

Nutrition and Health

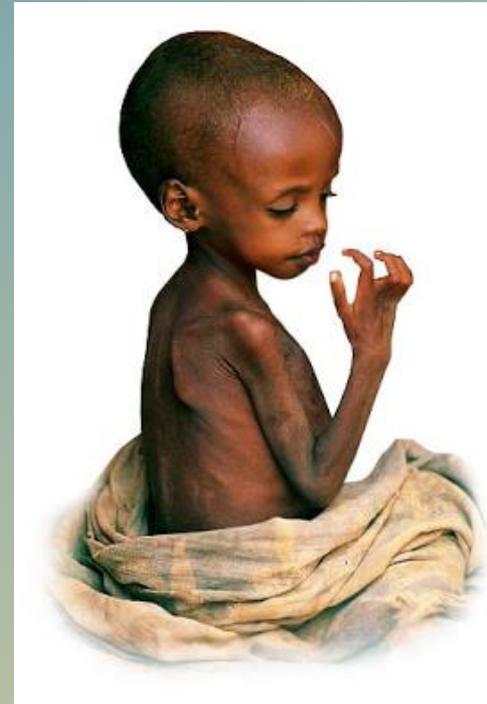
- our overall state of health is influenced by:
 - the macronutrients and micronutrients we **consume**
 - the **metabolism** of these nutrients by the body
- the nutrients provide our body with:
 - : raw materials to **build body structures**
 - ie) amino acids, fatty acids
 - : molecules to ensure **proper function**
 - ie) vitamins, minerals and enzymes
 - : energy necessary to **sustain life**
 - Energy = **the capacity to do work**
 - = measured in calories*
 - 1 Cal = **1 kcal = 4.184 kJ (kilojoules)**

Nutrient Deficiencies

- Deficiencies in nutrients are a result of not consuming **sufficient** amounts of macro or micro nutrients
- The affect the deficiency has on the body depends on:
 - : the **type** of nutrient that is inadequate
 - : the **length** of time the nutrient is poor supply
 - : the **age** of the individual lacking the nutrient
- Nutrition deficiencies result in **malnutrition**
- Nutrient deficiencies can have **permanent** and often **fatal** results

1. Deficiency of Carbohydrates

- When a person is on a carbohydrate-free diet, protein is used as energy source. The excessive breakdown of proteins to sugars can lead to excessive ketones being formed in the liver. These people exhibited the same symptoms as those on a starvation regimen.
- Symptoms include: abnormal fat metabolism, breakdown of body protein, increased sodium excretion, loss of energy and fatigue.
- It has been found that small amounts of carbohydrates, between 50 to 100 g, can prevent these symptoms.



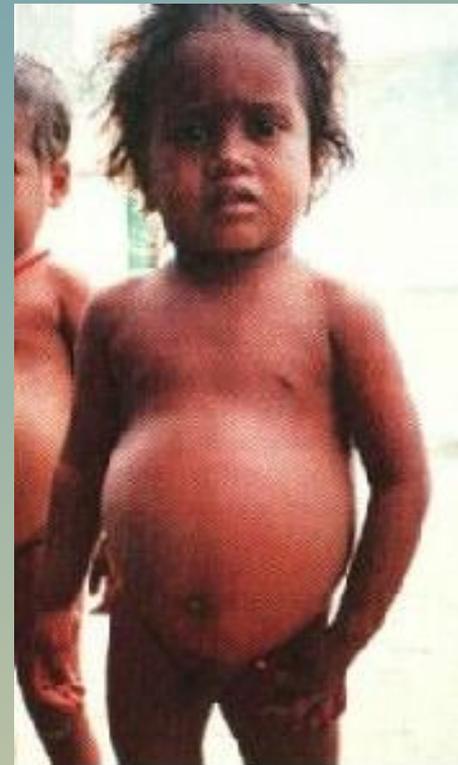
2. Deficiency of Lipids

- The main biological functions of lipids include energy storage, as structural components of cell membranes, and as important signaling molecules.
- Deficiencies in lipids lead to skin lesion and hormonal imbalances, neurological disorders and vitamin deficiencies (ADK).



3. Protein Deficiency

- Protein takes longer to digest, which makes you feel full and energized. If you don't eat enough protein to fuel your body's tissues with the necessary amount of amino acids (protein's small subparts), your body has no choice but to start breaking down your muscles to get amino acids from their fibers. Symptoms of protein deficiency are both physical and mental.
- Physical symptoms include: edema (swelling), weight loss, brittle hair or hair loss, ridges in finger nails, reduced pigmentation, skin problems, muscle weakness and cramps, slow healing wounds, and a general feeling of malaise.
- Emotional or mental symptoms include: moodiness, severe depression, anxiety, lack of energy, no desire to do things



4. Vitamin Deficiency

- A vitamin deficiency can cause a disease or syndrome known as an **avitaminosis** or **hypovitaminosis**. T
- It usually refers to a long-term deficiency of a vitamin and can be caused by:
 - inadequate nutrition
 - malabsorption (cannot be **taken in** by the body)
 - metabolic defects (cannot be **processed** by the body)
 - lifestyle choices (**ie. smoking, alcohol consumption, etc**)
- Over-retention of fat-soluble vitamins in the body is known as **hypervitaminosis** and can lead to a toxic build up of vitamins in the body

5. Mineral Deficiency

- Minerals are essential nutrients for **proper function** of the body required for fluid balance, blood and bone development, maintaining a healthy nervous system, and regulating muscles, including heart muscles.
- They help in the assimilation and use of vitamins and other nutrients.
- Minerals can be obtained from **food, supplements, and fortified food products**
- A deficiency often happens slowly over time and can be caused by:
 - An increased need for the mineral
 - Lack of the mineral in the diet
 - Difficulty absorbing the mineral from food
- Mineral deficiencies can lead to a variety of health problems, such as **weak bones, fatigue, or a decreased immune system.**