INTRODUCTION

In the last decade, there has been an increasing awareness of the importance of nutrition for human health and well-being. This is reflected in the commitments towards the six global nutrition targets for 2025 endorsed by the Sixty-Fifth World Health Assembly in 2012 (WHO 2012), and the ambitious aim of the Sustainable Development Goals (SDGs) “to end all forms of hunger and malnutrition by 2030” (1). The United Nations Decade of Action on Nutrition underscores these commitments to mobilize international efforts to end malnutrition in all its forms (2). The success of these global targets requires adequate investments in nutrition programmes and surveillance.

Some of the key indicators of the nutritional status of a given population are based on anthropometric data. Accurate anthropometric data are critical to provide reliable information to policy makers, programme managers, researchers and advocates, especially in the nutrition field. The quality of anthropometric data is also important in assessing how health and nutrition interventions are implemented and in guiding subsequent planning.

In population representative surveys, anthropometric data are collected to provide a clear understanding of the magnitude and distribution of malnutrition problems in a country, and to design and monitor interventions to improve the nutritional status of the populations concerned. The type of survey used depends on the context, but all surveys should follow standard criteria for anthropometric data quality and standard methods for data collection, analysis and reporting. Comparable and accurate anthropometric data are essential if national governments and other stakeholders are to be able to monitor how nutrition-specific and -sensitive programmes have been carried out and make decisions based on their progress.

In 2015, The United States Agency for International Development (USAID) hosted a technical meeting (3) in Washington, DC to develop a shared understanding of the purposes, strengths and challenges of anthropometric survey methodologies and to provide recommendations for improving the comparability of anthropometric data and accuracy of population estimates. In 2017, the United Nations Children’s Fund (UNICEF) and World Health Organization (WHO) co-hosted a meeting on “Strengthening and Implementing Nutrition Monitoring and Surveillance: Lessons from the Field” in Geneva to focus on lessons learned from all regions and discuss nutrition indicators and surveillance systems in place. This meeting highlighted the gaps in nutrition data for monitoring progress at national, regional and global levels. The expert group also recognized that there was a need for criteria to assess the quality of anthropometric data, and to harmonize methods for data collection, analysis and reporting (4). To this end, the WHO-UNICEF Technical Expert Advisory Group on Nutrition Monitoring set up a working group (WG) in 2016 to establish a set of recommendations for collecting anthropometric data that would improve data quality and standardize methods of analysis and reporting.

Purpose

The task of the TEAM WG on Anthropometric Data Quality was to define basic criteria and standards for sampling, training and standardization of anthropometrists, data collection, supervision, for data management including quality assessment and analysis, interpretation and reporting of anthropometric data. A central outcome of its deliberations is the present document the aim of which is to provide guidance to personnel involved in surveys including anthropometric measurements. It has been drawn up based on a review of currently available tools for national household surveys (DHS, MICS, SMART, etc.) and proposes a set of recommendations to enhance quality reporting for the global nutrition targets (childhood stunting, wasting and overweight) and SDG target 2.2.

Some recommendations included in this document are evidence-based while others rely more on practical experience and expert advice. When developing this technical guidance, it became clear that there is a need for further research to provide a wider range of evidence-based recommendations and to determine whether the use of technologically more advanced measuring instruments leads to the collection of more accurate data. The aim of this document is to guide survey implementers on how to improve the quality of anthropometric data for global monitoring. It should allow countries to track their progress towards the Global Nutrition Targets for 2025 and the SDGs for 2030 more effectively.

This document is intended as a reference for the recommended steps in collecting, analysing and reporting malnutrition estimates based on anthropometric data in nationally representative surveys. Its objective is to set out standardized methods for generating representative malnutrition estimates based on anthropometric data relating to weight, length/height and age in children less than 5 years old (or aged 0–59 months).

Emergency settings are beyond the scope of this document. Some of its proposed recommendations and tools may be of use in emergencies but owing to the limited resources and pressing need for rapid assessments in such settings, some steps may not be feasible. A more context-bound approach may be necessary.

Recommendations focus on anthropometric indicators based on measurements of weight, length/height and age, among which the following anthropometric indices are central:

- weight-for-age;
- length-for-age or height-for-age;
- weight-for-length or weight-for-height.

Indicators such as wasting (weight-for-length/height more than 2 SD below the WHO Child Growth Standards median), stunting (length/height-for-age more than 2 SD below the WHO Child Growth Standards median) and overweight (weight-for-length/height more than 2 SD above the WHO Child Growth Standards median) in children aged 0–59 months are not only part of the Global Nutrition Monitoring Framework of the Comprehensive Implementation on Maternal, Infant and Young Child Nutrition (5), they are also three of the six global nutrition target indicators as well as SDG 2.2. Mid-upper arm circumference (MUAC) is not included in this document as it is not one of the definitions of wasting used for tracking progress towards the Global Nutrition Targets set by the World Health Assembly.

**Audience**

This document's target audience is technical staff experienced in surveys for collecting anthropometric data, and is especially intended for:

- survey managers;
- technical assistance providers for national surveys;
- national survey organizations (reporting to government on SDG and WHA, implementers of representative surveys that include child anthropometry, etc.);
- international and national organizations with interest in data quality;
- researchers;
- public health nutritionists.

**Outline**

This document is divided into three main chapters (Figure 1). Chapter 1 describes the organization and design of a survey including recommendations on the planning stage, sampling procedures, development of the questionnaire, training of field teams and equipment required for anthropometry. Chapter 2 provides guidance to support the collection of high quality data during field work, especially regarding data collection procedures, on conducting the interview and carrying out measurements and on the data capture/entry process and recommended in-process quality assurance checks. Chapter 3 describes the data quality assessment checks at the central office, the recommended standard approach for analysis of malnutrition estimates and their interpretation and reporting. It also provides a standard approach to producing a transparent report. Each chapter provides a rationale and proposes a number of steps for enhancing data quality. Whenever available, recommendations at each step of the process are coupled with links to useful tools. Examples of faulty practices that may affect data quality and suggestions on how to avoid them are also provided in some sections of Chapter 1 and 2.

The three chapters present material or set of recommendations of distinct nature. Chapters 1 and 2 pertain to survey steps where survey planners and implementers own the process of conducting the survey and are ultimately responsible
for the survey data collected. In these chapters, potential faulty practices and how to avoid them at each stage of the planning and data collection are thus included. In turn, Chapter 3 explains how to perform data quality assessment and data analyses following a standard approach and produce a report that enhances transparency.

**Figure 1. Improving data quality along the anthropometric survey process**