MODULE 7

Measuring malnutrition: Population assessment

PART 1: FACT SHEET

The fact sheet is the first of four parts contained in this module. It provides an overview of how to measure malnutrition in a population. Detailed technical information is covered in Part 2. The measurement of micronutrient malnutrition is not included as it is covered in Module 4. Words in italics are defined in the glossary.

Introduction

Nutrition assessments are essential to guide response during an emergency. There are three main methods used to assess the nutrition of populations: *rapid nutrition assessments, nutrition surveys and nutrition surveillance*. Module 7 explains how to conduct nutrition surveys.

Survey objectives

The most common objective for anthropometric surveys during emergencies is to measure the *prevalence* (level) of acute malnutrition within a specified population. Prevalence of acute malnutrition needs to be interpreted in regard to contextual information such as food security, feeding practices, public health, water and sanitation and shelter conditions among others. Results of anthropometric surveys can be used to establish a baseline or to follow trends.

Survey populations

Nutrition surveys need to be representative of the affected population. The population to be surveyed may be refugees or internally displaced people (IDPs) living in camps or people living within a livelihood zone (area where the population has similar *livelihoods*) or a particular administrative area (district or region). Survey results are only representative of the geographical area from which the survey sample is selected and may only be generalized beyond the survey area with caution and strong clear justification.

Children aged 6 to 59 months are typically measured as they are nutritionally vulnerable and act as a proxy for the nutritional status of the entire population. Since almost all anthropometry surveys in emergencies measure children aged 6-59 months, this also provides an opportunity for comparison across areas or over time.

Data collection

International guidelines recommend that information on *anthropometry* (body measurements) be collected. Some limited additional information can be coupled with an anthropometric survey. Measles vaccination coverage is often asked as part of an anthropometric nutrition survey as it is relatively easy to collect and can lead to clear recommendations. Mortality surveys are often coupled with nutrition surveys when no data on mortality is available. It can seem attractive to collect additional information about the determinants of malnutrition together with an anthropometric nutrition survey, but it is inadvisable to attempt to obtain all this additional information via a nutrition survey.

Sampling

Anthropometric surveys are done by sampling a sub-set of the affected population. This requires the use of internationally recognized statistical methods so that the prevalence of acute malnutrition in the sampled population can be generalized to that of the whole population of the area.

The most common forms of sampling procedure are simple and systematic sampling and cluster sampling. A cluster is a group of neighbouring households. The cluster sampling methodology involves selecting a number of clusters randomly in the first stage (generally between 25 and 40) and then selecting children or households randomly within each cluster in the second stage.

Planning and preparation for surveys

Practical and technical issues relating to nutrition surveys include: getting permission from local authorities to carry out the survey, checking the security situation, obtaining and testing measuring equipment, organising transport, obtaining population data, developing, testing and translating questionnaires, recruiting and training fieldworkers and piloting all procedures. National staff and agencies should be involved from the outset to build national capacity and to ensure recognition of the survey findings.

It is also important to factor in *seasonality* as prevalence of acute malnutrition can vary quite dramatically depending on the season.

Timing

Field data collection for nutrition surveys can take anything from a few days in camp situations to several weeks for dispersed populations in large rural areas. In addition to field work, survey preparation can take up to two weeks, and analysis and report writing one to two weeks.

Survey teams

Teams are usually composed of three people each. The composition of team members needs to be sensitive to the local context in terms of gender, ethnicity and language skills as well as local knowledge of the survey area. At least two people are required to do weight and height measurements and one to record the data. The latter is the team leader responsible for the quality and reliability of the data collected. Two to six teams can be used depending upon the time allocated to complete the survey and the size and accessibility of the area to be covered.

Training and field data collection

The training usually takes at least two or three days. There should be regular supervision of survey teams by the supervisor or coordinator throughout the survey. In addition, whenever feasible, there should be a daily 'wrap up' session with all the teams to discuss any problems that have arisen during the day.

It is advisable to inform the population in advance that a survey will take place and ask people to stay home. Once the team is in the area to be surveyed, local authorities must be informed of the survey. When arriving in a household, permission for measuring the children should be sought from an adult caretaker.

Data analysis

Analysis of anthropometric data can either be done by hand or using freely-available software, including Emergency Nutrition Assessment (ENA) for SMART, Epi Info combined with ENA hybrid or WHO Anthro.[1]

Presenting results

Nutrition survey results are presented in a standard way. The prevalence (level shown as a percentage) of malnutrition is always accompanied by the 95 per cent *confidence interval* (equivalent to saying that if the survey is done 100 times, the value will be within the range of the confidence interval 95 times out of 100). The age and sex distributions are always shown. For children aged 6 to 59 months, weight-for-height index in Z-score according to WHO standards should primarily be reported. Weight-for-Height in Z-score according to NCHS reference may also be reported in addition to allow comparison with past surveys. Wasting and severe wasting measured by *MUAC* (Mid Upper Arm Circumference) should be included when appropriate (e.g., when feeding programs use MUAC as admission criterion). For surveys measuring adult malnutrition, the *BMI* (Body Mass Index) or MUAC are the most commonly used indicators.

The prevalence of malnutrition should be interpreted in relation to what is expected for that time of the year (season) and in the context of the overall situation. Currently, there are no universally agreed thresholds which indicate the severity of a nutritional situation but the United Nations stipulate that a prevalence of *acute malnutrition* (wasting) of 10 to 14 per cent indicates a serious situation and over 15 per cent indicates a critical situation.

The findings of a nutrition survey should be written up and disseminated as soon as possible after completion of the survey. Reports should be as clear as possible and always include a summary of one to two pages with key findings and recommendations.

[1] For download, see www.cdc.gov/epiinfo; http://www.smartmethodology.org/; http://www.who.int/childgrowth/software/en/

Key messages

1. Anthropometric nutrition surveys are commonly conducted during emergencies to estimate the level of acute malnutrition in a population.
2. Two-stage cluster sampling is commonly applied.
3. Nutrition surveys require time, financial resources, trained staff and logistical support.
4. There are standard ways of presenting anthropometric data in reports as prevalence with 95 per cent confidence intervals.
5. Survey reports should include a description of objectives, methodology, limitations as well as the findings and recommendations.
6. Level of malnutrition should be interpreted in line with contextual factors, such as food security, public health and care practices.