Definition ,Treatment and Classification of Malnutrition

Dr.Bahareh Imani ▣
Assistant Professor Of Pediatrics ▣
MUMS ▣
E-mail:imanibh@mums.ac.ir ▣
www.DrBaharehImani ▣
@Dr.BaharehImani ▣

اهداف

- در انتهای این درس شما قادر خواهید بود:
- سوتغذیه حاد و شدید را در کودکان تشخیص دهید
- سوتغذیه حاد را تقسیم بندی کنید
- علایم و نشانه های سوتغذیه را بشناسید
- اصول درمان سو تغذیه را فرابگیرید
- ده مرحله درمان سوتغذیه را توضیح دهید

INTRODUCTION

1: Definition of malnutrition

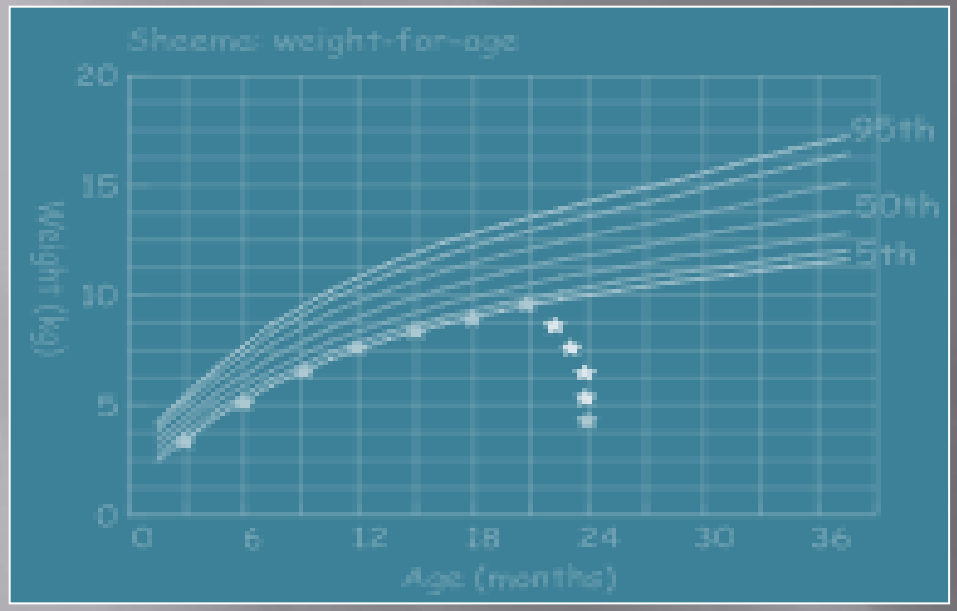
- Children, who are well and fed adequately, are supposed to grow in length and weight according to their age following an expected standard. Failure for this to happen can lead to growth faltering (undernutrition) or overweight (overnutrition), which is broadly referred to as malnutrition.

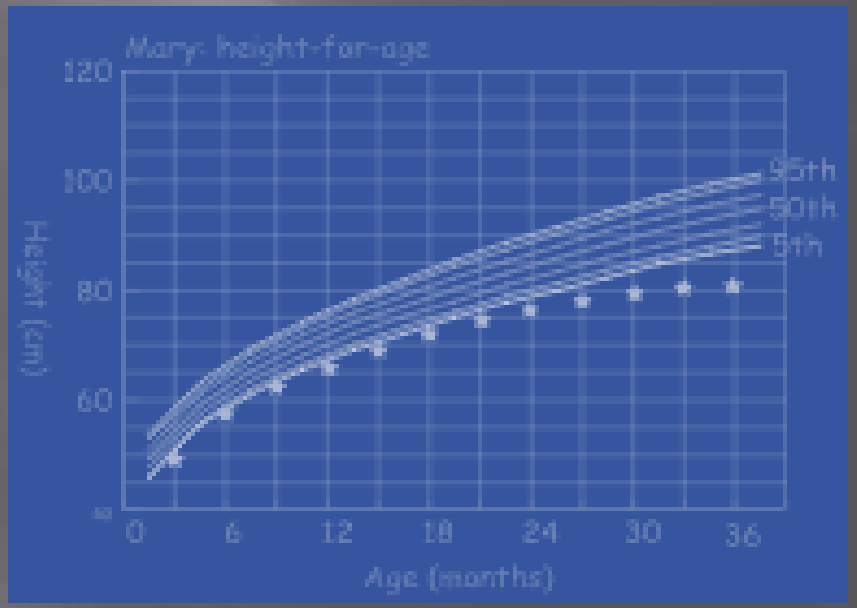
- The term ‘malnutrition’ means ‘badly nourished’ and can be used to describe both over and undernutrition.
- However, the term is used mainly to describe undernutrition.
- A child is said to be undernourished when she is too thin for her height (wasted), too light for his age (underweight) or too short for his age (stunted).

- We normally use these indices to define malnutrition:
- weight-for-height index for wasting, weight-for-age index for underweight height-for-age index for stunting.

Difference between chronic and acute malnutrition

- Malnutrition may be described as chronic or acute.
- Both are serious global problems that contribute significantly to the mortality of children under five. Acute malnutrition is the result of a relatively short period of inadequate nutrition, which leads to wasting and, if severe, may also lead to edema.
- Chronic malnutrition is the result of prolonged episodes of inadequate nutrition and leads to stunting.


Sheema: weight-for-age
Weight (kg)
20
15
10
5
0
0
6
12
18
24
30
36
Age (months)
95th
50th
5th


Mary: height-for-age
Height (cm)
120
100
80
60
0
6
12
18
24
30
36
Age (months)
95th
50th
5th

Why children become malnourished

The causes of acute and chronic malnutrition.

Poor feeding practice

Illness

Poor hygiene

Inadequate nutrients intake

Inadequate nutrient intake and illness are direct causes.

Poor feeding practices, poor hygiene and poor parental education are underlying causes.

Whether a child develops chronic or acute malnutrition depends on the degree, duration and kind of dietary inadequacy

Why malnutrition needs to be prevented

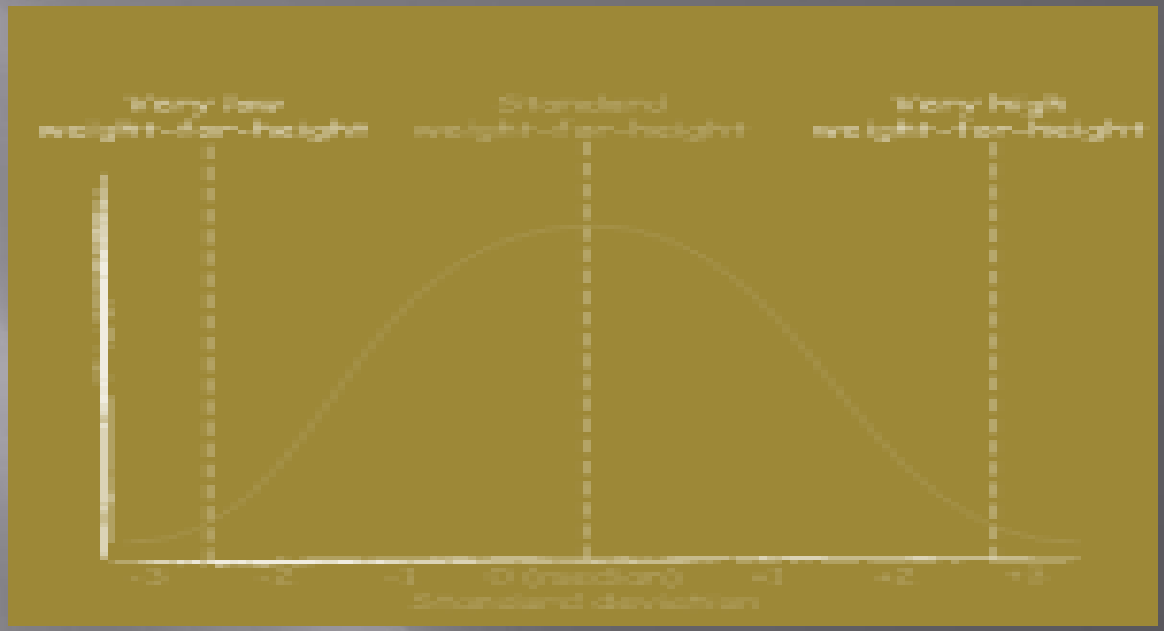
- Children become malnourished if they eat less than they need to grow and be healthy.

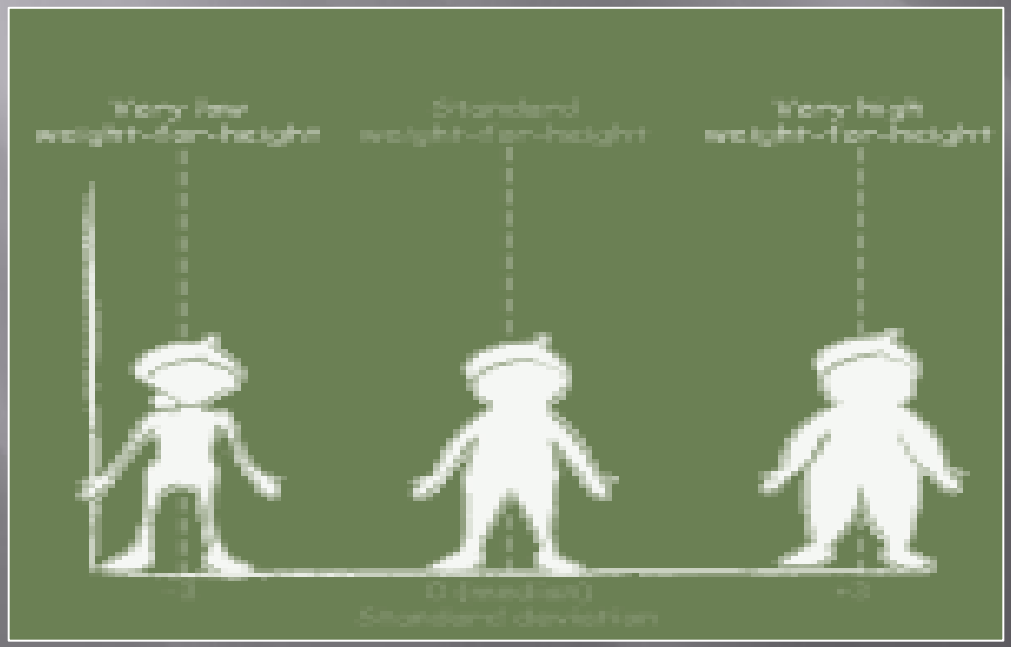
- Children may eat too little because of illness (no appetite), lack of food at home, too few meals, or the foods offered are too watery and lack nutrients.

Classification of Malnutrition

There are two types of malnutrition – acute and chronic.

- In this section, we will focus on acute malnutrition.
- Acute malnutrition can be classified as moderate or severe.
- In order to understand this classification and to determine how severely a child is malnourished, you need to know about the WHO growth standards and the term Standard Deviation (SD).


Very low
weight-for-height
Standard
weight-for-height
Very high
weight-for-height
-3
-2
-1
0 (median)
+1
+2
+3
Standard deviation


Very low
weight-for-height
Standard
weight-for-height
Very high
weight-for-height
-3
0 (median)
+3
Standard deviation

Classification of Malnutrition

The standards that WHO has developed provide a single international standard that represents the best description of the growth from birth to five years of healthy children who receive recommended feeding and health care.

The growth standards include tables and charts, which show expected weight-for-age, height/length-for-age, weight-for-height/length and MUAC-for-age.

Classification of Malnutrition

How to determine moderate and severe malnutrition: moderate malnutrition WHO defines

Moderate Acute Malnutrition(MAM)

Weight-for-height between -2 and -3SD

Or

- Mid upper arm circumference between 115 and 125mm for children aged 6-59 months.

Children with moderate acute malnutrition are moderately wasted (thin). If left unchecked and untreated it can become severe. It therefore must be treated early.

How to determine moderate and severe malnutrition:

- severe malnutrition :WHO defines Severe Acute Malnutrition (SAM)as:

Weight-for-height <-3SD

- Or

- Mid upper arm circumference <115mm for children aged 6-59 months

- and/or

- Presence of bilateral edema

- SAM refers to children who are very thin or have edema.

- Children with SAM have a highly elevated risk of death compared with normal or moderately malnourished children.

case

Name: Sheema • Age: 2 yrs 0 mnth • Sex: female • Length: 67.0cm • Weight: 3.9kg • Weight-for-length: <- 4SD Height-for-age:<-3SD (

- wasted
- Underweight
- stunted normal
- I don’t know

Fatima •

Age: 1 yr 8 mnths •

Sex: female •

Length: 67.0cm

• Weight: 6.5kg

• Weight-for-length: btwn -1SD & -2SD

• Weight-for-age:3SD (

wasted
underweight
stunted normal
I don't know

Name: Kofi ▣

- Age: 4 yrs 6 mnths ▣
- Sex: male • Height: ▣ 110.0cm
- Weight: 18.5kg ▣
- Weight-for-height: ▣ Median
- Height-for-age: 80th ▣ centile

wasted
underweight
stunted
normal I
don’t know

Malnutrition with/without complications

Children with Severe Acute Malnutrition (SAM) are extremely vulnerable to life-threatening complications and have a high mortality if given inadequate or inappropriate care. They require immediate, intensive treatment.

with complications ⊡

a) Severe edema (grade 3)", ⊡

b) High fever", ⊡

c) Poor appetite", ⊡

d) Pneumonia", ⊡

e) Dehydration", ⊡

i) Infant aged <6m", ⊡

without complications ⊡

f) Alert", ⊡

g) Clinically well", ⊡

h) Good appetite", ⊡

1. Why severely malnourished children are different

At risk of:

- hypoglycaemia
- hypothermia
- fluid overload/ cardiac failure
- untreated infection

A. VISIBLE SIGNS ▣

- Severe Acute Malnutrition is visible signs of ▣ severe wasting
- and/or ▣
- edema of both feet ▣

Visible severe wasting

- Loss of fat and muscle “skin and bones”
- Front view: ribs easily seen, skin of upper arms loose, skin of thighs loose
- Back view: Ribs and shoulder bones easily seen, flesh missing from buttocks “baggy pants”

Edema

- Swelling from excess fluid in tissues
- Edema must appear in both feet
- Describe edema as:
- + Mild: both feet
- ++ Moderate: both feet, plus lower legs, hands or lower arms
- +++ Severe: generalized oedema including both feet, legs, hands, arms and face

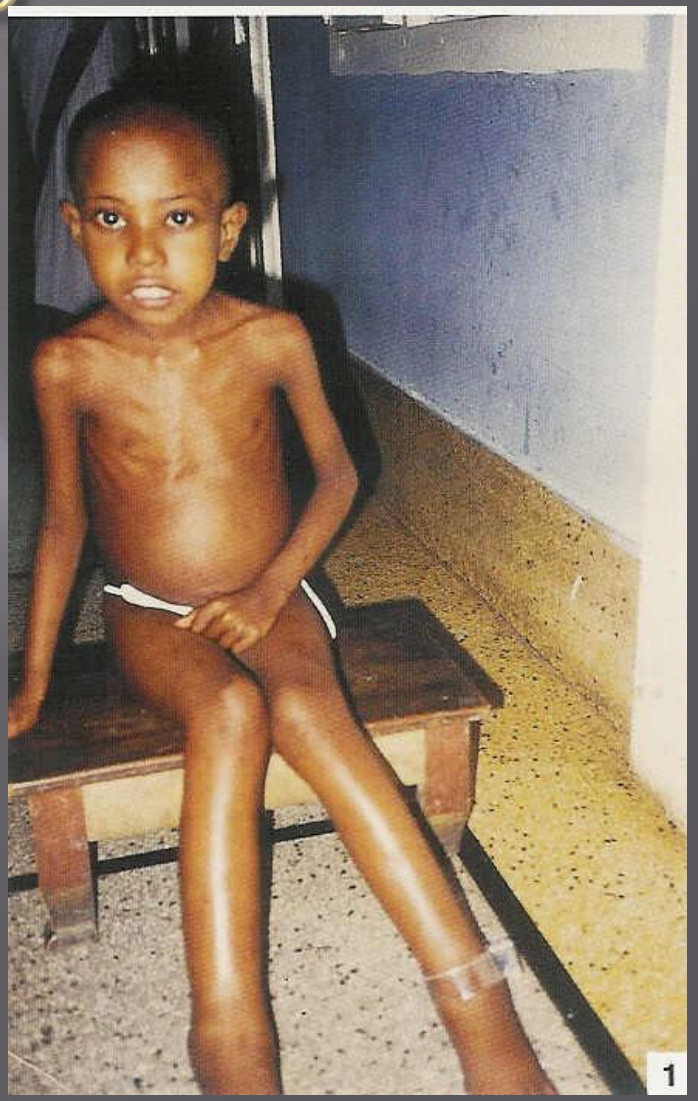
Dermatosis

- Common in children with oedema
- Patches of skin abnormally light or dark
- Shedding of skin, ulceration of skin and/or weeping lesions
- Describe dermatosis as:
  - + Mild: Discolouration or a few rough patches
  - ++ Moderate: Multiple patches arms and/or legs
  - +++ Severe: Flaking, raw skin, fissures

Exercise 1: *Identifying visible signs*

Question 1

What visible signs of SAM can you see?



Exercise 2:

What visible signs of SAM can you see? (front/back)

Exercise 3

- What visible signs of SAM can you see?

B. MID-UPPER ARM CIRCUMFERENCE

- **MUAC** used to assess wasting in children aged 6-59m
- **Severe Wasting is MUAC** <11.5cm

Criteria for Hospital Admission

- Edema (+++)
- OR
- Weight-for-height <70% (<-3SD) or MUAC <11.5cm AND one of the following:

- Poor appetite
- Not alert
- Clinically unwell

Criteria for Community-based Care or Outpatient Treatment

- Weight for length <70%/ <-3SD or MUAC >11.5cm
- or Oedema(+/++)
- AND all of the following:
- Good appetite
- Clinically well
- Alert

Emergency care wall chart

EMERGENCY TREATMENT OF SEVERELY MALNOURISHED CHILDREN

*Severely malnourished children are **different** from other children. So they need **different treatment.***

CONDITION	IMMEDIATE ACTION
Treat shock Shock is if the child is lethargic **or** unconscious and cold hands **Plus either**: Slow capillary refill (longer than 3 seconds) **or** Weak fast pulse Monitor closely: use the Critical Care Pathway Initial Management Chart	**If child is in shock:** 1. Give oxygen 2. Give sterile 10% glucose (5ml/kg) by IV 3. Give IV fluid at 15ml/kg over 1 hour, using: • Ringers' lactate with 5% dextrose or • half-normal saline with 5% dextrose or • half-strength Darrow's solution with 5% dextrose • if all of the above are unavailable, Ringer's lactate 4. Measure and record pulse and respirations every 10 minutes **If there are signs of improvement** repeat IV 15ml/kg for one more hour **If there are no signs of improvement** assume child has septic shock. In this case: 1. Give maintenance fluids (4ml/kg/h) while waiting for blood 2. Order 10ml/kg fresh whole blood 3. Refer child to ward quickly for slow transfusion
Treat severe dehydration Assume severe dehydration if there is profuse watery diarrhoea and signs such as sunken eyes, slow skin pinch, absent tears, dry mouth, very thirsty, reduced urine output, rapid pulse and respirations.	**DO NOT GIVE IV FLUIDS EXCEPT IN SHOCK** 1. Give ReSoMal 5ml/kg every 30min for 2 hours. Do not give standard ORS to severely malnourished children 2. Measure and record pulse and respirations every 30 minutes. Use Critical Care Pathway Initial Management Chart 3. Refer child to ward quickly for continued rehydration
Treat very severe anaemia Very severe anaemia is Hb less than 4g/dl	**If very severe anaemia** (or Hb 4-6g/dl AND respiratory distress): 1. Give whole blood 10ml/kg body weight slowly over 3 hours. If signs of heart failure, give 5-7ml/kg packed cells rather than whole blood. 2. Give furosemide 1ml/kg IV at the start of the transfusion

Ten steps

	Stabilization		Rehabilitation	Follow-up
	Days 1–2	Days 3–7	Weeks 2–6	Weeks 7–26
1. Treat or prevent hypoglycaemia	→			
2. Treat or prevent hypothermia	→			
3. Treat or prevent dehydration	→			
4. Correct electrolyte imbalance	→	→	→	
5. Treat infection	→	→		
6. Correct micronutrient deficiencies	Without iron →	→	With iron →	
7. Begin feeding	→	→		
8. Increase feeding to recover lost weight			→	→
9. Stimulate emotional and sensorial development	→	→	→	→
10. Prepare for discharge			→	