Health Awareness and Nutrition:

Basic Terms and Definitions

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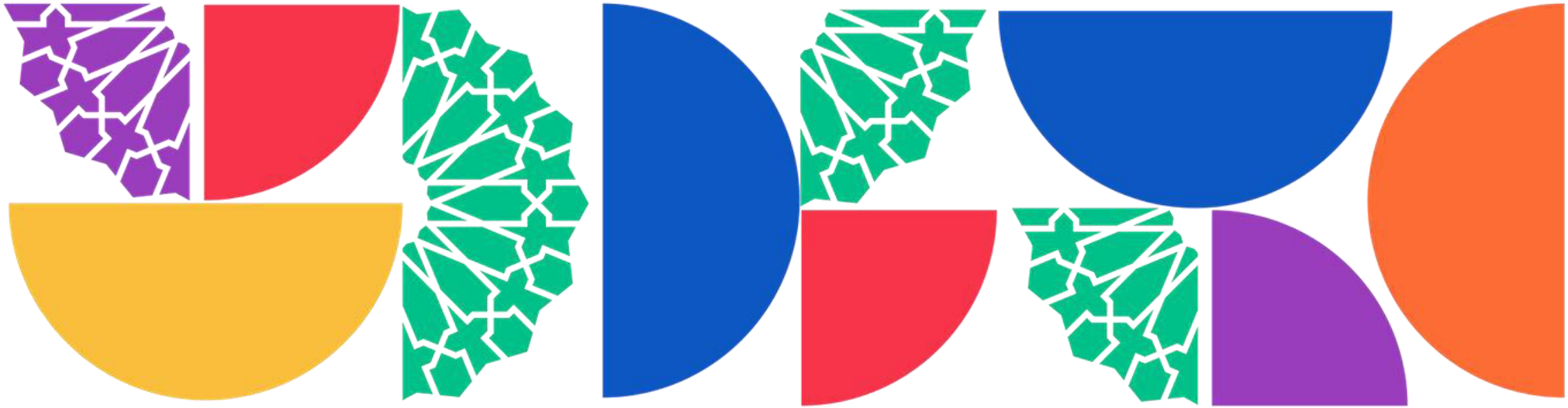
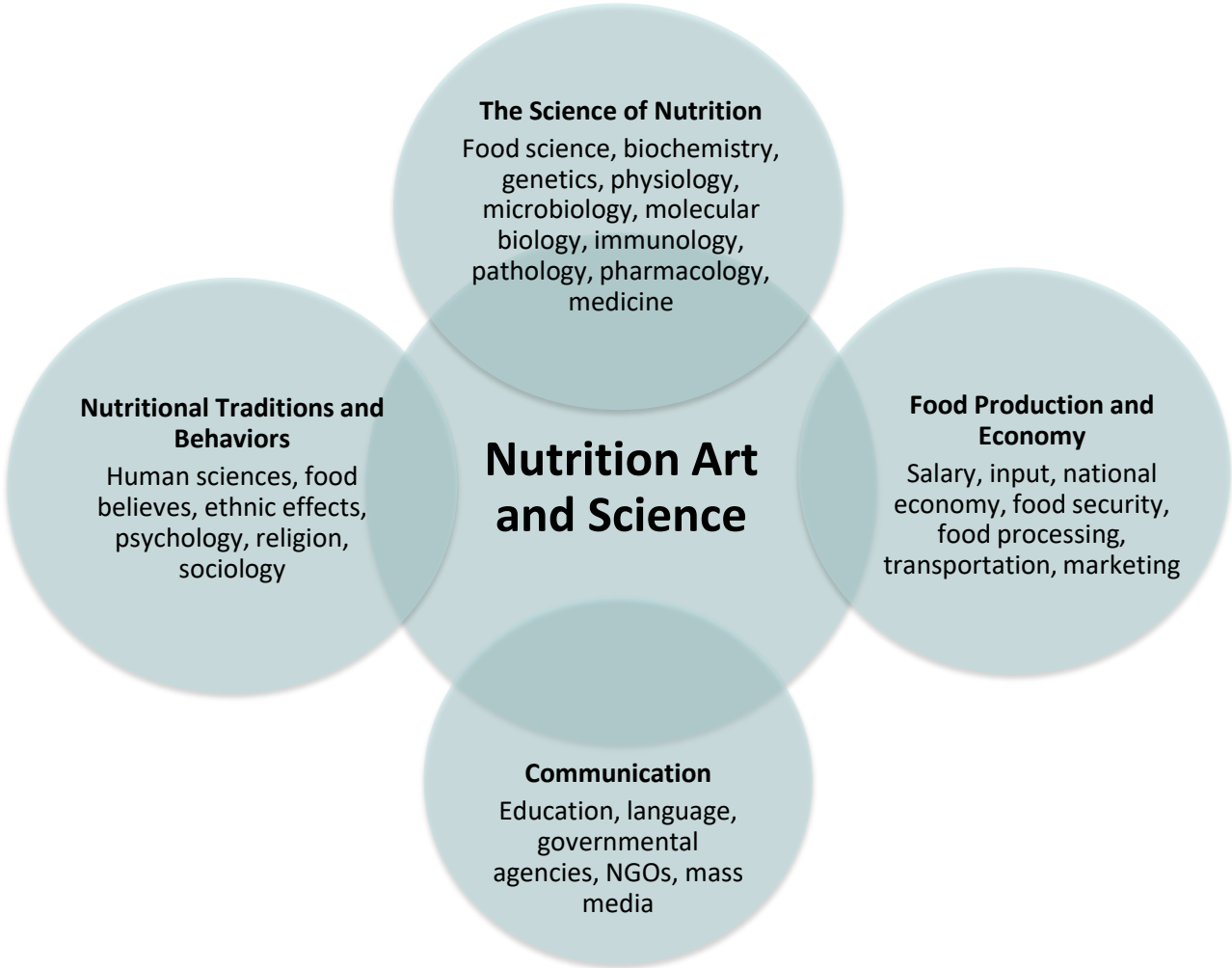


Nutrition Science and Art

Nutrition is an interdisciplinary science that intercourses with other applied and human sciences



Basic Terms and Definitions

- **Nutrition:** the science of foods and the nutrients and other substances they contain and its relationship with health.
  It is concerned primarily with **body growth, development and maintenance**

- **Food:** products derived from plants or animals that can be taken into the body to **yield energy** and nutrients for the **maintenance** of life and the **growth** and **repair of tissues**

- **Diet:** the food and beverages that a person regularly eats and drinks. Diet could be Normal (regular) or therapeutic (modified)

Basic Terms and Definitions

- **Nutrients:** chemical substances obtained from food and used in the body to provide energy, structural materials, and regulating agents to support growth, maintenance, and repair of body tissues.

Basic Terms and Definitions

Functional foods:

- food that contain physiologically active compounds that provide health benefits beyond their nutrient contributions, sometime also called *designer foods, medical foods, or Nutraceuticals*

Examples include: fruits and vegetables, whole grains, probiotics, fiber , and fortified foods and beverages and some dietary supplements

Basic Terms and Definitions

Functional foods:

- **Phytochemicals:** non-nutrient compounds found in plant-derived foods that have biological activity in the body which and may have health effects.

Examples include: flavonoids, curcumin, and carotenoids.

Basic Terms and Definitions

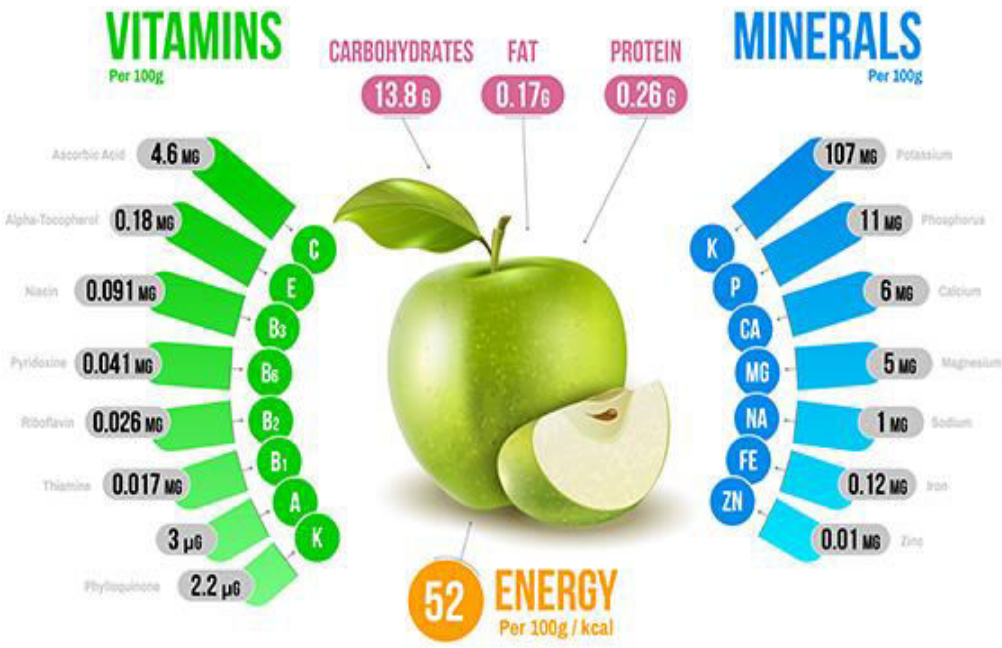
Criteria for classifying nutrients:

- Required by the body on a daily basis to perform a specific physiological functions
- Required in a specific quantity
- The absence of the nutrient will lead to developing deficiency symptoms and signs
- Those deficiency symptoms could not be covered unless the body is provided with that nutrients, not any other nutrients

Basic Terms and Definitions

- **Essential Nutrients:** nutrients a person must obtain from food because the body cannot make them for itself in sufficient quantity to meet physiological needs, also called **indispensible nutrients**. About 40 nutrients are currently known to be essential for human beings

- **Non-essential Nutrients:** nutrients that the body can make them for itself in sufficient quantity to meet physiological needs, also called **dispensable nutrients**



Nutrients in Foods and in the Body

Composition of foods includes the six nutrient classes of:

- Water

- Carbohydrates

- Lipids

- Proteins

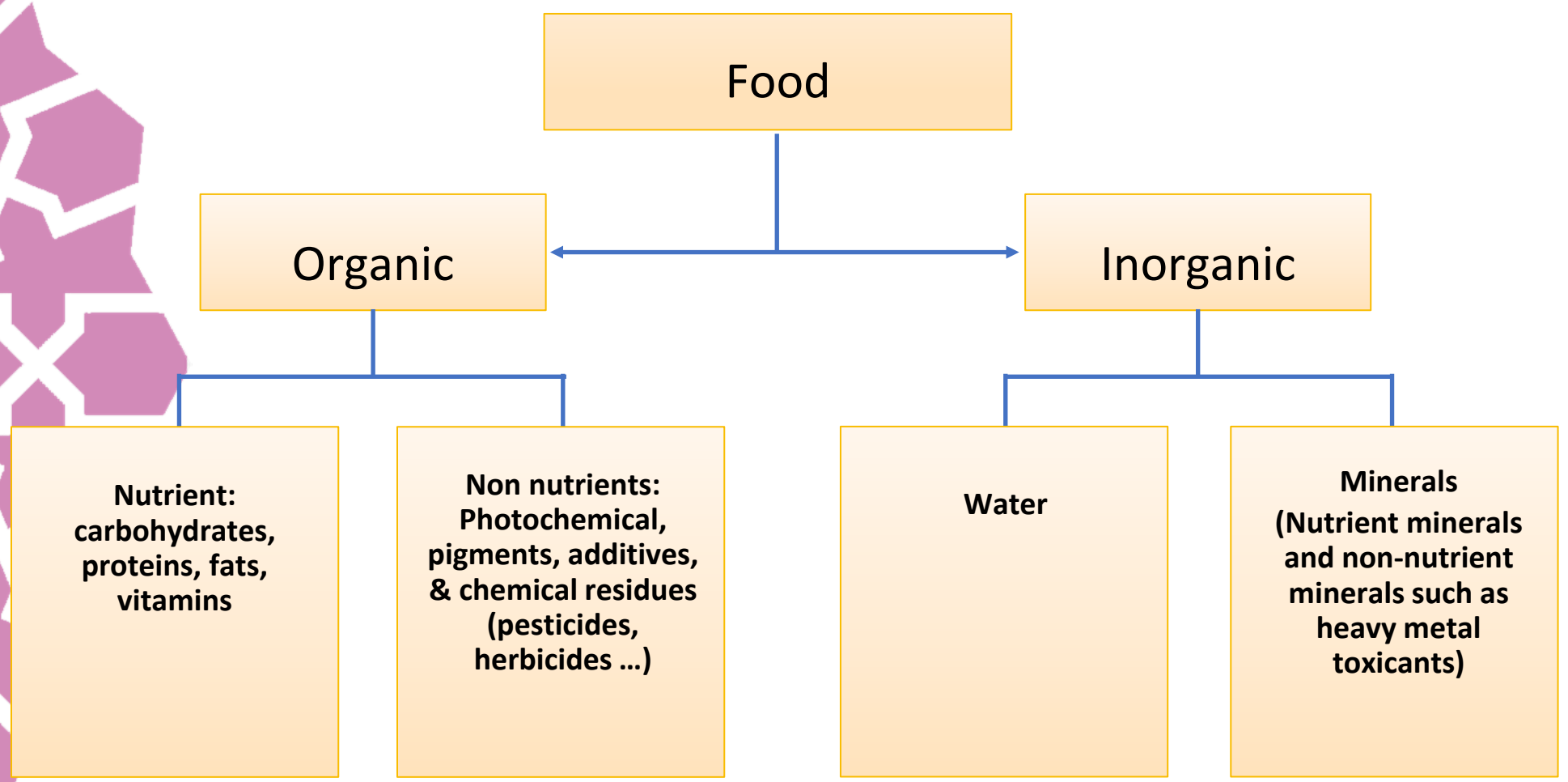
- Vitamins

- Minerals

Basic Terms and Definitions

	Carbon	Hydrogen	Oxygen	Nitrogen	Minerals
Inorganic nutrients					
Minerals					✔
Water		✔	✔		
Organic Nutrients					
Carbohydrate	✔	✔	✔		
Lipids (Fats)	✔	✔	✔		
Proteins	✔	✔	✔	✔	
Vitamins	✔	✔	✔		

Composition of Food



Nutrients

Divided into two categories:

Energy Producing Nutrients: (Macronutrients)

- Carbohydrates

- Proteins

- Lipids

Essential Non-caloric Nutrients (Micronutrients)

- Vitamins

- Minerals

Macronutrients and Micronutrients

Macronutrients:

- Carbohydrate, fat, Water, and protein are macronutrients because the body needs them in large quantities

Energy-yielding nutrients:

the nutrients that breakdown to yield energy the body can use: Carbohydrate, protein and fat

Macronutrients and Micronutrients

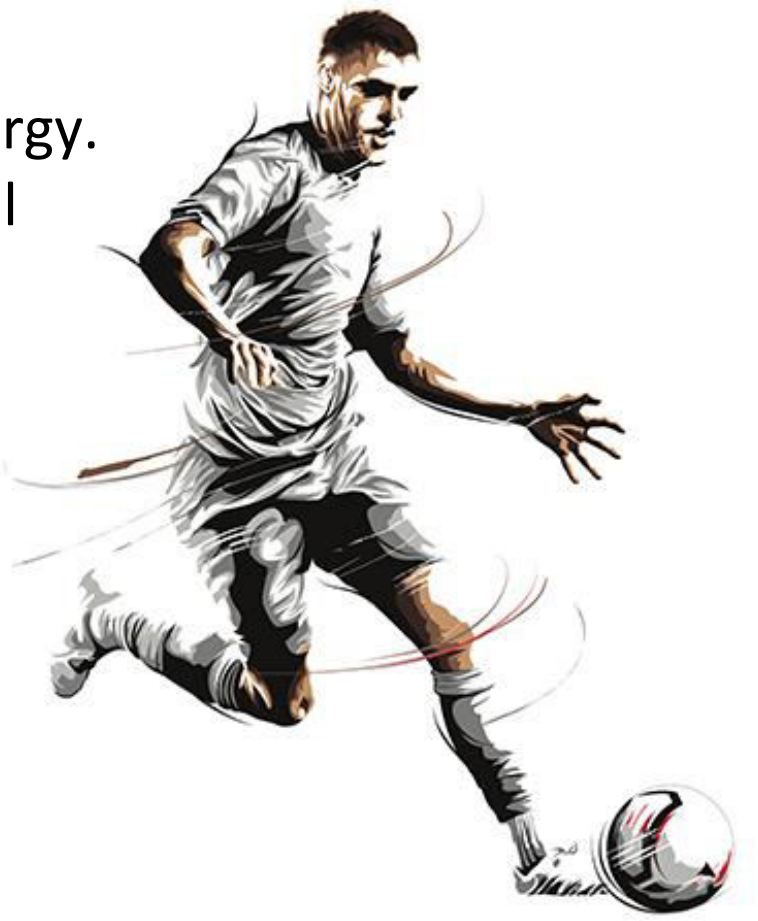
Micronutrients:

- Vitamins and minerals **do not provide energy** and the body needs them in smaller quantities.
- They have important roles in the energy producing processes and other body building processes

Basic Terms and Definitions

- **Energy:** the capacity to do work

  The energy in food is chemical energy. The body can convert this chemical energy to mechanical, electrical, or heat energy



Basic Terms and Definitions

- **Calories:** units by which energy is measured

  Food energy is measured in **Kilocalories** (1000 calories equal 1 kilocalorie), abbreviated kcalories or kcal

  One Kcalorie is the amount of heat necessary to raise the temperature of 1 Kg of water 1 C^{o}

  The scientific use of the term *kcalorie* is the same as the popular use of the term Calorie

Energy content

- **Kilocalorie (kcal)**
  - Carbohydrate = 4 kcal/g
  - Protein = 4 kcal/g
  - Fat = 9 kcal/g
  - Alcohol = 7 kcal/g

- **Kilojoule (kJ): the metric value**
  - Carbohydrate = 17 kJ
  - Protein = 17kJ
  - Fat = 38 kJ
  - Alcohol: = 30 kJ

Energy From Food

- It is the number of calories (energy) in a specific amount of food
- **Energy density:** a measure of the energy a food provides relative to the amount of food (kcalories per serving)

  High energy density means that there are a lot of calories in small amount of food

  Low energy density means that there are fewer calories in small amount of food

Nutrient Density

- The relationship between Calories and Nutrients is called **nutrient density**

  Refers to the amount of nutrients provided relative to the number of Calories

Foods with **high nutrient density** are nutritious

Foods with **low nutrient density** are not healthy

Of these 2 breakfasts which one has higher energy density?

Lower energy density

This 450-gram breakfast delivers 500 kcal, for an energy density of 1.1 (500 kcal/450 g = 1.1 kcal/g)

Higher energy density

This 144-gram breakfast delivers 500 kcal, for an energy density of 3.5 (500 kcal/144 g = 3.5 kcal/g)

Energy Requirements

- Each individual requires a **specific** amount of food, depending on their **energy requirements**
- **Estimated Energy Requirement (EER):** It takes into account your age, sex, weight, height, and physical activity level (PA)
- The energy requirement is defined as the amount needed to maintain health, growth, and an "appropriate" level of physical activity

Energy Requirements

Total Energy Expenditure =

Basal Metabolism

+

Digestion: Thermic Effect of Food

+

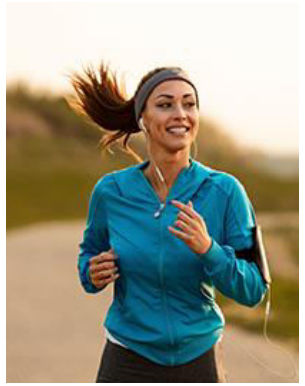
Physical Activity

Pathways for Energy in the body

Energy for activity

Stored energy

Energy Balance



Healthy Eating
Calories In

=

Being Active
Calories Out

Energy Imbalance

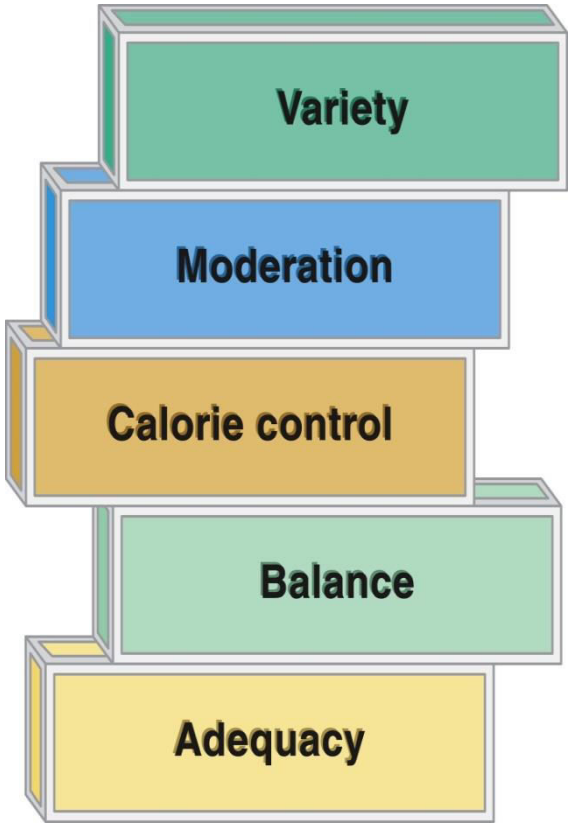
Too Much
Food

=

Too Much
Stored Fat

Characteristics of a Healthy Diet

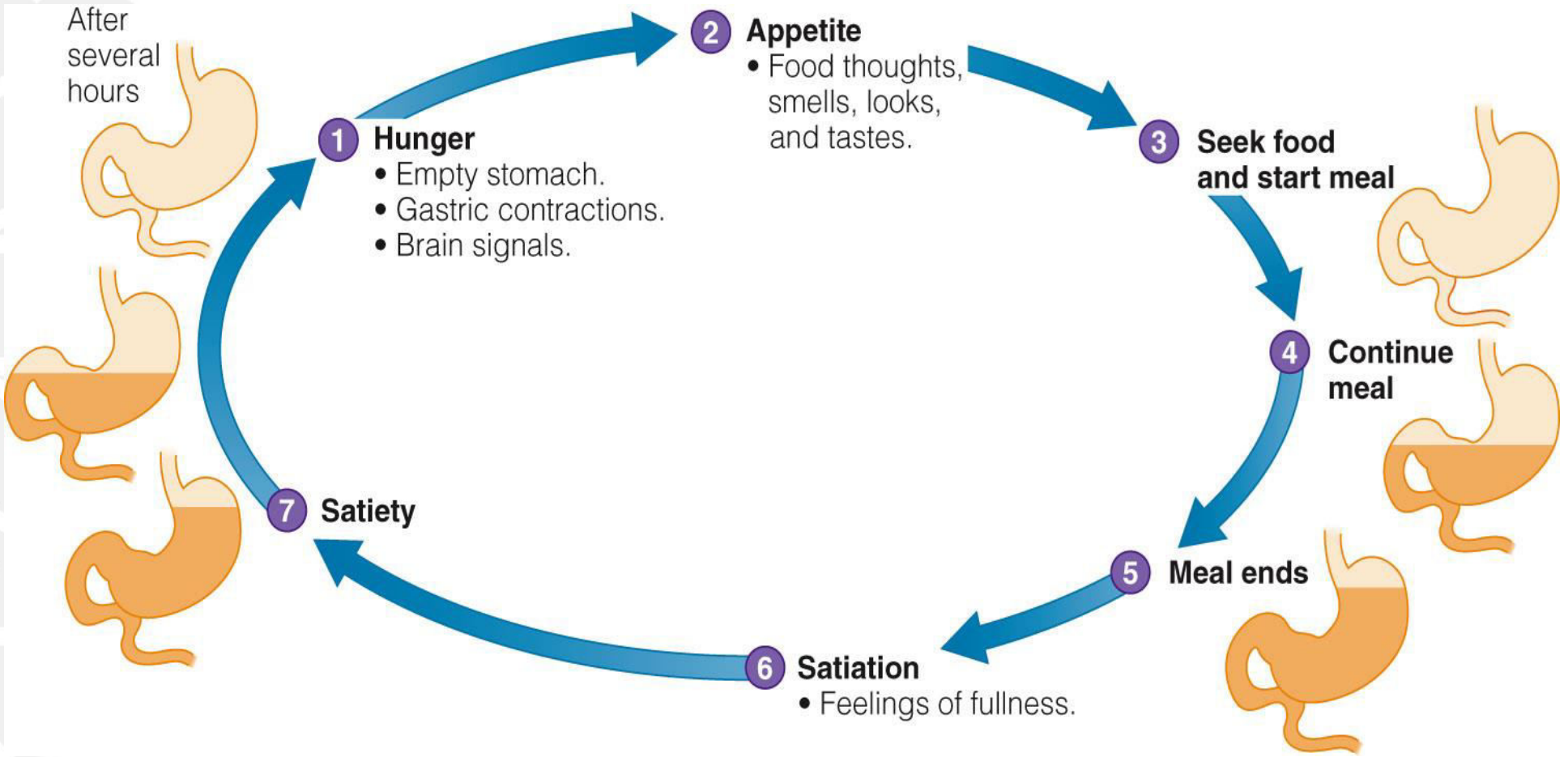
- **Calorie Control:** An appropriate amount of Calories are eaten to maintain a healthy body weight
- **Adequacy:** diet contains a quantity adequate to maintain health
- **Balance:** Food types complement one another in the diet. Not any one nutrient or food type is overbearing
- **Moderation:** The diet does not contain an excess or deficient in one or more of the food groups or nutrients
- **Variety:** Different foods are used for the same purpose in the diet



Factors Affecting our Food Choices

- **Hunger:** The Physiological need for food. The physical body sends signals indicating a need for food
- **Satiety:** The Physiological feedback mechanisms that terminate food intake
- **Appetite:** The Psychological desire for food. The brain sends signals indicating a desire for food because of sensory input like seeing, smelling, or thinking about food

Factors Affecting Hunger, Appetite and Satiety



Factors Affecting Food Choices

- **Personal Preferences:** The food likes and dislikes of an individual
- **Availability:** Food supply, geographical area, climate, soil
- **Economics:** Social status and income
- **Social Factors:** Family, friends, holidays, celebrations, etc

Factors Affecting Food Choices

- **Advertising:** TV, radio, magazines, newspaper
- **Nutritive values:** nutrient and energy content
- **Other:** feelings, Emotions, knowledge, etc.

Nutrition Facts

4 servings per container

Serving size **1 cup (180g)**

Amount per serving

Calories **245**

	% Daily Value*
Total Fat 12g	**14%**
Saturated Fat 2g	**10%**
Trans Fat 0g	
Cholesterol 8mg	**3%**
Sodium 210mg	**9%**
Total Carbohydrate 34g	**12%**
Dietary Fiber 7g	**25%**
Total Sugars 5g	
Includes 4g Added Sugars	**8%**
Protein 11g	
Vitamin D 4mcg	20%
Calcium 210mg	16%
Iron 4mg	22%
Potassium 380mg	8%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.