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Anthropometric Evaluation and Annual Monitoring Indicators

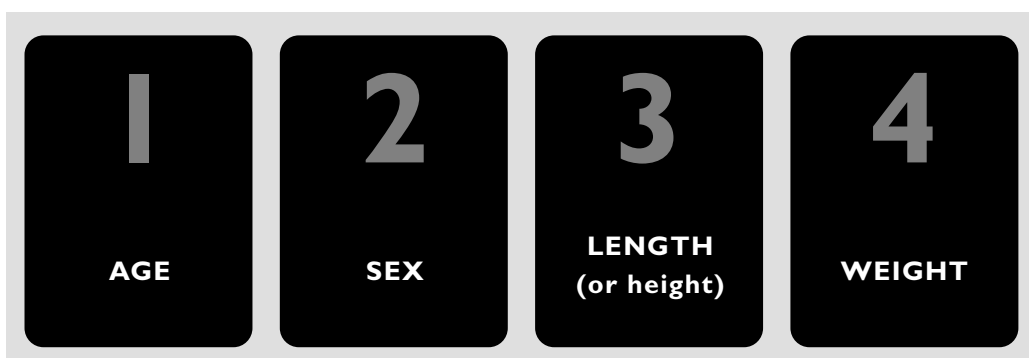
2.1. Anthropometric Indicators

Changes in body dimensions reflect the overall health and welfare of individuals and populations. Anthropometry is used to assess and predict performance, health and survival of individuals and reflect the economic and social well being of populations. Anthropometry is a widely used, inexpensive and non-invasive measure of the general nutritional status of an individual or a population group. Recent studies have demonstrated the applications of anthropometry to include the prediction of who will benefit from interventions, identifying social and economic inequity and evaluating responses to interventions. For more information on the application of anthropometric data, refer to Appendix 2.

Anthropometry can be used for various purposes, depending on the anthropometric indicators selected. For example, weight-for-height (wasting) is useful for screening children at risk and for measuring short-term changes in nutritional status. However, weight-for-height is usually not appropriate for evaluating changes in a population over longer time periods. A clear understanding of the different uses and interpretations of each anthropometric indicator will help to determine the most appropriate indicator(s) for program evaluation. For more detailed explanations of age and sex specific appropriate anthropometric uses, refer to Appendices 4 and 5. Key terms are defined in the glossary. The anthropometric measurement of infants below six months of age for monitoring and evaluation purposes is not recommended.

2.1.1. The Building Blocks of Anthropometry: Indices

The four building blocks or measures used to undertake anthropometric assessment are:



Each of these variables provides one piece of information about a person. When they are used together they can provide important information about a person's nutritional status. The actual measurement of age, weight and height of children requires specific equipment and techniques which are described later. When two of these variables are used together they are called an *index*. Three indices are commonly used in assessing the nutritional status of children:

- Weight-for-age;
- Length-for-age or Height-for-age;
- Weight-for-length or Weight-for-height.

There are many other anthropometric measures including mid - upper arm circumference (MUAC), sitting height to standing height ratio (Cormic Index), and many skinfold measures. This guide will concentrate on the measurements and interpretation of weight and height in children.

2.1.2. What the Indices Reflect About the Nutritional Status of Infants and Children

The advantages and disadvantages of the three indices and the information they can provide is summarized below:

Weight-for-age: Low weight-for-age index identifies the condition of being **underweight**, for a specific age. The advantage of this index is that it reflects both past (chronic) and/or present (acute) undernutrition (although it is unable to distinguish between the two).

Height-for-age: Low height-for-age index identifies past undernutrition or chronic malnutrition. It cannot measure short term changes in malnutrition. For children below 2 years of age, the term is length-for-age; above 2 years of age, the index is referred to as height-for-age. Deficits in length-for-age or height-for-age is referred to as **stunting**.

Weight-for-height: Low weight-for-height helps to identify children suffering from current or acute undernutrition or **wasting** and is useful when exact ages are difficult to determine. Weight-for-length (in children under 2 years of age) or weight-for-height (in children over 2 years of age) is appropriate for examining short-term effects such as seasonal changes in food supply or short-term nutritional stress brought about by illness.

The three indices are used to identify three nutritional conditions: underweight, stunting and wasting, respectively.

Underweight: Underweight, based on weight-for-age, is a composite measure of stunting and wasting and is recommended

as the indicator to assess changes in the magnitude of malnutrition over time.

Stunting: Low length-for-age, stemming from a slowing in the growth of the fetus and the child and resulting in a failure to achieve expected length as compared to a healthy, well nourished child of the same age, is a sign of stunting. Stunting is an indicator of **past growth failure**. It is associated with a number of long-term factors including chronic insufficient protein and energy intake, frequent infection, sustained inappropriate feeding practices and poverty. In children over 2 years of age, the effects of these long-term factors may not be reversible. For evaluation purposes, it is preferable to use children under 2 years of age because the prevalence of stunting in children of this age is likely to be more responsive to the impact of interventions than in older children. Data on prevalence of stunting in a community may be used in problem analysis in designing interventions. Information on stunting for individual children is useful clinically as an aid to diagnosis. Stunting, based on height-for-age, can be used for evaluation purposes but is not recommended for monitoring as it does not change in the short term such as 6 - 12 months.

Wasting: Wasting is the result of a weight falling significantly below the weight expected of a child of the same length or height. Wasting indicates **current or acute malnutrition** resulting from failure to gain weight or actual weight loss. Causes include inadequate food intake, incorrect feeding

practices, disease, and infection or, more frequently, a combination of these factors. Wasting in individual children and population groups can change rapidly and shows marked seasonal patterns associated with changes in food availability or disease prevalence to which it is very sensitive. Because of its response to short-term influences, wasting is not used to evaluate Title II programs but may be used for screening or targeting purposes in emergency settings and is sometimes used for annual reporting. Weight-for-height is not advised for evaluation of change in non-emergency situations since it is highly susceptible to seasonality.

In **humanitarian assistance** activities, **wasting** (a SMART indicator) or thinness in children in the 6-59 month age range, combined with nutritional **edema**, is an indicator of acute malnutrition and should be used to reflect the overall **severity** of a crisis. Wasting is determined using **weight-for-height** (WFH) and is calculated as the weight of each child in relation to the weight of a well nourished reference child of the same sex and stature using the U.S reference standards. Weight-for-height is expressed using Z scores (standard deviations from the reference median). Percentage of the reference median should also be reported as it is used as the entry criteria for feeding programs. When counting children as wasted, it is important to include all under fives who have pitting edema in their limbs. Reporting using Z score is preferred for assessments and surveys and weight-for-height percent of the median is preferred for admission into treatment.

- **Edema** is the presence of excessive amounts of fluid in the intracellular tissue. Edema can be diagnosed by applying moderate thumb pressure to the back of the foot or ankle. The impression of the thumb will remain for some time when edema is present. Edema is diagnosed only if both feet show the impression for some time. As a clinical sign of severe malnutrition, the presence of edema should be recognized when using short term indicators such as wasting. The presence of edema in individuals should be recorded when using weight-for-height for surveillance or screening purposes. When a child has edema, it is automatically included with children counted as severely malnourished, independently of its wasting, stunting, or underweight status. This is due to the strong association between edema and mortality. Edema is a rare event and its diagnosis is used only for screening and surveillance and not for evaluation purposes.

- **Mid - Upper Arm Circumference (MUAC)** is relatively easy to measure and a good predictor of immediate risk of death. It is used for rapid screening of acute malnutrition from the 6-59 month age range (MUAC overestimates rates of malnutrition in the 6-12 month age group). MUAC can be used for screening in emergency situations but is not typically used for evaluation purposes (MSF, 1995). MUAC is recommended for assessing acute adult undernutrition and for estimating prevalence of undernutrition at the population level.

2.2. Annual Monitoring Indicators

Well chosen and reported monitoring indicators will enhance program management and can provide valuable insights into trends of anthropometric indicators used for determining impact. Part 8 of this Guide describes how annual monitoring indicators that are based upon data from growth monitoring and promotion programs (GMP)

may be collected and reported in a standard format. This is intended to make the indicators more useful for management of programs at all levels within countries, and also for reporting to USAID.

The two recommended **annual monitoring indicators** serve several purposes.

1. Percent of eligible children in Growth Monitoring and Promotion programs

- a. supports program management – providing information on coverage, targeting, and may provide a useful basis for supervision of field staff;
- b. provides information on context, or some explanation, in the reporting of anthropometric impact indicators; and
- c. provides an indication of patterns of, or trends in, service delivery and use and thus has potential to demonstrate successes of efforts to achieve specified project results.

2. Percent of children in Growth Monitoring and Promotion (GMP) programs gaining weight in past 3 months (by gender)

- a. As a **management tool**, this information is a trigger to increase growth promotion and health education counseling. The information can be a positive communication between the health worker and caregiver concerning the health of the child. This information is most effective when provided with other information such as food availability and presence or history of infection.
- b. As a **surveillance tool**, the indicator may be useful as a lagged indicator of a community facing severe food or health-related stress. The usefulness of this indicator for surveillance is reduced when small numbers are being monitored.

A major advantage for an organization in reporting on the two monitoring indicators is that it provides national level staff with a framework to think about, interpret, and act upon data that are currently being reported to them. A barrier to “institutionalizing” the reporting of monitoring data is that often no action is taken on information reported and sometimes no meaningful feedback is provided to the staff who collect and report them. Reporting on monitoring indicators at a national level will provide some evidence that GMP data have been collected and used as intended.

Growth monitoring and promotion programs are key components of many food assisted health and nutrition activities of Title II programs. The development of the guidelines presented here was based upon four assumptions:

- 1) growth monitoring without growth promotion will not benefit the health of participating children;
- 2) it is not useful to report village-level activities of GMPs to regional and national levels unless some action is taken, or some decision is based upon the information reported;
- 3) the reporting system will not be sustainable without some meaningful action or feedback; and
- 4) continuing effort will be required to improve the quality of data reported from GMP activities, but reporting GMP data can be useful when it is interpreted within an appropriate context.