

Assessment of malnutrition



Causes of malnutrition:

- Major causes → poverty – food process – dietary practices.
- Consequences of health issues like gastroenteritis – chronic illness – HIV.
- Diarrhea and other infections.
- Parasitic infections.
- Abnormal nutrient loss.
- Lack of adequate breast feeding.

Degree of malnutrition:

- Mild malnutrition → abdominal sub-cutaneous fat is decreased.
- Moderate malnutrition → Thigh and buttock sub-cutaneous fat is decreased.
- Severe malnutrition → old face appearance.

Protein and calories deficiency:

- Kwashiorkor (protein deficiency) → change in mood – dull patient – loss of appetite – skin change (dermatitis) – change in skin color – thin hair – wasting – liver enlargement – focal edema (swelling in the limbs and belly).
- Marasmus (calories deficiency) → good appetite – alert – low weight – severe wasting – little or no edema – minimal subcutaneous fat – severe muscle wasting.
- Marasmic-Kwashiorkor (Protein and calories deficiency) → weight less than 60% of ideal weight – edema.

Vitamins deficiency:

- Vit A → white spot in the eye.
- Vit B1 (thiamine) → beriberi "dry & wet".
- Vit B2 → angular stomatitis – glossitis.
- Vit B3 (Niacin) → pellagra "diarrhea, dementia, dermatitis".
- Vit B6 → neurological change.
- Vit B7 (Biotin) → hypotonia, ataxia.
- Vit B9 (folate) → anemia.
- Vit B12 → Megaloblastic anemia.
- Vit C → gum hypertrophy.
- Vit D → rickets rosary – widening of wrist – developmental delay – bowing of the lower limbs.
- Vit E → ecchymosis – petechiae.
- Vit K → bleeding.

Minerals deficiency:

- Iron → iron deficiency anemia.
- Zinc → acro-dermatitis in napkin area ((also occur with candidiasis and atopy like contact dermatitis)).

General signs of malnutrition:

- Face → moon face (kwashiorkor) – simian face (marasmus).
- Eye → dry eye – pale conjunctiva – Bitot's spots (Vit A) peri-orbital edema.
- Mouth → Angular stomatitis – cheilitis – glossitis – parotid enlargement – spongy bleeding gums (Vit C).
- Teeth → enamel mottling – delayed eruption.
- Hair → dull – sparse – brittle – hypo-pigmentation – flag sign – alopecia.
- Skin → loose and wrinkled (marasmus) – shiny and edematous (kwashiorkor) dry – poor wound healing – erosions – hypo or hyper pigmentation.
- Nail → koilonychia – thin and soft nail plates – fissures or ridges.
- Musculature → muscles wasting (buttocks and thigh).
- Skeletal → deformities (Vit C, Vit D, Calcium deficiency).
- Abdomen → distended – hepatomegaly – fatty liver – ascites.
- Cardiovascular → bradycardia – hypotension – reduced cardiac output – small vessel vasculopathy.
- Neurologic → global developmental delay – loss of knee and ankle reflexes – poor memory.
- Hematological → pallor – petechiae – bleeding diathesis.
- Behavior → lethargic – apathetic.

Approach and management to faltering growth:

- Recheck weight-plot weight against centile chart.
- Check type and amount of feeding.
- Observe feeding technique.
- Assess stool.
- Examine for underlying illness – appropriate investigations.
- Consider admission to observe response to feeding.
- Dietician involvement.
- Inform general practitioner / health visitor / community nurse.

Calories calculation for baby:

- Normal baby need (100-120 kcal/kg) - preterm baby (150) - less than 6 months age (110) - after one year (100).
- **Each ounce = 30 cc of water = 20 kcal.**
- We multiply the number of daily requirement of calories (100-120 kcal/kg) by the ideal weight of the child.
- To calculate the ideal weight you should use the chart or use the following equation
ideal weight of the infant = **(age in months + 9)/2**.
- Then we divide it by 20 (the number of ounces that the milk spoon carry)(Ounce=20 Kcal), the result will be the numbers that the child should feed in the day.
- Example → in the child ideal wt. is 5kg , $5 \times 100 = 500$ kcal/day, divided by 20, this equals to 25 numbers, that means if the child feeds 5 times/day every bottle should contain 5 numbers.

