrics. New York: HarperCollins, 2000.

HOW CAN YOU EVALUATE NUTRITION CLAIMS?

Watch for conflict of interest and bias

- Who is reporting the information?
  - What are their credentials?
  - Are they receiving payment or other perks from the study/product?
- Who conducted the research and who paid for it?
  - Is there a conflict of interest?

HOW CAN YOU EVALUATE NUTRITION CLAIMS?

- Is the report based on reputable research studies?
  - Was there a control and an experimental group?
  - Was the sample size large enough?
  - Was a placebo effectively administered?
  - Was it a double-blind study?
- Is the report based on testimonials?
- Are the claims too good to be true?

CHECKLIST FOR IDENTIFYING POTENTIAL NUTRITION MISINFORMATION

- ✓ Is something being sold?
- ✓ Does the product offer a new remedy for problems that are not easily solved (e.g. obesity, cellulite, poor immunity, wrinkles, stress?)
- ✓ Are such terms as 'miraculous', 'magical', 'secret', 'detoxify', 'energy restoring', 'immune boosting' or 'studies prove' used?
- ✓ Are testimonials, before-and-after photos or expert endorsements used?
- ✓ Does the info sound too good to be true?
- ✓ Is a money-back guarantee offered?

WHICH SOURCES OF NUTRITION ADVICE ARE TRUSTWORTHY?

Trustworthy experts are educated and credentialed

- Registered dietitian (RD) from Dietitians of Canada
  - Nutritionist with credentials (term nutritionist is *not* a regulated title, except in Alberta, Quebec, Nova Scotia)
- Professional with advanced degree(s) in nutrition (MS, MA, or PhD in nutrition) or Physician with appropriate expertise in nutrition

WHICH SOURCES OF NUTRITION ADVICE ARE TRUSTWORTHY?

Government agencies are usually trustworthy

- Health Canada, Government of Canada:
  - Office of Nutrition Policy and Promotion
  - Natural Health and Non Prescription Health Products Directorate
  - Canadian Food Inspection Agency
  - Public Health Agency of Canada
- American Sources (Example: National Institutes of Health)

WHICH SOURCES OF NUTRITION ADVICE ARE TRUSTWORTHY?

Professional organizations provide reliable nutrition information

- Dietitians of Canada
- Canadian Nutrition Society
- Food Secure Canada
- Canadian Society for Exercise Physiology
- Obesity Canada

GUIDELINES FOR PLANNING HEALTHY DIETS:

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- Standards of recommendations used in Canada and the United States
- Dietary Reference Intakes (DRIs) identify the
  - Amount of a nutrient needed to prevent deficiency disease in healthy people
  - Amount of a nutrient that may reduce the risk of chronic disease
  - Upper level of safety for nutrient intake

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- DRIs consist of four values
  - Estimated Average Requirement (EAR)
  - Recommended Dietary Allowance (RDA)
  - Adequate Intake (AI)
  - Tolerable Upper Intake Level (UL)

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- Estimated Average Requirement (EAR)
- The average daily intake level of a nutrient that will meet the needs of half of the healthy people in a particular life stage and gender group
- Used to determine the Recommended Dietary Allowance (RDA) of a nutrient

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- Recommended Dietary Allowance (RDA)
- The average daily intake level required to meet the needs of 97–98% of healthy people in a particular life stage and gender group
- Aim for this amount

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- Adequate Intake (AI)
- Recommended average daily intake level for a nutrient that is assumed to be adequate
- Based on observations and estimates from experiments
- Used when the RDA is not yet established: vitamin K, fluoride, chromium, certain types of fats

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- Tolerable Upper Intake Level (UL)
- Highest average daily intake level that is not likely to have adverse effects on the health of most people
- Consumption of a nutrient at levels above the UL is not considered safe
  - increases risk of potential toxic effects

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

Figure 1.4 Dietary Reference Intakes (DRIs)

Focus

Dietary Reference Intakes (DRIs) are specific reference values for each nutrient issued by the National Academy of Sciences, Health and Medicine Division. They identify the amounts of each nutrient that one needs to consume to maintain good health.

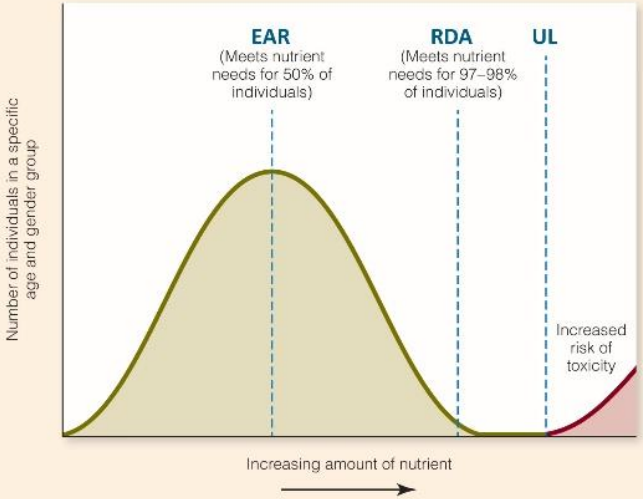
DRIs FOR MOST NUTRIENTS

EAR The Estimated Average Requirement (EAR) is the average daily intake level estimated to meet the needs of half the people in a certain group. Scientists use it to calculate the RDA.

RDA The Recommended Dietary Allowance (RDA) is the average daily intake level estimated to meet the needs of nearly all people in a certain group. Aim for this amount!

AI The Adequate Intake (AI) is the average daily intake level assumed to be adequate. It is used when an EAR cannot be determined. Aim for this amount if there is no RDA!

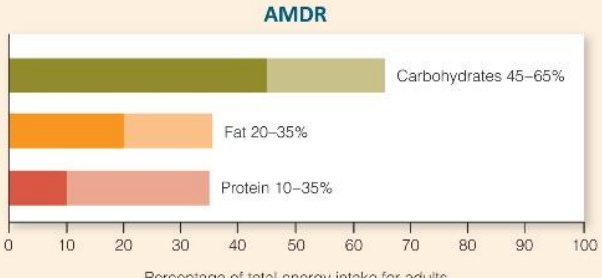
UL The Tolerable Upper Intake Level (UL) is the highest average daily intake level likely to pose no health risks. Do not exceed this amount on a daily basis!



DRIs RELATED TO ENERGY

AMDR The Acceptable Macronutrient Distribution Range (AMDR) is the recommended range of carbohydrate, fat, and protein intake expressed as a percentage of total energy.

EER The Estimated Energy Requirement (EER) is the average daily energy intake predicted to meet the needs of healthy adults.



Pearson

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- Two DRIs apply to energy:
  - Estimated Energy Requirement (EER)
  - Acceptable Macronutrient Distribution Range

HOW MUCH OF EACH NUTRIENT DO MOST PEOPLE NEED?

- EER
  - average dietary energy intake that is predicted to maintain energy balance for an individual
  - varies based on age, gender, weight, height, activity
- AMDR
  - range of energy intake from carbohydrate, fat, and protein associated with reduced risk of chronic disease
  - range expressed as % of total energy or total kcal.

FOOD GUIDES

Translates science into practical terms

Helps people meet nutritional needs

For carbohydrate, protein, fat, vitamins, & minerals

Suggests a pattern of food choices

Incorporates foundations of healthy diet:

Variety, balance, moderation

ACHIEVING ADEQUACY, BALANCE AND VARIETY:

- Canada's Food Guide defines major food groups and dictates equivalent portions of food from food groups
- Standardization ensures a plan-based diet will deliver a certain amount of a given nutrient
- Focus is on obtaining adequate amounts of nutrients of greatest concern, plus essential nutrients, fibre, and phytochemicals

HOW DO THE CANADIAN DIETARY GUIDELINES PROMOTE A HEALTHFUL DIET?

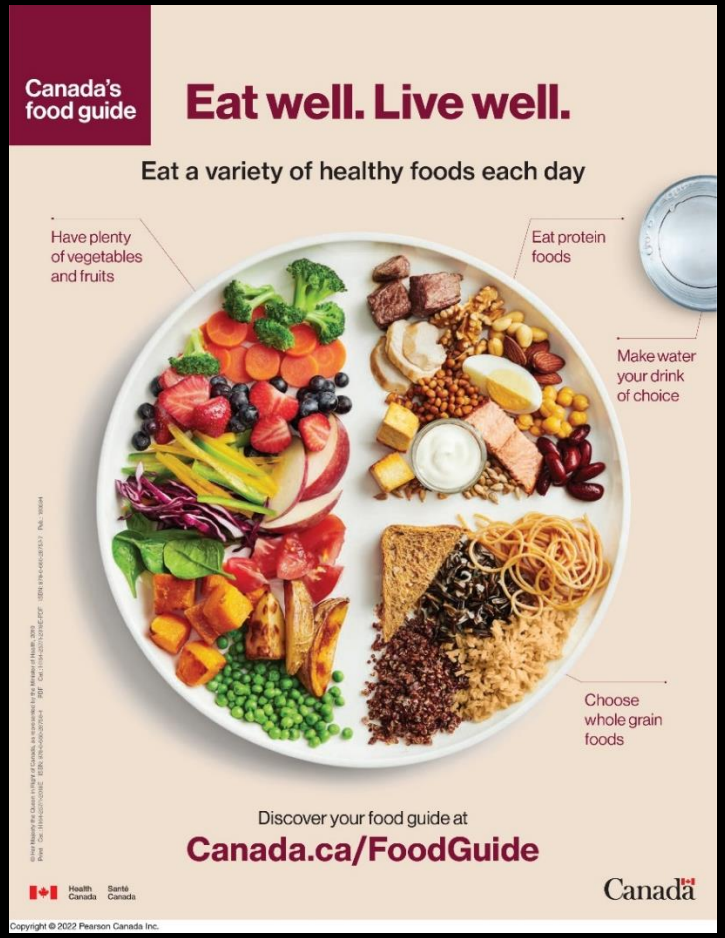


Figure 2.5 Canada's Food Guide Snapshot

HOW CAN YOU USE CANADA'S FOOD GUIDE TO HELP YOU DESIGN A HEALTHFUL DIET?

Figure 2.6 Canada's Food Guide Eat Well, Live Well

Include regular physical activity

- Canadian Dietary Guidelines include a key recommendation that people should meet Canadian 24-Hour Movement and Activity Guidelines
  - At least 150 minutes per week of moderate intensity physical activity
  - And muscle strengthening exercises on 2 or more days
  - Aim for 7-9 hours of sleep

OTHER FOOD GUIDES

VEGETARIAN FOOD GUIDE PYRAMID

(a) Vegetarian diet pyramid

There are eight Food- Based Dietary Guidelines for Antigua & Barbuda.

These Dietary Guidelines aim to promote healthy eating habits and an active lifestyle in order to prevent chronic nutrition-related diseases among the members of the population.

Know and practise the Guidelines

1. Eat different types of foods every day.

- When planning meals think of different colors, tastes and nutritional value.

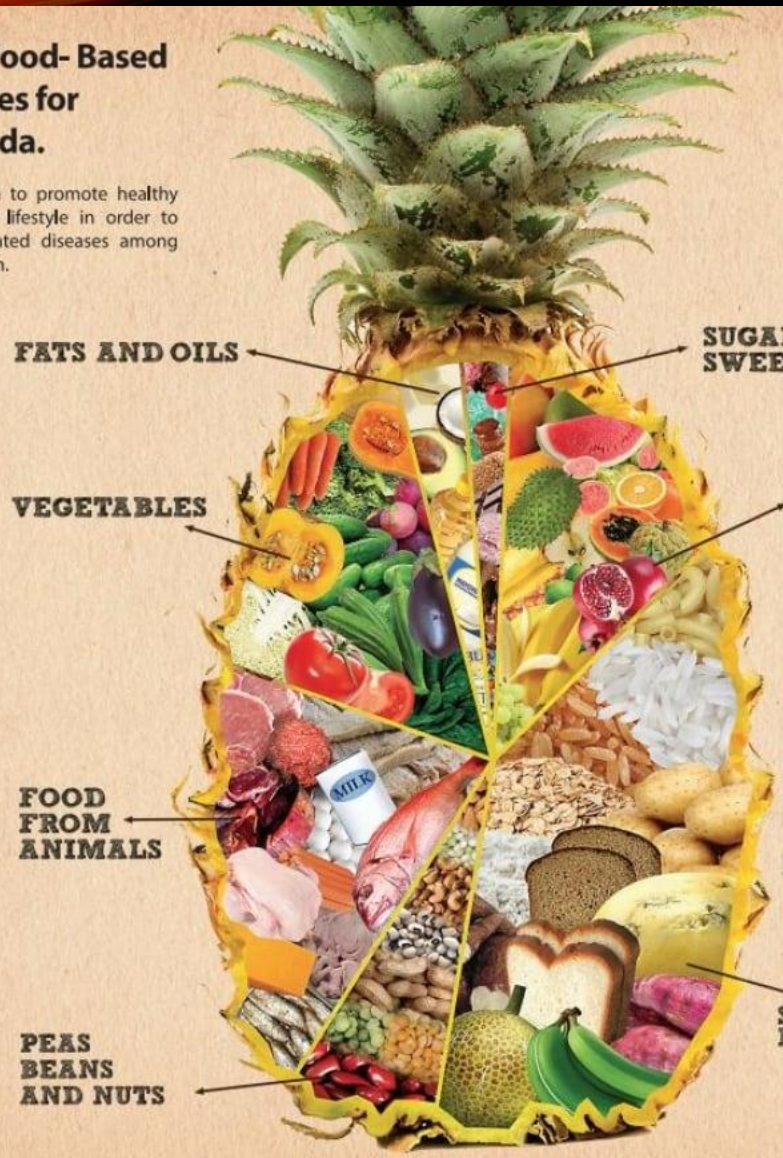
2. Include a variety of vegetables in your daily meals.

- Use vegetables in meat/poultry/fish dishes and to make interesting drinks.

3. Choose to eat a variety of fruits daily.

- Eat local fruits when in season because they are cheaper and of better quality.

4. Limit the use of salt, salty foods and salty seasonings.



- Use more fresh herbs and seasonings and cook with less salt.

5. Reduce the intake of food and drinks that are high in sugars and fats

- Read food labels to identify the amount of sugars and fats

6. Make Physical Activity a part of your daily routine.

- Do some moderate physical activity for at least 30 minutes each day (swim, brisk walk, cycle)

7. Give baby only breast milk for first 6 months of the baby's life.

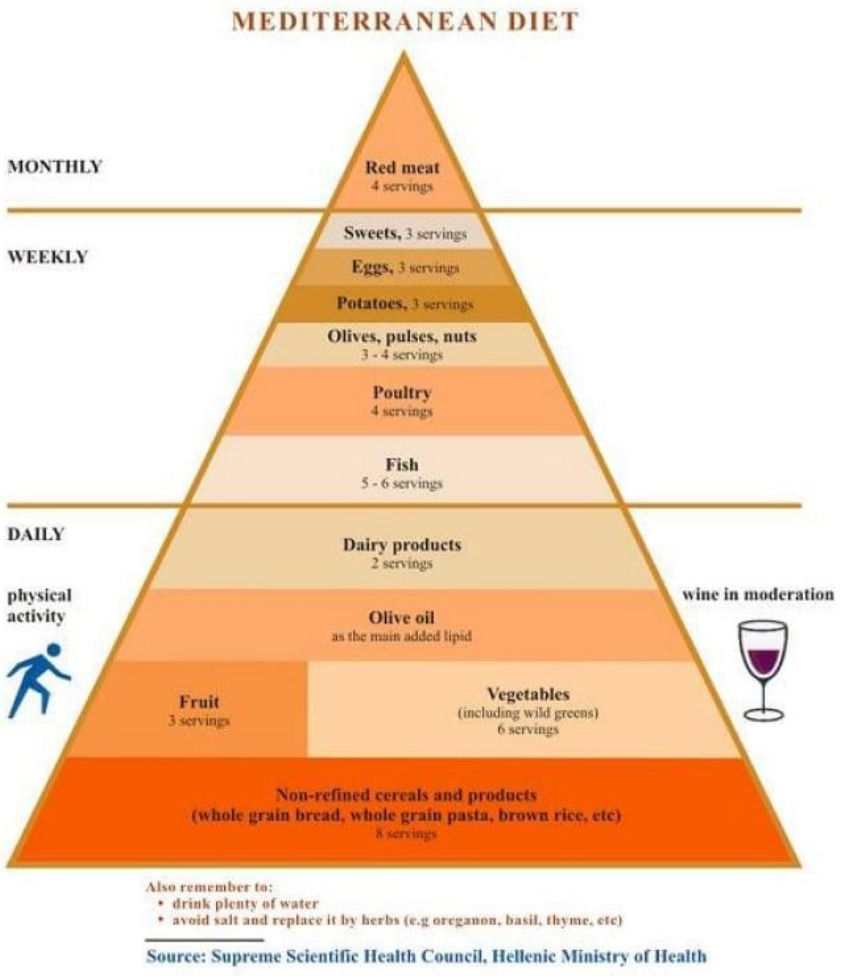
- Baby needs only breast milk and no water.

8. Use safe food handling and food storage practices.

- Wash hands before and during food preparation. Store foods covered and at the correct temperature.

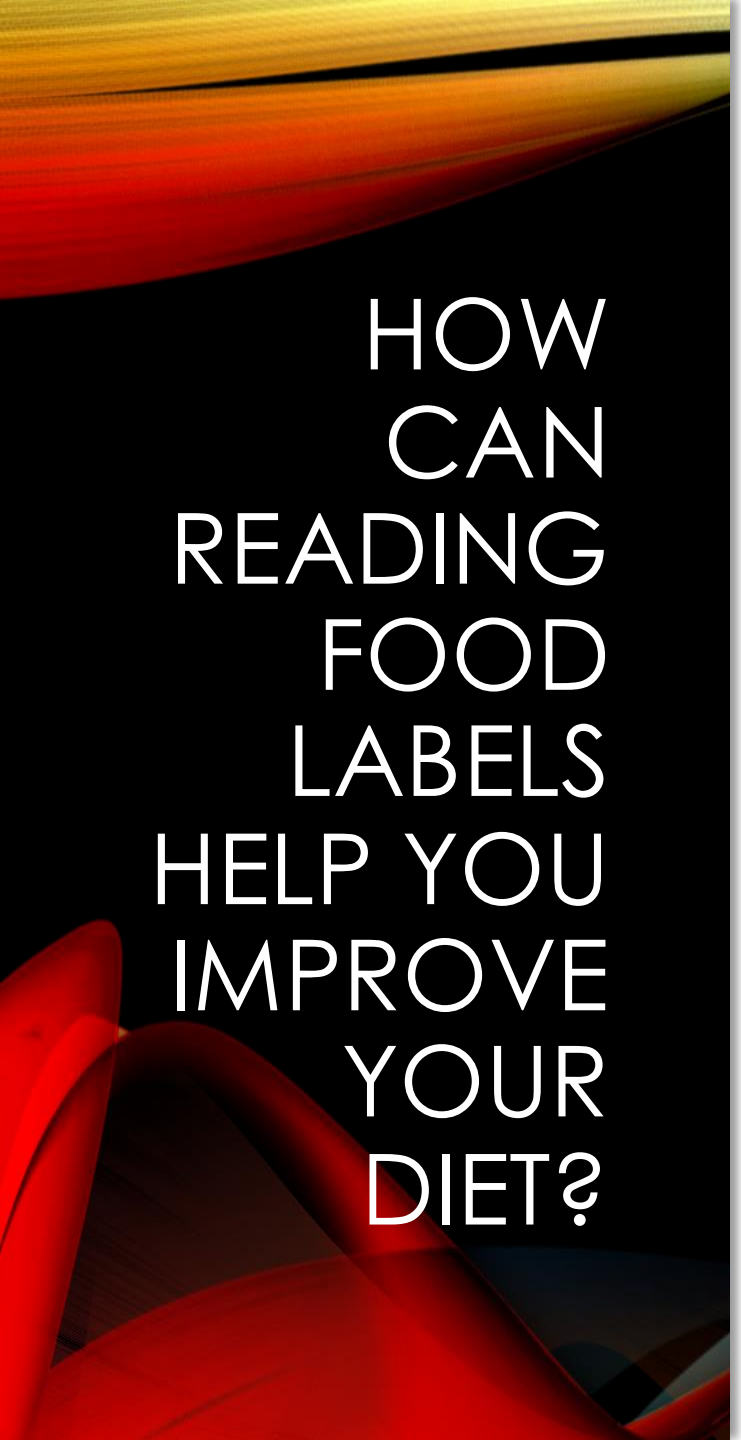
The Traditional Healthy Asian Diet Pyramid


Ocasionalmente
Varias veces
Cada semana
Varias veces
A diario
Bebe + agua
Estilo de vida Saludable


MEDITERRANEAN DIET
MONTHLY
Red meat
4 servings
WEEKLY
Sweets, 3 servings
Eggs, 3 servings
Potatoes, 3 servings
Olives, pulses, nuts
3 - 4 servings
Poultry
4 servings
Fish
5 - 6 servings
DAILY
Dairy products
2 servings
physical activity
Olive oil
as the main added lipid
wine in moderation
Fruit
3 servings
Vegetables
(including wild greens)
6 servings
Non-refined cereals and products
(whole grain bread, whole grain pasta, brown rice, etc)
8 servings
Also remember to:
• drink plenty of water
• avoid salt and replace it by herbs (e.g oreganon, basil, thyme, etc)
Source: Supreme Scientific Health Council, Hellenic Ministry of Health

FOOD LABELS

Your new best friend!!!



HOW CAN READING FOOD LABELS HELP YOU IMPROVE YOUR DIET?

Health Canada and Canadian Food Inspection Agency (CFIA) provide direction on food labelling in Canada

As of December 2021, all prepackaged food being manufactured or imported must comply with the labelling requirements

Food label is a critical tool for making healthy, safe food choices

THE KEY ELEMENTS THAT MUST BE INCLUDED ON FOOD LABELS

1. Nutrition Facts Table (NFT)
2. Ingredient list
3. Allergen declaration and gluten sources
4. Date marking
5. Country of origin claims
6. Composition claims
7. Nutrition claims
8. Methods of production claims
9. Common name

NUTRIENT RECOMMENDATIONS

- Daily Values (DV) are another set of nutrient standards; they are practical for people seeking to make wise choices
  - Printed on food labels
  - Allow comparison among foods with regards to nutrient content

WHY ARE DAILY VALUES (DV) USED ON LABELS?

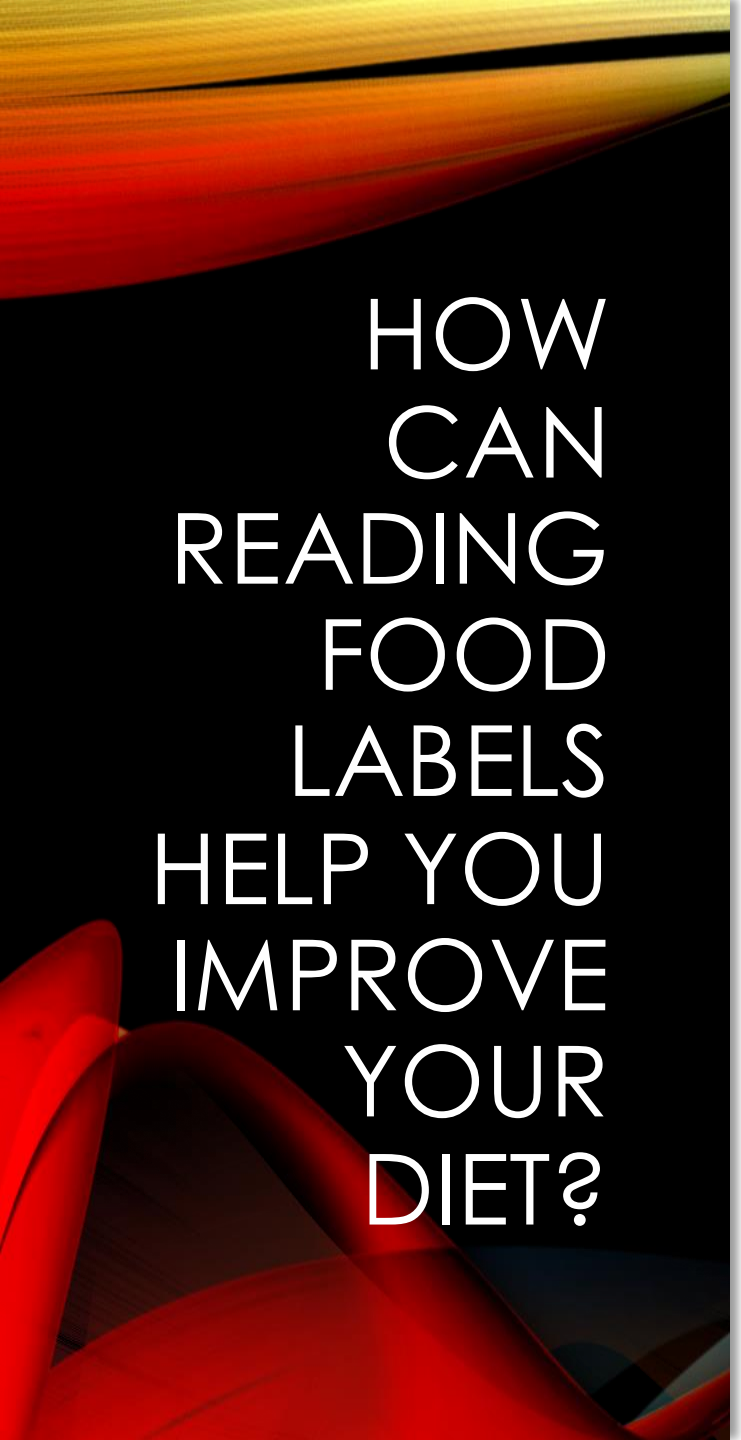
- DRI values vary from group to group
  - On a food label, however, one set of values must apply to everyone
  - The DV reflects the needs of an "average" person
  - This is based on a 2,000-Calorie per day intake

CONSUMER CORNER: CHECKING OUT FOOD LABELS

The %DVs are of two types:

An intake goal to strive for: fibre, protein, vitamins, and most minerals	Healthy daily maximums: cholesterol, total fat, the sum of saturated fat and trans fat, and sodium

The label must state the contents of these nutrients expressed as %DV: vitamin A, vitamin C, calcium, iron



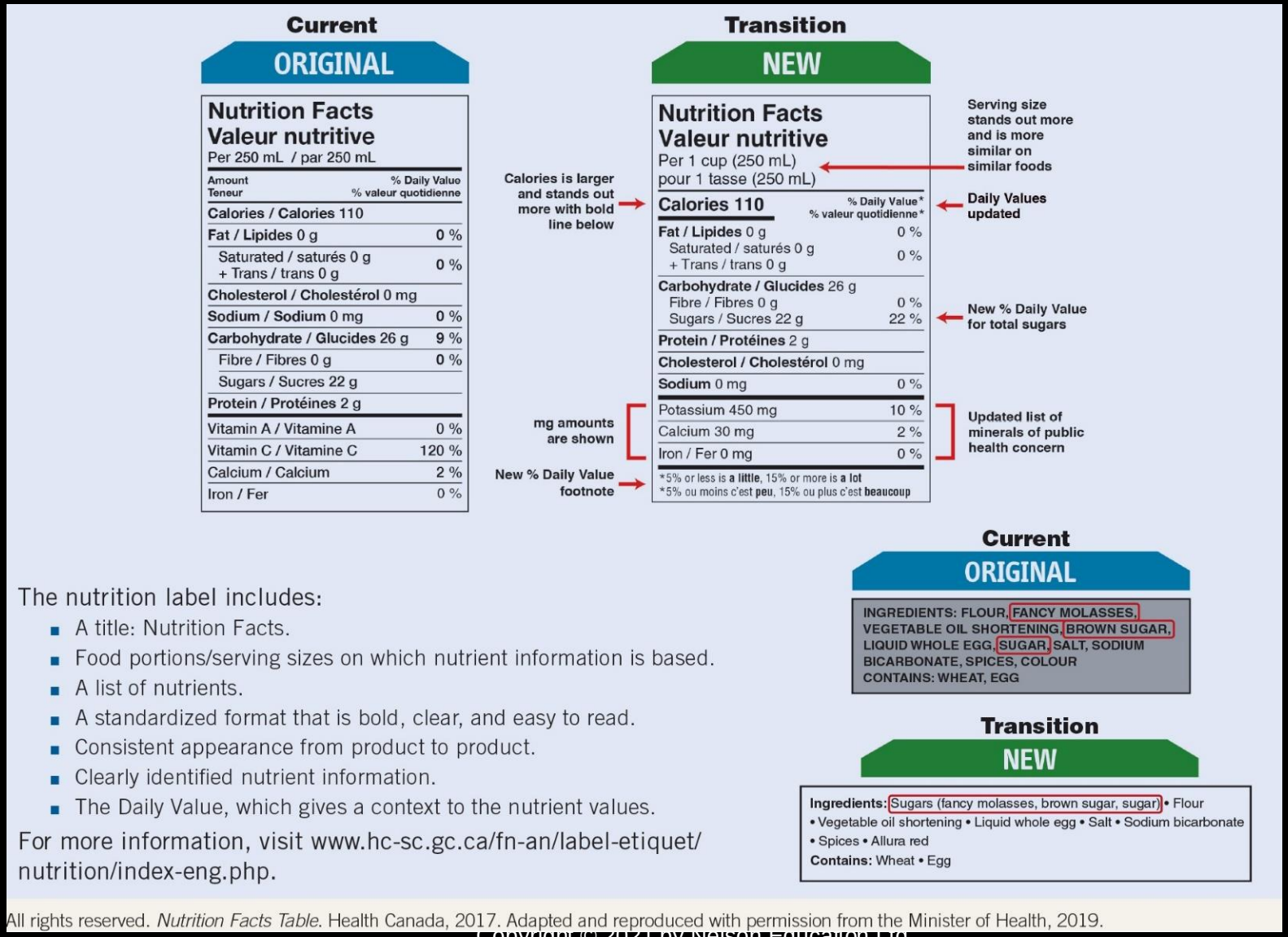
HOW CAN READING FOOD LABELS HELP YOU IMPROVE YOUR DIET?

Use the list of ingredients to evaluate foods for a healthy diet

Recent updates:

- List sugars together
- List food colours by common names
- Readability (text colour, size, bullets or commas etc.)

FIGURE 2-11: WHAT'S ON A FOOD LABEL?



The nutrition label includes:

- A title: Nutrition Facts.
- Food portions/serving sizes on which nutrient information is based.
- A list of nutrients.
- A standardized format that is bold, clear, and easy to read.
- Consistent appearance from product to product.
- Clearly identified nutrient information.
- The Daily Value, which gives a context to the nutrient values.

For more information, visit www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/index-eng.php.

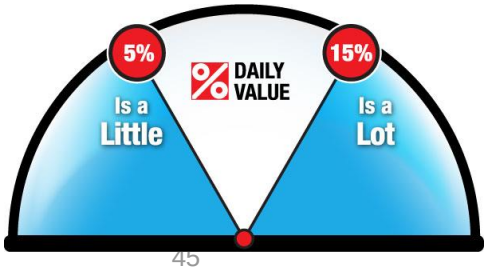
HOW TO USE THE % DAILY VALUE

Step 2: READ the % DV

The % DV helps you see if a specific amount of food has a little or a lot of a nutrient.

5% DV or less is a **LITTLE**

15% DV or more is a **LOT**



Nutrition Facts

Per 3/4 cup (175 g)

Amount	% Daily Value
Calories 160	
Fat 2.5 g	**4** %
Saturated 1.5 g + Trans 0 g	**8** %
Cholesterol 10 mg	
Sodium 75 mg	**3** %
Carbohydrate 25 g	**8** %
Fibre 0 g	**0** %
Sugars 24 g	
Protein 8 g	

Vitamin A	2 %	Vitamin C	0 %
Calcium	20 %	Iron	0 %

FOR EXAMPLE, IF YOU WOULD LIKE TO EAT MORE FIBRE…

Nutrition Facts

Per 1/2 cup (28 g)

Amount	% Daily Value
Calories 120	
Fat 1 g	2 %
Saturated 0.2 g + Trans 0 g	1 %
Cholesterol 0 mg	
Sodium 170 mg	7 %
Carbohydrate 23 g	8 %
Fibre 7 g	28 %
Sugars 5 g	
Protein 3 g	

Vitamin A	0 %	Vitamin C	0 %
Calcium	2 %	Iron	30 %

B

Nutrition Facts

Per 3/4 cup (30 g)

Amount	% Daily Value
Calories 120	
Fat 0 g	0 %
Saturated 0 g + Trans 0 g	0 %
Cholesterol 0 mg	
Sodium 150 mg	6 %
Carbohydrate 27 g	9 %
Fibre 1 g	4 %
Sugars 10 g	
Protein 2 g	

Vitamin A	0 %	Vitamin C	0 %
Calcium	2 %	Iron	30 %

… cereal **A** would be a better choice for you as part of a healthy lifestyle.

Remember: **5% DV** or less is a **little** and **15% DV** or more is a **lot**.

The Ingredient List

- Lists all of the ingredients for a food by <u>weight, from the most to the least.</u>

Example:

INGREDIENTS: WHOLE GRAIN ROLLED OATS, SUGAR, HIGH MONOUNSATURATED CANOLA OIL, ALMOND PIECES, RAISINS, GOLDEN SYRUP, SALT, CRISP RICE (RICE FLOUR, SOY PROTEIN, SUGAR, MALT, SALT), SOY LECITHIN, NATURAL FLAVOUR

- Is a source of information for certain nutrients.
- Is a source of information for people with food allergies.

NUTRITION CLAIMS

- Are regulated statements made when a food meets certain criteria.
- They are optional, and may be found only on some food products.

NUTRITION CLAIMS WHEN YOU WANT TO **DECREASE** THE AMOUNT OF CERTAIN NUTRIENTS, LOOK FOR:

Free	• none or hardly any of this nutrient • an example is “sodium free”
Low	• a small amount • an example is “low fat”
Reduced	• at least 25% less of the nutrient compared with a similar product • an example is “reduced in Calories”
Light	• can be used on foods that are reduced in fat or reduced in Calories

NUTRITION CLAIMS

WHEN YOU WANT TO **INCREASE** THE AMOUNT OF CERTAIN NUTRIENTS, LOOK FOR:

Source	• contains a significant amount of the nutrient • an example is “source of fibre”
High or good source	• contains a high amount of the nutrient • an example is “high in vitamin C”
Very high or excellent source	• contains a very high amount of the nutrient • an example is “excellent source of calcium”

CONSUMER CORNER: CHECKING OUT FOOD LABELS

- What food labels *MAY* contain:

  Disease Risk Reduction and Nutrient Function Claims

  - In 2002, Health Canada allowed disease risk reduction claims to be placed on food packaging

HEALTH CLAIMS

- Disease risk reduction claims

- Example: "**A healthy diet** low in saturated and trans fats may reduce the risk of heart disease. (Naming the food) is free of saturated and trans fats."

GENERAL HEALTH CLAIMS

- General health claims are generally developed:

by third party organizations	by corporations
	 

- Consumers should not **solely** rely on general health claims to make informed food choices.

NUTRITION LABELLING SUMMARY

Use Nutrition Facts, the ingredient list, nutrition claims and health claims to make informed food choices.

Nutrition Facts are based on a specific amount of food - compare this to the amount you eat.

Use the % Daily Value to see if a food has a little or a lot of a nutrient. Remember:

5% DV or less is a little, 15 % DV or more is a lot.

SUMMARY

- Food contributes, or detracts, from wellness and health
- There is both nutrition information and nutrition misinformation
  - Essential to learn to differentiate and make informed choices
- There are many resources available to help guide nutrition choices
  - Standards of recommendation
  - Food Guides
  - Food labels