Malnutrition

- **Malnutrition is a general term for a medical condition caused by (under nutrition) or (over nutrition) .**

  It most often refer to under nutrition resulting from inadequate intake, poor absorption or excessive loss of nutrients, but the term can also include over nutrition resulting from overeating or excessive intake of specific nutrients.

- **WHO define Malnutrition as " the cellular imbalance between supply of (nutrients & energy) and (the body's demand) for them to ensure growth, maintenance and specific functions ".**

Causes

1\ inadequate food intake which may be due to:

A\ insufficient or improper food supply.

B\ early cessation of breast feeding.

2\ infection which may lead to :

A\ decrease appetite leading to reduced food intake.

B\ infection may lead to malabsorption.

C\ some infectious disease have catabolic effects (e.g. kala azar & T.B.)

3\ chronic illness which may lead to :

- **A\ decrease appetite leading to reduced food intake.**
- **B\ increased inflammatory processes so increase metabolic demand.**
- **C\ any chronic illness that involves liver or small bowel affect nutrition by impairing digestive & absorptive functions.**
- **Examples : cystic fibrosis, malignancies, chronic renal failure, congenital heart disease & chronic inflammatory bowel diseases.**

Protein – Energy Malnutrition(PEM)

- **PEM, is a spectrum ranging from mild undernutrition (** resulting in some decrease in length and\or weight for age) **, to sever form of undernutrition (** resulting in more marked deficits in weight & length for age as well as wasting).
- **There are 2 forms of PEM : (Kwashiorkor) and (Marasmus) .**
- **Marasmus involves inadequate intake of protein and calories, whereas child with Kwashiorkor has normal calorie intake with inadequate protein intake.**

Measuring Malnutrition

- **Malnutrition is assessed by a combination of clinical features and body measurements. The indicators used are :**
- **1\ wasting : weight for height, mid upper arm circumference & body mass index.**
- **2\ stunting : height for age.**
- **3\ wasting and stunting combined : weight for age.**
- **4\ edema.**

Marasmus

- **Marasmus involves inadequate intake of energy source in addition to protein .**

Characteristic features of Marasmus:

- **1\ retardation of growth and reduction of weight which is more marked than that of height.**
- **2\ wasting of muscle & loss of subcutaneous fat which gave the child old appearance with prominence spine and ribs.**
- **3\ irritable child.**
- **4\ hunger child, episodes of hypothermia and hypoglycemia are common.**
- **5\ normal hair , no biochemical or hematological changes and liver is usually normal.**

Kwashiorkor

- **Caused by deficiency of protein with adequate energy (calorie) intake.**

Characteristic features of Kwashiorkor:

1\ failure of growth.

2\ edema: it may be pitting bilateral legs edema or generalized edema including the face (moon face).

3\ muscle wasting.

4\ mental changes : the child is apathic or miserable face.

5\ hair : it become fine and spares with weak roots.

6\ skin : pigmentation and ulceration (like a burn).

7\ mucous membrane : angular stomatitis and smooth tongue.

8\ enlarged liver.

9\ GIT : anorexia, vomiting, diarrhea .

10\ anemia and associated vitamin deficiency.

* Management :

- Management of severe malnutrition is best divided into 3 phases:
- 1\ initial phase: involves resuscitation, treatment of infection and correction of disordered metabolism.
- 2\ rehabilitation phase.
- 3\ follow up phase.