Nutrition Assessment Module 6

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References:

1. *Lee RD, Nieman DC. Nutritional assessment. 6th ed. New York, NY: McGraw-Hill; 2013.*
2. *de Onis, M., Borghi, E., Arimond, M., Webb, P., Croft, T., Saha, K., ... & Flores-Ayala, R. (2018).*
3. *World Health Organization. (n.d.). Assessment of Nutritional Status by Age Group.*

Lecture Title: Pediatric Growth Assessment: WHO Criteria and Practical Application

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I. Introduction to Pediatric Growth Assessment

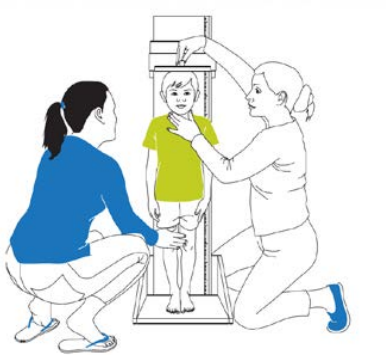
Growth and development are the most sensitive indicators of a child's overall health and nutritional status. Pediatric nutrition assessment allows health professionals to identify children at risk for both undernutrition (such as wasting and stunting) and overnutrition (such as overweight and obesity), which is essential for planning interventions and monitoring a child's progress. In clinical practice, we use the "ABCD" mnemonic to remember the four primary assessment methods: Anthropometric, Biochemical, Clinical, and Dietary. While all these methods are important for a complete clinical picture, this lecture focuses primarily on Anthropometry—the measurement of body size, weight, and proportions—and how to interpret these measurements using WHO Z-scores and growth standards to accurately classify a child's nutritional status.

II. Essential Tools and Measurements

To assess growth accurately, you must master these three basic measurements:

1. **Length and Stature:**
    - **Length (Recumbent Length):** Measured with the child lying down (supine[1]). Used for children 0–24 months or those who cannot stand.
    - **Stature (Standing Height):** Measured standing up. Used for children 2 years and older who are cooperative.

[1] Supine: Lying on the back, facing upward



2. **Weight:** Use an electronic scale. For infants, use a pan scale; for older children, use a platform scale.

3. **Mid-Upper Arm Circumference (MUAC):** A rapid screening tool used for children aged **6–59 months** to identify acute malnutrition.

III. Assessment of Children Under 5 Years (0–59 Months)

The World Health Organization (WHO) uses Z-scores[2] to classify nutritional status.

1. Core WHO Indicators

- **Weight-for-Height (WHZ):** Reflects Acute Malnutrition (Wasting[3]). It tells us if a child is thin for their height.
    - *Normal:* ≥ -2 SD
    - *Moderate Wasting:* < -2 to ≥ -3 SD
    - *Severe Wasting (SAM[4]):* < -3 SD

[2] **Z-score (Standard Deviation):** A statistical measure that tells us how far a child's measurement is from the average (median) child of the same age and sex.
[3] **Wasting:** Low weight-for-height; indicates recent or "acute" malnutrition and rapid weight loss.
[4] **SAM (Severe Acute Malnutrition):** A life-threatening condition defined by very low weight-for-height, very low MUAC, or the presence of nutritional edema.

- **Height-for-Age (HAZ):** Reflects Chronic Malnutrition (Stunting[5]). It tells us if a child is short for their age due to long-term poor nutrition.
    - *Normal:* ≥ -2 SD
    - *Stunted:* < -2 SD
- **Weight-for-Age (WAZ):** Reflects **Underweight**. This is a general indicator but does not distinguish between wasting and stunting.
    - *Underweight:* < -2 SD

2. Rapid Screening and Clinical Signs

- **MUAC:**
    - *Normal:* ≥125 mm
    - *Moderate Acute Malnutrition (MAM):* 115–124 mm
    - *Severe Acute Malnutrition (SAM):* < 115 mm
- **Bilateral Pitting Edema[6]:** If a child has swelling in both feet, they are automatically diagnosed with Severe Acute Malnutrition (SAM), regardless of their weight or Z-score.

IV. Assessment of Children and Adolescents (5–19 Years)

As children grow older, the primary indicator changes to BMI-for-Age (BAZ).

- BMI Calculation: BMI = $\frac{Weight(kg)}{Height(m)^2}$

[5] **Stunting:** Low height-for-age; indicates "chronic" or long-term malnutrition.
[6] **Bilateral Pitting Edema:** Swelling caused by fluid accumulation in both feet; a clinical sign of severe protein deficiency

- WHO Classifications (5–19 years):
    - Thinness: < -2 SD
    - Severe Thinness: < -3 SD
    - Overweight: >+1 SD
    - Obesity: >+2 SD
- Height-for-Age (HAZ): Still used to detect stunting in older children (< -2 SD).

V. Practical Step-by-Step Approach for Health Center Visits

When you visit a Primary Health Care (PHC) center, follow these steps:

1. **Step 1: Measure Accurately.** Obtain the child's exact age, weight, height (or length), and MUAC (if under 5).
2. **Step 2: Calculate Indices.** Determine the WHZ, HAZ, or BMI-for-age.
3. **Step 3: Compare with Standards.** Use WHO Growth Charts or software like WHO Anthro (0–5 years) or WHO AnthroPlus (5–19 years). (You can download at https://www.who.int/tools/child-growth-standards/software)
4. **Step 4: Classify.** Use the Z-score cut-offs to label the nutritional status (e.g., "Moderately Stunted").
5. **Step 6: Clinical Interpretation.** Look at the "whole child." Consider their diet, history of infections, and family socioeconomic situation.

VI. Understanding Prevalence Thresholds (Public Health Context)

When looking at a whole community (like the group of patients at a PHC), we use Prevalence Thresholds to see how serious the problem is.

LABEL	WASTING & OVERWEIGHT (%)	STUNTING (%)
VERY LOW	<2.5	<2.5
LOW	2.5 – <5	2.5 – <10
MEDIUM	5 – <10	10 – <20
HIGH	10 – <15	20 – <30
VERY HIGH	≥ 15	≥ 30

End of Module 6