ANTHROPOMETRY: CHILDREN UNDER 5

ANTHROPOMETRY is the measurement of the human body. Anthropometric measures are used to assess the nutritional status of individuals and population groups, and as eligibility criteria for nutrition support programs. Common anthropometric measures are height, weight, and mid-upper arm circumference (**MUAC**).

Some measurements are presented as indices, including height-for-age (**HFA**), weight-for-age (**WFA**), weight-for-height (**WFH**), **MUAC-for-age**, and body mass index (**BMI**)**-for-age**. Each index is recorded as a z-score* that describes how far and in what direction an individual's anthropometric measurement deviates from the median in the 2006 WHO Child Growth Standards for his or her sex. MUAC measurements are compared to recommended cutoffs that apply to all children 6–59 months.

An individual's z-score or MUAC measurement can be used to classify how malnourished he or she is. A mean z-score can also be calculated to determine the nutritional status of a population group.

*A z-score is measured in standard deviations.

DEFINITION	INDEX or MEASURE	MODERATE	SEVERE
Stunting reflects chronic malnutrition			
Inadequate length or height* relative to age	HFA	< -2 and ≥ -3 z-score	< -3 z-score
Underweight reflects both chronic malnutrition and acute malnutrition			
Inadequate weight relative to age	WFA	< -2 and ≥ -3 z-score	< -3 z-score
Wasting reflects acute malnutrition			
Inadequate weight relative to length or height*	WFH	< -2 and ≥ -3 z-score	< -3 z-score
Inadequate muscle tissue and fat stores in the body	MUAC (6–59 months)	< 125 mm and ≥ 115 mm	< 115 mm
	MUAC-for-age (3–59 months)	< -2 and ≥ -3 z-score	< -3 z-score
Bilateral Pitting Edema reflects severe acute malnutrition			
An accumulation of fluid that starts in both feet and that can progress to other parts of the body	Any bilateral pitting edema indicates severe acute malnutrition.		
Overnutrition		overweight	obese
Excessive fat accumulation that presents a risk to health	WFH BMI-for-age	> +2 and ≤ +3 z-score	> +3 z-score

* Children under 2 years are measured lying down (length) and children 2–5 years are measured standing up (height).

POPULATION-LEVEL CLASSIFICATIONS

At the population level, nutrition indicators are often expressed in terms of prevalence (% of the population).

Practitioners may use the information below, in combination with trend data, local contextual factors, and other health and nutrition information, to understand the magnitude of the nutrition problem of a given population.

	Low	Medium	High	Very High
% stunted (HFA < -2 z-score)	< 20	20–29	30–39	≥ 40
% underweight (WFA < -2 z-score)	< 10	10–19	20–29	≥ 30
% wasted (WFH < -2 z-score)	< 5	5–9	10–14	≥ 15

Source: WHO (1995).

Note: There is no established international classification to indicate the public health significance for the prevalence of bilateral pitting edema or overnutrition.

COMMON NUTRITION-RELATED TERMS

Malnutrition occurs when an individual's dietary intake is not balanced with his or her nutritional needs. Malnutrition includes **undernutrition** and **overnutrition**. Undernutrition is defined as a lack of nutrients caused by inadequate dietary intake and/or disease. It encompasses a range of conditions, including acute malnutrition, chronic malnutrition, and micronutrient deficiency. Overnutrition occurs when the body has more nutrients than it needs; overnutrition conditions include both overweight and obesity.

Moderate Acute Malnutrition (MAM) is identified by moderate wasting (WFH < -2 z-score and ≥ -3 z-score for children under 5 years or MUAC < 125 mm and ≥ 115 mm for children 6-59 months).

Severe Acute Malnutrition (SAM) is identified by severe wasting (WFH < -3 z-score for children under 5 years or MUAC < 115 mm for children 6-59 months) or the presence of bilateral pitting edema.

Global Acute Malnutrition (GAM) is the prevalence of both MAM and SAM in a population.

BMI is calculated as weight (kg)/length or height (m^2). BMI is used in adult populations; BMI-for-age is used for children and adolescents.

Undernourishment is a population-level indicator that compares caloric availability per capita with minimum caloric requirements. FAO estimates the prevalence of undernourishment based on the amount of food available in the country and the extent of inequality in access to food. Undernourishment is not an anthropometric indicator.