

A young boy with dark skin and short hair, wearing a white shirt, is looking intently at a plate of fruit. The plate contains several green apples, a red apple, and a bunch of yellow bananas. The background is slightly blurred, showing what appears to be a window or a wall with a patterned curtain.

Nutritional knowledge

Nutrients

Nigeria, March 2005

Presentation

- Nutrition
- Nutrients
- Macro-nutrients
- Micro-nutrients
- Water
- Sources
- Requirements
- Check your knowledge

What is nutrition?

- Study of foods and how the body uses them
- It is concerned with how food is
 - Produced, processed
 - Handled, sold
 - Prepared, shared
 - Eaten
- What happens to food in the body?
 - Digestion, absorption and use nutrients

What are nutrients?

- An element or compound that is *necessary for or contributes to* an organism's
 - Metabolism: all body processes necessary for life
 - Growth
 - Other functioning
- 6 nutrient groups:
 - Those that provide energy
 - Those that support processes in the body

Nutrients

- Macro-nutrients
 - Protein
 - Fat
 - Carbohydrates
- Micro-nutrients
 - Vitamins
 - Minerals & trace-elements
- Water



Macro-nutrients:

Fat

- Fat: 1 g → 9 kcal (38 kJ)
- Major source of energy for the body
- Provides essential fatty acids
- Supports absorption of fat-soluble vitamins A, D, E, K and carotenoids

Macro-nutrients: carbohydrates

- Carbohydrates: 1 g → 4 kcal (17 kJ)
- Provide energy to the body cells
 - Brain + red blood cells (carbohydrate dependent)
- Provide fiber
 - Not a nutrient
 - Important for good health

Macro-nutrients: protein

- Protein: 1 g → 4 kcal (17 kJ)
- Major functional & structural component of all cells in the body
 - Provides essential amino acids
- Supplies energy in particular circumstances (e.g. in malnourishment):
 - When fat & carbohydrate intake is inadequate, protein is used as energy source

Micro-nutrients: vitamins

- Essential for general health
 - For good growth, development and functioning of the body
- Vitamins play a role in digestion and utilisation of protein, fat and carbohydrates
- Vitamins are also components of enzymes

Micro-nutrients: Minerals & trace-elements

- Minerals are required in greater quantity than trace-elements
- As a group, they speed-up, activate or control many different body processes
 - In general: building & regulating
 - Specific role as e.g. component of enzymes

Water

- Essential for life
 - One cannot survive 3 days without water
- Necessary for: digestion, absorption, circulation, excretion
- Needed for maintenance of the body's temperature = 37 °C

**Food provides nutrients and
nutrients provide health to the body**



Protein sources

Animal sources

- e.g. meat, poultry, fish, eggs, milk and dairy products

Vegetable sources

- e.g. vegetables, legumes, plants, grains, nuts, seeds

Sources of fat

Animal sources

- e.g. whole milk, cream, butter, cheese, eggs, fatty meat, meat poultry, fatty fish, fish oil

Vegetable sources

- Vegetable oils e.g. palm, canola, olive, coconut or safflower oil
 - Also nuts, seeds, certain vegetables

Foods containing vegetable shortenings

- e.g. pastries, fried foods (doughnuts, French fries)

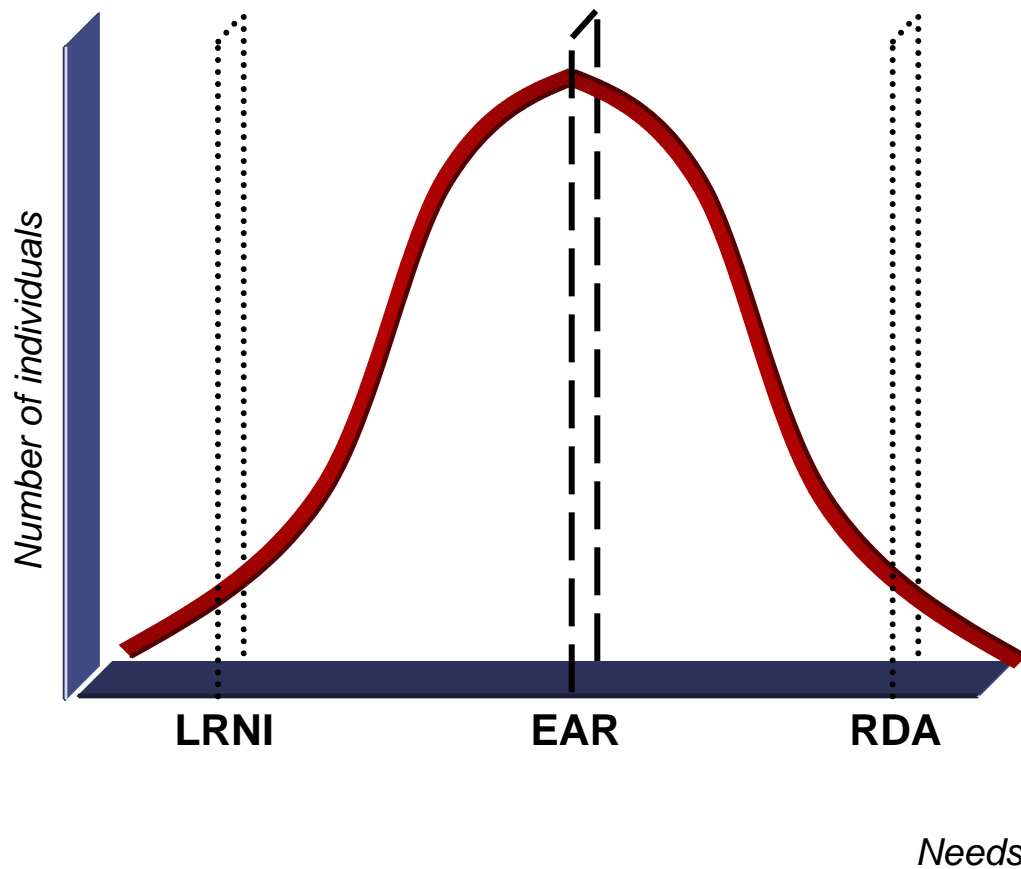
Carbohydrates sources

- **Sucrose**
 - Sugar: white, brown and raw sugar
- **Lactose**
 - Milk and milk products
- **Fructose**
 - Fruits and fruit products
- **Starch**
 - Grains, certain vegetables
 - e.g. corn, tapioca, flour, cereals, pasta, rice, potatoes
- **Dietary fiber**
 - Cereals, whole grains, vegetables, fruits

Requirements

- Every country has its own, local nutrient recommendations
- Internationally, the US/Canadian Dietary Reference Intakes (DRIs) can serve as a basis
 - To assess daily nutrient intake
 - AIs (Adequate Intakes) or RDAs (Recommended Daily/Dietary Allowances)

Recommended daily intake



- The amount of nutrients that should be available per day for consumption
- Meets the needs of 97,5% healthy individuals

AMDR = Acceptable Macronutrient Distribution Range

Age group	Protein Energy%	Fat Energy%	CHO Energy%
Children 1–3 years	5 - 20	30 - 40	45 - 65
Children 4–18 years	10 - 30	25 - 35	45 - 65
Adults	10 - 35	20 - 35	45 - 65