Technical Guidance for the Joint Approach to Nutrition and Food Security Assessment (JANFSA)

1st Edition October 2016

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Technical Guidance

for the

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Acknowledgements

The development of this guidance was based on a consolidation of experiences from pilot studies on a Joint Approach in Nutrition and Food Security Assessment (JANFSA) conducted over the past four years and the inputs from participants who attended a global consultation workshop held in May 2016 in Nairobi. Acknowledgement is given to UNICEF East and Southern Africa Regional Office (ESARO) and WFP Regional Bureau of Eastern and Central Africa (RBN) based in Nairobi, who led in the development of the technical guidance. The guidance benefited from the draft Protocols that were developed from work done in Karamoja, Uganda in 2011 and 2012. This work was under the guidance of a Technical Working Group (TAG) composed of technical representatives from UNICEF Uganda, UNICEF East and Southern Africa Regional Office (ESARO), WFP Regional Bureau Johannesburg, UNHCR, ACF, USAID and FAO. Based on the Protocols, further piloting of the adapted tools developed by the TAG was done in four countries in East and Central Africa over three years. The lessons learnt from these pilot studies form the basis of this guidance.

The guidance benefited from a peer review workshop held in Nairobi from 9 to 11 May 2016. Forty-seven representatives from UNICEF and WFP country offices in Eastern and Central Africa attended the workshop, along with representatives from Headquarters and Regional Bureaux/Offices of Eastern and Central Africa; West Africa; Southern Africa; and the Middle East, Central Asia and Eastern Europe. Special thanks go to WFP and UNICEF staff who attended the workshop as this guidance has been enriched by their experiences.

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Foreword

This Joint Approach for Nutrition and Food Security Assessment (JANFSA) guidance is designed for professionals and organizations intending to carry out integrated nutrition and food security assessments. It sets out the steps required and the standards for such assessments.

The JANFSA guidance developed by WFP Regional Bureaux for East and Central Africa and Southern Africa, and the UNICEF Regional Office for Eastern and Southern Africa. It is based on initial work done by a Technical Working Group (TAG)[1] in 2011/12, in line with a regional memorandum of understanding for WFP and UNICEF and has benefited from peer review by technical specialists across UNICEF and WFP.

The guidance brings to life the UNICEF conceptual framework on the causes of malnutrition, adapted by WFP to include determinants of food security. Information on both food security and nutrition is collected for the same population, which allows for a joint analysis of the relationship between the two, as well as of the underlying causes of food and nutrition insecurity to better inform policy and programme decision-making.

The JANFSA guidance also helps to define appropriate programme responses and supports the design of existing food or non-food based interventions in the study area. This is done by determining their type (social protection, safety nets, preventive or curative nutrition interventions), targets (areas, households or individuals) and implementation (independently or jointly) in order to efficiently address the food security and/or nutrition-related issues. The JANFSA will contribute information needed for nutrition-sensitive programming

[1] Technical Working Group (TAG) was made up of representative members from UNICEF Uganda, ESARO, WFP RBJ, RBN, UNHCR, ACF, USAID and FAO.

including information regarding the need for complementary water, sanitation and health-related interventions to address malnutrition.

The JANFSA guidance adds to other available toolboxes such as those for the Standardized Monitoring and Assessment of Relief and Transition (SMART); Joint Assessment Missions (JAM); and Crop and Food Supply Assessment Missions (CFSAM), among other guidance material.

We hope this guidance will help UN agencies, NGOs, governments and other parties interested in nutrition and food security to improve their analyses so as to assist vulnerable populations and contribute to zero hunger.

Leila GHARAGOZLOO-RAKKALA Regional Director UNICEF Eastern and Southern Africa (ESARO)	Valerie GUARNIERI Regional Director WFP Regional Bureau of East and Central Africa (RBN)

About this Guidance

Purpose

This guidance is a consolidation of experiences from four pilot studies on joint nutrition and food security assessments (JANFSA) conducted over the past four years and the inputs from participants who attended a consultation workshop held in May 2016 in Nairobi. The manual takes readers through the step-by-step process of planning and carrying out a JANFSA. It is designed for any professionals or organizations who intend to conduct similar assessments, particularly technical experts from UNICEF, WFP, government institutions and NGOs at regional or country level who require high-level standard guidance to carry out integrated nutrition and food security assessments. The document may also be of interest to local institutions, food security or nutrition actors, and anyone wishing to learn about the main features of integrating assessments.

Structure

The document consists of six parts.

Part I gives the background to joint assessments and the reasons for integrating nutrition and food security assessments.

Part II contains the introduction and briefly describes key concepts in food and nutrition security to ensure a common understanding and refresh readers on what needs to be measured. It also describes the process and framework of integrated nutrition and food security assessments.

Part III provides guidance on how to plan and undertake an integrated assessment. It specifies the objectives and how to develop the methodology:

- How many households to interview and how many children to measure
- What type of sampling techniques should be used and the precision levels required

Part IV explores data collection procedures, including field data collection and data quality checks.

Part V covers data entry and analysis. It provides guidance on running joint analyses linking food security and nutrition. It also suggests how investigators could identify recommendations and response options. This part contains some of the results from the three pilot studies.

Part VI describes the structure of the survey report, how to finalize it and how to disseminate the results and findings from the joint assessment successfully.

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Acronyms

ACF	*Action Contre La Faim*
CARI	Consolidated Approach for Reporting on Indicators of Food Security
CDC	Centre for Disease Control
CSI	Coping Strategy Index
CFSVA	Comprehensive Food Security and Vulnerability Assessment
DHS	Demographic Survey
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunization
ESARO	UNICEF East and Southern Africa Regional Office
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
FCS-N	Food Consumption Score Nutrition
HH	Household
HDDS	Household Dietary Diversity Score
IDDS	Individual Dietary Diversity Score
ITN	Insecticide-treated bed nets
IYCF	Infant and Young Child Feeding
JANFSA	Joint Approach for Nutrition and Food Security Assessment
MAM	Moderate acute malnutrition
MDD_W	Dietary Diversity Score for women
MUAC	Mid-Upper Arm Circumference
ODAN	One-Dimensional Actor-Network
ONA	Web and mobile application for data and visualization
ODK	Open Data Kit
PDAs	Personal Digital Assistants
PLW	Pregnant and Lactating Women

PLHIV	People Living With HIV
PPS	Population Proportionate to Size
SAM	Severe Acute Malnutrition
SAS	Analytics, Business Intelligence and Data Management
SPSS	Statistical Package for Social Scientists
STRATA	Data Analysis and Statistical Software for Professionals
SMART	Standardized Monitoring and Assessment of Relief and Transition
TAG	Technical Working Group
RBJ	WFP Regional Bureau Johannesburg
RBN	WFP Regional Bureau Nairobi
NGO	Non-governmental organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
VAM	Vulnerability Assessment and Mapping (WFP Food Security Analysis Unit)
WASH	Water and Sanitation
WHO	World Health Organization
WFP	World Food Programme

PART I: BACKGROUND AND JUSTIFICATION

The interrelationship between food security and nutrition has long been recognized. UNICEF's conceptual framework on the causes of malnutrition has been adapted by WFP to further include determinants of food security. Yet despite the acknowledged importance of addressing these linkages to meet programme information needs, WFP, UNICEF and other agencies have often carried out food and nutrition assessments in parallel. As a result, the linkages between food security and nutrition are often left unexplored. This disassociation has been attributed to various reasons, ranging from technical issues – such as differences in the sample sizes required to obtain reliable household food security information compared with those needed for precise estimates for nutrition assessments – to timing issues, and agency mandates and expertise. If information for the same population is needed to inform programme design on food security and nutrition, separate assessments may not be an optimal way to achieve this. That said, there are some instances when a JANFSA may not be possible for example if the food security and nutrition assessment timing and data requirements differ or in rapid onset emergencies where time constraints do not allow for this in-depth process.

1. Why a JANFSA?

1.1. Informing programme design

Food and nutrition-related problems are often a major cause of excess morbidity and mortality among emergency-affected populations, as well as among poor populations living in protracted emergency or development contexts. Climatic or human-induced emergencies often disrupt existing household livelihood mechanisms, limiting the physical or economic access to food and the optimal utilization of food.

In populations facing widespread food shortages and high levels of malnutrition, humanitarian organizations provide livelihood and emergency assistance to meet basic food needs and contribute to the protection of nutrition and health status of households, thereby reducing hunger. To target life-saving interventions successfully and to support positive development outcomes, these organizations require assessments that identify and measure specific needs within the affected population.

This JANFSA guidance helps to define appropriate programme responses and refine the design of existing food or non-food interventions in the area of study. Food security and/or nutrition-related issues are efficiently addressed by providing information that determines their type (preventive or curative), targets (areas, households or individuals) and implementation (independently or jointly). The JANFSA contributes to information needed for nutrition-sensitive programming, food-based nutrition interventions and some of the sectors relevant to addressing malnutrition.

Both the initial assessment of food security and nutrition and the evaluation of existing food, health and nutrition programmes require reliable data on the prevalence and severity of various forms of malnutrition and food insecurity. Such data is usually gathered by population-based surveys. As a result, surveys/assessments of household food security and of maternal and child nutrition are critical for food assistance, health and nutrition programming in acute and protracted emergencies or in development contexts.

1.2. Capitalizing on the linkages

The goal of joint assessments is to investigate the prevalence and severity of household food insecurity and malnutrition and any interrelationships between them. This requires assessing indicators of household food

security and those of individual nutritional status in children aged 6-59 months and in pregnant and lactating women (PLW).

There are no preconditions to conducting a JANFSA. However, a few assumptions on the linkages between the two dimensions and on the standards to follow for joint assessments were considered whilst drafting this guidance.

Joint assessments optimize individual and household-level data collection procedures to maximize cost-efficiency, triangulate nutrition and food security information, understand the underlying causes of malnutrition and reveal the linkages between food security and nutrition. The JANFSA allows for a deeper understanding of the degree of association between household food insecurity and the nutritional status of children aged 6–59 months and PLW. It gives insight into intra-household food distribution and how food security dimensions influence forms of malnutrition. However, the value of a JANFSA goes beyond the technical aspects. Table 1.1 summarizes the key advantages.

Table 1.1: The advantages of JANFSA

Linkage of food security and nutrition	• Greater understanding of the potential linkages between food security and nutrition. • Comprehensive collection and analysis of intra-household food distribution and utilization in relation to care and feeding practices.
Joint response and advocacy	• Powerful advocacy tool in both the planning phase of the assessment and the implementation of any joint programme.
Cost	• Comparative reduction in costs of logistics, training, transportation and human resources (pooling resources) • Integrated assessment will be more cost-efficient and effective than if done separately.
Coordination and planning	• Combined food security and nutrition results allow more precise targeting, and greater clarity in roles and responsibility. • Responses to malnutrition have often been product-centric without addressing other underlying causes.
Capacity	• Technical and planning discussions, as well as the assessment results themselves, can act as a means of broadening the capacity of practitioners who normally only work in one of the sectors.
Improved data quality	• SMART-compliant methods and tools for nutrition are combined with food security tools and methods in a standardized manner.
Conceptual Framework	• The UNICEF conceptual framework for determinants of child and maternal malnutrition adapted by WFP to include food security is operationalized.

PART II: INTRODUCTION

2.1. Food and Nutrition Security Conceptual Framework

The JANFSA is based on WFP's adapted UNICEF conceptual framework on determinants of child and maternal malnutrition, which includes household food security and livelihood dimensions. This framework has been used in developing the guidance to understand the linkages between food security and nutrition. However, other frameworks such as that presented in the Lancet series on maternal and child nutrition in 2013[2] could be used to complement the approach (see Annex 1). The overall conceptual framework on food and nutrition security used in this guidance is presented in Figure 2.1.

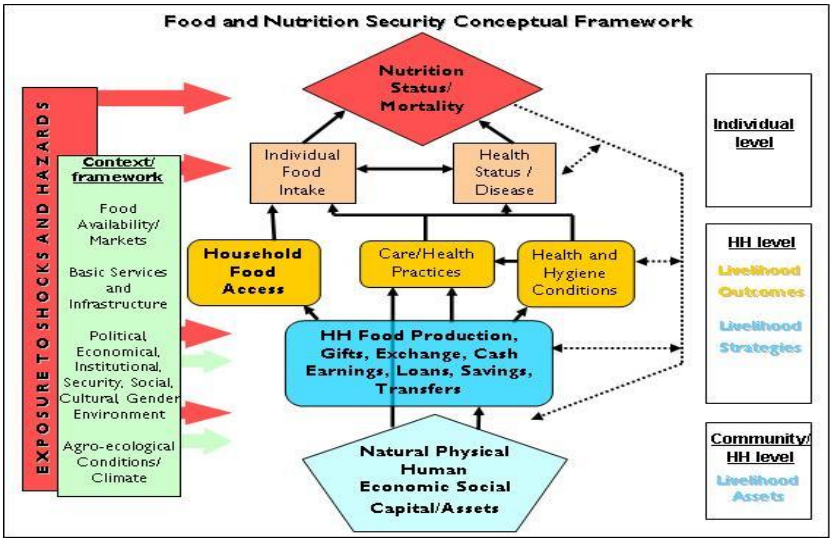


Figure 2.1: Food and Nutrition Security Conceptual Framework

[2] See http://www.thelancet.com/pb/assets/raw/Lancet/stories/series/nutrition-eng.pdf

Food security and child nutritional status primarily deteriorate because of inadequate feeding practices[3] and disease. Chronic and acute food insecurity are some of the critical underlying factors of child undernutrition. Climatic or human-induced shocks often disrupt existing household livelihood mechanisms, limiting or disrupting households' use of their assets, production and access to food. For example, the livelihoods of subsistence farmers can be damaged by shocks such as droughts, limiting income sources to purchase food and thereby harming their food and nutrition security. Wage earners' sources of income to purchase food could be disrupted by displacement or their activities could be interrupted. For poor populations, changes in production, food prices, wage structures and other variables often lead to deteriorating household food security and child nutritional status.

In addition to factors influencing household access to food, an increase in the incidence of communicable diseases often undermines nutritional status. Communicable diseases are generally more common in emergency-affected populations because disease prevention programmes such as vaccinations, hygiene and sanitation, health promotion and health service access are interrupted by shocks such as conflict, floods, economic instability or the breakdown of social services. Some shocks result in population displacement, often leading to high population densities in camp settlements with poor shelter and sanitation, few health services and other factors that aggravate the spread of communicable diseases. Outbreaks of childhood diseases with a major impact on nutritional status are also common in stable populations in development contexts.

[3] Zero or poor compliance with recommended infant and young child feeding practices such as the early initiation of breastfeeding within one hour of birth, exclusive breastfeeding during the first six months of age, continued breastfeeding up to two years and complementary feeding from six months of age but also insufficient and/or non-diversified food intake.

In populations with extensive food shortages and high levels of acute and/or chronic malnutrition, the humanitarian community and government stakeholders provide emergency assistance or developmental interventions to cover basic food and non-food needs to protect households' nutrition and health. Before implementing such life-saving interventions, the humanitarian community carries out assessments to determine the magnitude and specific needs of each population. Even so, sometimes emergency-affected or poor populations receive food assistance that is deficient in important nutrients such as protein, energy, iron, vitamin A, B vitamins and others. Even if the assistance provides enough protein, energy and fats, many individuals in the recipient population may suffer from micronutrient deficiencies.

Non-food factors such as diseases, poor sanitation and unsafe drinking water may also play a role in increasing malnutrition in young children. Malnutrition has an effect on the immune system, thus predisposing affected children to diseases. Disease outbreaks or endemic diseases may themselves lead to malnutrition. Some diseases, such as measles and some types of pneumonia, can be prevented by childhood vaccinations. Others, such as many types of non-viral diarrheal diseases, can be prevented by providing clean water and adequate sanitation facilities. Immunization services that aim to reduce childhood mortality caused by preventable diseases are supported by UNICEF, other United Nations agencies, non-governmental organizations, and local and national governments.

Reliable data is needed for household food security and nutrition assessments, as well as to plan, implement and evaluate food, health and nutrition programmes. This data includes food availability and consumption; market integration; household purchasing power and economic access to food; anthropometric measurements; infant and

young child feeding and caring practices; the availability of health services; and information on existing nutrition-specific and nutrition-sensitive programmes carried out by government and humanitarian or development partners. Such data is usually gathered by population-based surveys. Whilst there is an obvious interrelationship between food security and nutritional status, these two sets of outcomes are rarely assessed together.

Whilst assessing the different components of household food insecurity, the JANFSA methodology tries to identify the extent to which all potential determinants and underlying causal factors contribute to child and maternal malnutrition. This widely accepted framework is the starting point to investigate the complex relationships between food security and nutrition. It ensures that the most relevant data on household food security and child and maternal nutritional status is collected to meet the broadest range of information needs for programmatic purposes. Although some stakeholders tend to emphasize some aspects of the framework over others or may prefer comparable alternative frameworks, this analytical tool allows all stakeholders to consider the broader food and nutrition picture, thus helping them reach a consensus on the minimum package of information to collect and analyse.

2.2. Key concepts

2.2.1. Food security

Food security is a state in which “all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (World Food Summit, 1996). By contrast, food insecurity exists when “people have limited or uncertain availability and inadequate physical, social or economic access to nutritionally adequate and safe food”.

Food security is a multidimensional function of the following:

1. ***Food availability:*** the amount of food physically available to a household (micro level) or to an area (community, district, region or country, which includes domestic production, commercial imports, reserves and food aid).

2. ***Food access:*** the physical (road network and market) and economic (own production, exchange and purchase) ability of a household to acquire adequate amounts of food regularly. It is one or a combination of home production and stocks, purchases, barter, gifts, borrowing and food assistance.

3. ***Food utilization:*** the intra-household use of the food they have access to and the individual's ability to absorb and use nutrients (a function of their health status and of the efficiency of food conversion by their body).

FAO has added a fourth dimension: ***Stability*** – emphasizing the importance of reducing the risk of adverse effects on: food availability, access or utilization.

Food security is an outcome of household livelihood strategies and activities. The strategies are based on the assets and/or capital available to the household.

In this guidance, the Consolidated Approach for Reporting on Indicators of Food Security (CARI[4]) is used as one of the key indicators linking household

[4] CARI is an approach developed by WFP for reporting the severity of household food insecurity using a combination of indicators: Food Consumption Score, Share of Food Expenditure, livelihood coping strategies adopted, daily per capita intake in kilocalories, and poverty status. For more details on CARI guidance, see http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp271449.pdf

nutrition and food security. The CARI was developed by WFP to standardize the analysis and reporting of food insecurity levels within a population. When it is employed, each surveyed household is classified into one of four food security categories based on their current food security status (using food consumption indicators) and their coping capacity (using indicators that measure economic vulnerability and asset depletion). Other food security indicators such as the household hunger scale (HHS)[5] could be used in the analysis if preferred.

2.2.2. Nutrition

Nutrition is the process by which a living organism assimilates food and uses it for growth, liberation of energy and replacement of tissues. It is part of "food utilization" at the individual level. Malnutrition occurs when an individual's diet does not provide adequate nutrients for growth and maintenance, or when the body is unable to fully utilize the consumed food due to illness. Malnutrition can be under-nutrition (insufficient nutrients for the body) or over-nutrition (excessive calories for the body). However, in this document and in most nutrition assessments, malnutrition refers to under-nutrition only.

There are five main forms of malnutrition:

1. ***Acute malnutrition,*** also known as "wasting", is defined as low mid upper arm circumference (MUAC) or weight-for-height and/or oedema. It is characterized by a rapid deterioration in nutritional status over a short period of time related to a severe or recurrent lack of nutrients (lean period, severe epidemic, sudden or repeated change in the diet, or conflict). There are different levels of severity

[5] USAID and FANTA, 2011. *Household Hunger Scale: Indicator Definition and Measurement Guide*.

of acute malnutrition: moderate acute malnutrition (MAM) and severe acute malnutrition (SAM).

2. ***Chronic malnutrition,*** also known as “stunting”, is defined as low height-for-age and is a form of growth failure which develops over a long period of time. Inadequate nutrition over long periods of time (including poor maternal nutrition and poor infant and young child feeding practices), repeated infections and/or inadequate parental care practices can lead to stunting. It also has moderate and severe forms.

3. ***Underweight*** is defined as low weight-for-age as a result of acute or chronic malnutrition or a combination of both.

4. **Micronutrient malnutrition** refers to vitamin and mineral nutritional deficiency diseases caused by dietary insufficiency and/or inadequate absorption. Vitamin A deficiency, iron deficiency anaemia and iodine deficiency disorders are among the most common forms of micronutrient malnutrition. Other micronutrients found in food, including vitamins such as thiamine, niacin, riboflavin, folate, vitamins C and D, and minerals such as calcium, selenium and zinc can also significantly affect health.

   Children under 5 are considered the most sensitive to nutritional stress. The 6–59 month age group is most commonly chosen as representative of the magnitude of the situation for the entire population.

5. ***Overweight and obesity*** are defined as ''abnormal or excessive fat accumulation that presents a risk to health''. There is not one simple index for the measurement of overweight and obesity in children and adolescents because their bodies undergo a number of

physiological changes as they grow. Depending on the age, different methods to measure a body's healthy weight are available.

2.3. The joint assessment process

The goal of joint assessment is to investigate the prevalence and the severity of household food insecurity and malnutrition, as well as any interrelationships that may exist between them. For this purpose, indicators of household food security and individual nutritional status in children aged 6-59 months and in PLW must be assessed.

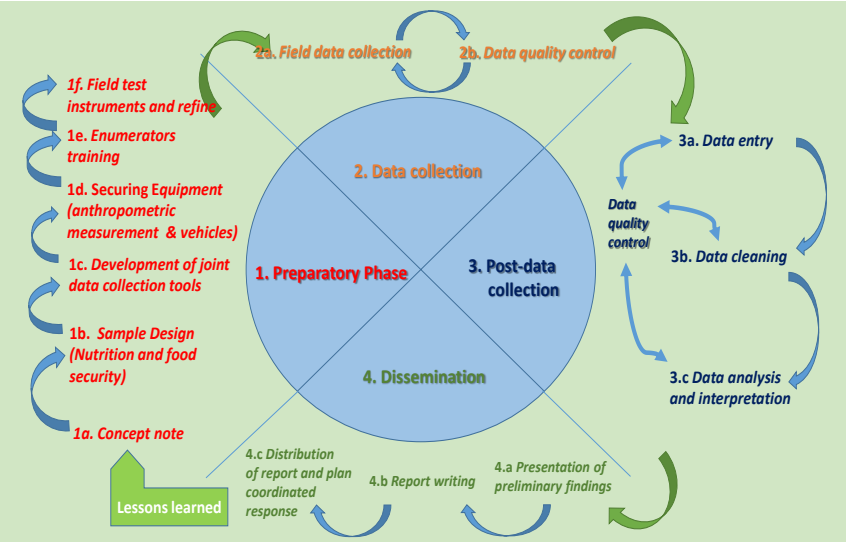


Figure 2.2: The survey cycle

Figure 2.2 summarizes the design and sequencing of phases of a typical survey, from the preparatory phase to the dissemination of the final report. The same phases and steps apply to a joint food security and nutrition survey. The four main steps are as follows:

1. Preparatory phase
2. Field data collection
3. Post-field data collection
4. Dissemination of results

Figure 2.2 shows the order of activities within each phase. However, the steps are only indicative as in most cases, several activities are undertaken simultaneously to save time. This guidance will use the steps as a way of structuring the JANFSA.

PART III: PREPARATORY PHASE

3.1. Concept note

Once the decision has been made to conduct a joint assessment, a concept note should be drafted. This document must clearly state the goals and objectives of the assessment, the timeline, the composition of the core team, the roles and responsibilities of each actor, and a tentative budget.

3.1.1. Goals and objectives

The overall goal of the joint assessment is to gather comprehensive, useful, timely and cost-effective data on the extent and determinants of household food insecurity and maternal and child malnutrition. The objectives of the JANFSA agreed upon by the stakeholders determine the coverage and depth of analysis. It is therefore necessary that objectives are clear and endorsed by stakeholders before the assessment design is finalized. Wherever possible, include the government statistical agency and other relevant government departments in the planning and in the whole assessment cycle. Below are examples of core and optional objectives for JANFSA. The list is not exhaustive and should be adapted to suit context and data needs.

Core objectives

Primary objectives:

- Estimate the current prevalence of acute malnutrition (wasting), chronic malnutrition (stunting) and underweight among children aged 6-59 months.
- Estimate the current prevalence of acute malnutrition (wasting) among PLW.

- Estimate the current prevalence and severity of food insecurity (based on CARI or any other agreed indicator).
- Estimate the prevalence rates for key food security indicators such as household food consumption, coping and share of food expenditure.
- Describe who the food insecure are and where they live, by gender and household demographics.

Secondary objectives:

- Estimate household wealth, including asset ownership and main livelihood activities.
- Estimate various categories of household expenditure.
- Estimate the percentage of households with unacceptable food consumption score - nutrition (FCS-N) as a proxy measure of food access.
- Estimate the adequacy of infant and young child feeding practices in children aged 6-23 months (minimum dietary diversity, minimum meal frequency, consumption of iron-rich or iron-fortified foods and minimum acceptable diet).
- Estimate the proportion of households consuming drinking water from improved sources.
- Estimate the proportion of households with adequate sanitation facilities.
- Estimate the current prevalence of diarrheal disease, acute lower respiratory infection and fever in children under 5.
- Estimate the correlation between key childhood diseases, food security and nutritional status of children aged 6-59 months.
- Estimate the correlation between infant and young child feeding practices in children aged 6-23 months and their nutritional status.

- Measure the strength of association between household food consumption and child food consumption for various food groups as a measure of intra-household food distribution.
- Measure the strength of association between predominant household livelihood activities and child nutritional status.
- Measure the strength of association between household food security and nutritional status of children aged 6-59 months.
- Estimate the correlation between maternal hand-washing practices and the nutritional status of children aged 6-59 months.
- Identify the determinants that differentiate households with malnourished children from those households without malnourished children.
- Estimate the proportion of women of reproductive age with acceptable Minimum Dietary Diversity (MDD_W).

Optional objectives:

- Estimate the prevalence of adequate hand washing in mothers of children under 5.
- Estimate the measles vaccination coverage among children aged 9-59 months, the coverage of vitamin A supplementation in children aged 6-59 months and the coverage of deworming in children aged 12-59 months.
- Estimate the nutritional status of women of reproductive age using mid-upper arm circumference (MUAC) or body mass index.
- Estimate the frequency of shocks faced by households.
- Measure the correlation between the nutritional status of mothers of children aged 6-59 months and their children.

- Estimate the prevalence of exclusive breastfeeding, continued breastfeeding and introduction to complementary foods.
- Estimate the current prevalence and severity of food insecurity (based on the food insecurity experience scale).
- Estimate the prevalence and severity of anaemia in women of reproductive age and in children aged 6-59 months.
- Estimate household market access and access to credit/debt.
- Estimate iron supplementation among PLW.
- Estimate the prevalence of anaemia among women of reproductive age and/or children aged 6-59 months.

3.1.2. Timeline

A JANFSA should be timed to optimize results whilst fitting in with country plans and use by stakeholders. Timing should consider seasonality so that the period selected limits the bias in results. In setting the timing, regular country or stakeholder assessments should be considered and appropriately incorporate the JANFSA modules. Stakeholder consultation on the timing and in all assessment stages will limit the risk of bias in the results of the nutrition and food security components. The time required for each phase depends on the area of study, the available resources, and administrative and financial procedures. In general, an integrated nutrition and food security assessment can be completed within 2 to 3 months as findings are needed very quickly for programme decision-making.

- *The preparatory phase* takes two or more weeks depending on context. For efficiency, this phase should include sampling design (1 day), data collection tool development (1 week), the selection of survey enumerators (2 days), anthropometric materials gathering (1 week) and enumerator training (5 days or more depending on the experience of the enumerators). Anthropometric enumerator

selection should consider their performance in taking accurate measurements after standardization.

- *Field data collection* lasts between 10 days and a maximum of 3 weeks according to the SMART methodology. Data quality control is done at the same time as data collection.

- *The post-field data collection phase* depends on whether data was collected using PDAs/smartphones or paper questionnaires. If paper questionnaires were used, more time is required. Data entry can take 1 to 2 weeks (if tablets are not used), data cleaning and treatment (1 week), data analysis and interpretation (2 weeks) and report writing (2 weeks). To save time in data analysis, programming (pre-analysis/script development) can be done as soon as the data entry masks (for paper questionnaires) or questionnaire testing (if using PDAs) has been completed.

Table 3.1: Indicative timeline for an integrated nutrition and food security assessment

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
1. Preparatory phase													
Sampling design	■												
Development of data collection tools	■												
Selection of enumerators and definition of team composition	■												
Gathering equipment for anthropometric measurements	■												
Enumerator training		■											
2. Data collection													
Field data collection			■	■	■								
Data quality control			■	■	■								
3. Post-data collection													
Data entry						■	■						
Data cleaning and treatment								■					
Data analysis and interpretation								■	■				
4. **Dissemination of results**													
Presentation of preliminary results										■			
Report writing										■	■	■	
Distribution of report													■

The survey timeline and length differs depending on how the JANFSA is conducted. If it is combined with national surveys such as demographic surveys, or with ordinary national assessments, the timeline may be longer. The example presented in the table represents a single independent survey.

Depending on the investigators, integrated assessments can be undertaken regularly, for example:

- Once a year during the lean season
- As a one-off, in the event of an emergency or alarming situation
- Once in every three or five years depending on the objectives.
- Once or twice if it's to assess outcomes of emergency food and nutrition response.

However, the JANFSA should be timed in line with same periods as previous nutrition and food security surveys to allow for trend analysis over time.

A stakeholder discussion needs to take place well in advance to agree upon the objectives of the survey. The discussion may involve the following: the WFP country office or the mandated agency on food security; the UNICEF country office or the mandated agency on nutrition; other UN agencies, NGOs or governmental entities, particularly national statistical agencies and relevant ministries; and the nutrition and food security clusters/sectors if they exist.

3.1.3. The composition of the core team

The core team of a JANFSA is composed of at least two different entities: one with a nutrition mandate and another with a food security mandate. This is to ensure that the core team has the required expertise for all steps

in the assessment. This co-investigation also facilitates the availability of instruments for the anthropometric measurements and the availability of skilled staff for data collection supervision and analysis. It is also essential to ensure that the sampling is robust, hence the involvement of experts from the national statistical agency, who can guarantee that the results will be accepted by the broader public.

3.1.4. Roles and responsibilities of each actor

The roles and responsibilities of all actors should be clearly defined before the JANFSA begins. A survey coordinator should be appointed to gather and finalize all outputs of the assessment, and to coordinate inputs from all actors involved. Ideally, the survey coordinator should be an expert in both domains. The roles and responsibilities of each actor need to be identified taking into account all steps of a joint assessment as outlined by this guidance document.

When defining roles and responsibilities, ensure that the relevant government authorities endorse the joint approach. It is also desirable to establish a Technical Working Group (TWG) with clear terms of references and a road-map to ensure a common understanding and commitment. The TWG should contain specialists in sampling, food security, nutrition and information management; programme managers representing UN agencies e.g. WFP and UNICEF; and technical staff from government, NGOs and donors. Government and other stakeholders must be included in the various study processes from planning and field work to reporting (draft, reviews and final version). The tasks of the coordinator include ensuring that the JANFSA objectives are well understood, obtaining stakeholder buy-in and securing funding for the assessment.

3.1.5. Budget

The concept note should contain a realistic estimate of the costs involved in carrying out the assessment, which can be used for resource mobilization and discussions among the stakeholders on budget allocation. This budget should be seen as an indication of resources needed and will need to be updated when the sample size and methodology have been finalized.

3.1.6. Memorandum of understanding

The concept note could be complemented by a memorandum of understanding (MoU) between the agencies and/or governmental bodies providing the co-investigators. The MoU should include clear instructions on budget allocations among the stakeholders and the division of tasks during data collection, data entry, data cleaning, data analysis, report writing, data access and ownership. The concept note is meant to be a working document to guide the in-depth development of the methodology, which could be detailed in study protocols. Meanwhile, the MoU sets out how the partners will collaborate throughout the process of conducting a JANFSA.

3.2. Study design

The design of the study should reflect a number of factors, including the following:

- A clear understanding of the geographical areas and population under study (livelihood zones or administrative areas or any stratification that is agreed upon).
- Whether the survey is independent or combined with other nationwide or sectoral studies.
- The resources available for the study.
- The secondary data and information available.

- The objectives.

3.2.1. Study population

The study population of joint assessments includes all households in the geographical area of interest, as well as all children under 5 and all PLW who are residing in those households on the day of data collection. This means that the main unit for sampling is the household, for both nutrition and food security indicators.

3.2.2. Study area and stratification

Depending on the budget, the required level of data disaggregation, the stakeholder interests and the objectives, the assessment could be national or it could focus on particular geographical areas, for example where malnutrition and/or food insecurity is very high. It could also compare two different areas (urban versus rural), two livelihood zones (pastoralists versus agriculturalists) or areas with high and low malnutrition rates/food insecurity. National joint assessments can also have primary outcomes representative on a lower level (stratum). The strata/units of analysis can be based on administrative or livelihood boundaries. It is important to identify the level of stratification needed, as sample size will need to be calculated for each stratum/unit of analysis. The final study area and level of stratification will be determined by the objectives, the availability of funds and stakeholder interests.

Example – The study population and planning of the four JANFSA pilots:

Each one of the four pilot studies relates to different cases and study populations:

1. ***Country X:*** Three districts of one region and their population were selected for a survey designed to test the JANFSA methodology.
2. ***Country Y:*** JANFSA was associated with a countrywide survey (CFSVA) conducted by WFP and UNICEF which was included in a national demographic survey (DHS) conducted by the local bureau of statistics.
3. ***Country Z:*** The JANFSA pilot was associated with a national CFSVA carried out by WFP with the assistance of the local bureau of statistics. Due to budget limitations, anthropometric measurements and the JANFSA were only conducted in one region.
4. ***Country A:*** The JANFSA was conducted across the entire country at the request of the Government. WFP and UNICEF provided the funding and technical assistance, with the National Bureau of Statistics leading the assessment.

For details in the lessons learnt from the pilots, see Annex 5.

3.3. Sample design

The sample design will be set by consensus between the principal investigator and co-investigators before proceeding to data collection, to improve the visibility of the methodology and trustworthiness of the results. Once the study areas and population have been determined, the sampling method needs to be identified. This influences the sample size calculations. A summary of sampling procedures for JANFSA is described below.[6]

[6] For more information, see WFP, 2009. *Comprehensive Food Security and Vulnerability Analysis Guidance* (on food security sampling)*;* ENA, 2012 [final version]. *Emergency Nutrition Assessment for Standardized Monitoring and Assessment of Relief and Transitions (ENA for SMART) Software User Manual;* and ACF, 2014. *Guidelines for Rapid*

3.3.1. Sampling methods

In general, the sampling for JANFSA follows the standard procedures for household selection used by food security and nutrition practitioners to ensure that the individuals and households sampled are statistically representative of the study population.[7] The sample size should be determined for each unit of analysis/stratum. If a survey includes several strata, a similar sampling method should be used for each to reduce different selection biases occurring between the strata. The technical expertise or guidance of national statistical offices should be sought for in the sampling.

There are four main sampling methods used for food security and nutrition surveys: exhaustive sampling, simple random sampling, systematic random sampling and cluster sampling.

Exhaustive sampling means selecting all households/individuals, and thus no sampling occurs. This can be done in small populations within a specific geographical area.

Simple random sampling is appropriate when a list of every household or individual is available (preferable with their location). Individuals and/or households are then randomly chosen from the list.

Systematic random sampling is used when the total number of households/houses is known and the population is geographically concentrated, and all houses are arranged in a geometric pattern. The first house is chosen at random, and the subsequent households are visited using a set sampling interval.[8] The first household is randomly selected

SMART surveys for Emergencies, International SMART Initiative at ACF – Canada and CDC Atlanta Version 1, September 2014.

[7] For more information, see *Sampling Guidelines for Vulnerability Analysis*.

[8] The sampling interval is determined by dividing the total number of households/houses

between the first house and sampling interval house (e.g. between the first and the fifth house if the sampling interval is 5).

The three forms of sampling described above are not often used as the first stage of sampling because food security and nutrition surveys tend to cover a large geographical area and/or the information is not available.

For the JANFSA pilots, ***cluster sampling*** was mostly used. This approach is recommended for complex studies that are characteristic of joint assessments. It is commonly referred to as **two-stage cluster sampling**.

In the ***first stage***, the whole population is divided into smaller geographical areas. These could be villages, enumerator areas or other geographical zones. Borders must be clear and the population size must be known or estimated for each area. Clusters are then randomly selected using sampling with *probability proportional to population size* (PPS). The list of villages and clusters selected must contain the relative number of households; however, it may be necessary to consider the total population or the number of children if the number of households is not known. ENA software can be used for the selection, or it can be done manually. The number of clusters and thus households per cluster depends on the sample size required.

During data collection, it is best if one cluster is completed each day by each team. If it is not possible to complete a cluster in a day, it is best to finalize the selection of all the households on the first day, and survey the households the next day. A minimum of 25 clusters should be included for the survey to be considered valid for analysis for the desirable administration/ geographical area, therefore it is advisable to consider at least 30 clusters in the design.

in the study area (village or strata) by the desired sample size (households needed as identified by the sample size calculations) for that study area.

In the ***second stage***, households in each cluster are selected. This can be done *using simple or systematic random sampling*, as described above. A complete list of households can either be obtained from local leaders or created by the survey team. Otherwise, the modified *Expanded Programme on Immunization (EPI[9]) Cluster Survey Design* can be used.[10] Figure 3.1 is a decision tree for selecting households at the last stage of sampling. When there are more than 100 households in one cluster, segmentation can be used to reduce the area covered by the survey teams. The village is divided into smaller segments and one segment is randomly chosen to be included in the cluster.

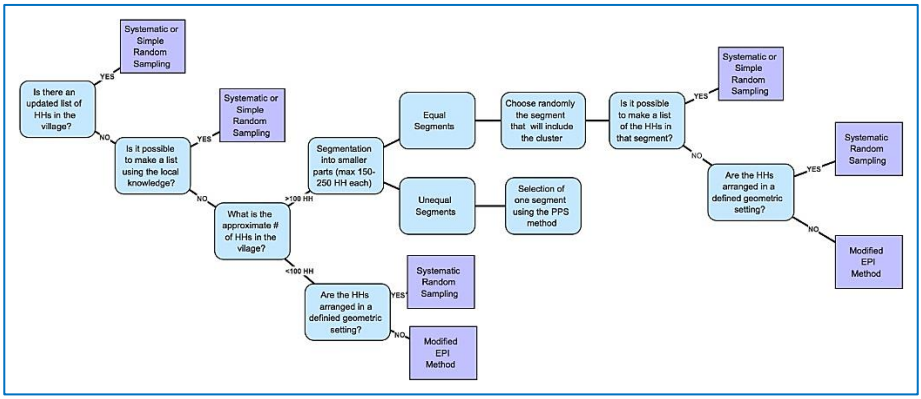


Figure 3.1: Decision tree for household selection at the last stage of sampling[11]

The calculated sample sizes already take into account that a certain proportion of selected households and individuals within selected

[9]EPI is a WHO survey carried out in 30 systematically selected clusters of seven or more children to estimate the immunization coverage of all the children who live in the area (i.e. the population) being surveyed.

[10] For further information, please refer to the sampling methods and sample size calculations used in the SMART methodology.

[11] From *Sampling methods and sample size calculations for the SMART methodology*, June

households will not be available for data collection. Hence during the survey, any absent households or absent individuals within households – including children aged 6-59 months – should not be replaced. If over 5 percent of the households in a cluster are not found or have absent women or children, the team needs to organize follow-up visits for each selected household. The teams should make maximum effort to locate and collect data from selected households and individuals by attempting to visit each selected household at least three times and by scheduling follow-up visits to interview any missing individuals. If the selected households are not be interviewed, the survey teams will record why data could not be collected from each missing household and individual in order to judge the potential for selection bias in the final survey results.

3.3.2. Sample size

Before sample sizes are calculated, all the JANFSA stakeholders must agree on the following aspects:

- Main objective(s) of the assessment
- Key outcome indicators, selected in line with the objectives
- Prevalence outcome indicators to be used for food security and nutrition sampling
- Sampling frame and stratification
- Financial resources available
- The most appropriate and cost-effective sample size per stratum based on required and actual precision level.

The sample sizes for each stratum can be calculated using SMART/ENA, ODAN, Open-EPI or other calculators. Sample size calculation methods must match the objectives of the survey. Most JANFSAs will have the

2012

following main objective: to estimate the prevalence of acute malnutrition and/or stunting and food insecurity. If the only objective is to verify a particular link between the determinants of food insecurity and those of malnutrition, the hypothesis related to the linkage to be investigated needs to form the basis of the sample size calculations. For example, if the objective is to identify differences in FCS between households with or without malnourished children in the JANFSA, the sample size is calculated using prevalence estimates for nutrition and food security indicators: the prevalence of poor food consumption, the prevalence of food insecurity or the proportion of households using severe coping strategies, plus the prevalence of wasting and/or of stunting, depending on the primary objectives of the assessment. If the primary objective involves a different indicators, this needs to be used for the sample size calculations. The method of sampling and the sample size, has an effect on the accuracy and precision of the results. When the sample size is too small, the indicators being measured become less precise and can be non-representative.

Sample size calculations for nutrition indicators should always be done using the SMART recommended software ENA.[12] Sample sizes for food security indicators can be calculated with ODAN, Open-EPI or ENA (identifying households rather than children). Note that ENA corrects for cluster sampling but ODAN and Open-EPI do not, and thus there are small differences between them.

Sample size calculations usually require the following assumptions for each outcome:[13]

[12] See http://smartmethodology.org/survey-planning-tools/smart-emergency-nutrition-assessment/ SMART methodology guidance (2012) can be used to complement this JANFSA guidance document, and is available here: http://smartmethodology.org/survey-planning-tools/smart-methodology/

[13] Some software assume power. If there is no need to fill it in, you can assume that in the three sample size calculators (ENA, Epi-info and ODAN), this is in accordance with the

- The power (beta) = 0.8
- Prevalence of primary nutrition and food security outcomes.
- The confidence interval is standard 95 percent in SMART/ENA. It can be adapted in ODAN and Open EPI, but the standard 95 percent confidence interval is advisable.
- Desired width of confidence intervals around the point estimate of prevalence (precision). A reference table is presented below with acceptable precisions for each estimated prevalence (nutrition and food security indicators).
- Design effect to account for cluster sampling: if no previous design effects are know from surveys measuring the same indicator in an identical or similar stratum, the standard of 1.5 is taken. Take into account that the design effect increases when the prevalence or the number of children/households within each cluster increases regardless of the homogeneity of the sample population. This means that when stunting is the main outcome, it might be more appropriate to use a design effect of 2.
- Average household size.
- Proportion of children under 5 (anthropometry surveys).
- Household and individual non-response: a 5 percent non-response rate is recommended, but this may need to be adapted based on the context and previous non-response rates.
- Note that a correction factor needs to be used when the survey/assessment is conducted in a population with a small target population (for children 6-59 months, if the population is below 10,000 for the nutrition indicators).

guidance provided. For other calculators, you will need to cross-check.

Table 3.2: Precision for different estimated prevalence of nutrition or food security indicators[14]

Estimated prevalence of nutrition or food security indicator (%)	Desired precision (+/- %)
5	3.0
10	3.5
15	4.0
20	4.5
30	5.0
40	6.0

Note that sampling is quite complex for infant and young child feeding practice (IYCF) indicators because of the different targeted populations: early breastfeeding and complementary feeding practices are assessed for children under 24 months; exclusive breastfeeding is assessed for children under 6 months; and continued breastfeeding at 1 year is assessed for children between 12 and 15 months. Hence, inclusion of IYCF indicators in a JANFSA will impact the overall sample size, and should be on a case by case basis depending on the resources available and information needs. The inclusion of IYCF indicators in the JANFSA should be context-specific and should be discussed at country level by the stakeholders. If IYCF indicators are identified as part of the core objective of the study, IYCF indicators must be considered in the sample size calculation. The sampling of IYCF indicators lies beyond the scope of this guidance.[15]

[14] Adapted from sampling methods and sample size calculations for the SMART methodology, 2012

[15] For more information and a sampling calculator, see Care USA, 2010. *Infant and young child feeding practices. Collecting and Using Data: A Step-by-Step Guide*.

3.3.3. Sample calculators

3.3.3.2. SMART sample size calculator

Sample size calculations for nutrition indicators should be done using the SMART recommended software ENA.[16]

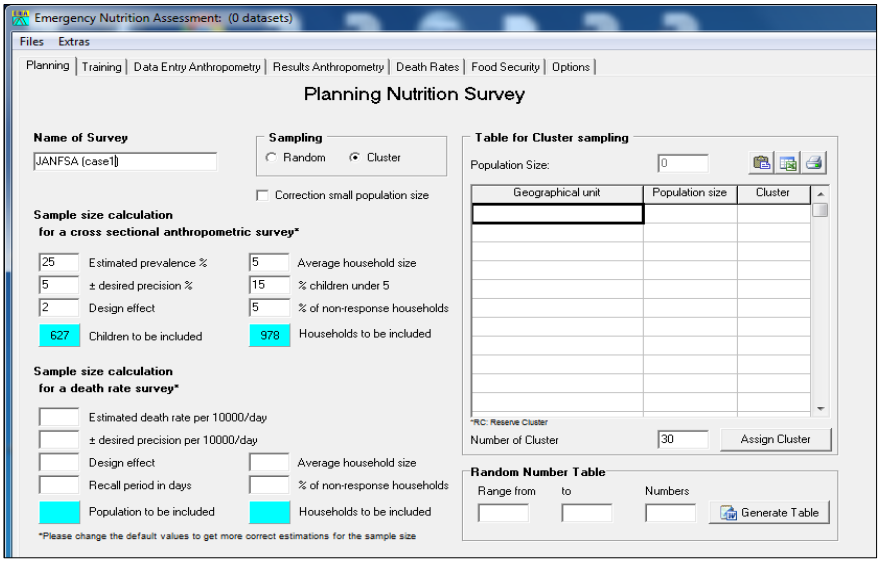


Figure 3.2: ENA sample size calculator

3.3.3.3. Food Security Calculator

Other calculators such as ODAN,[17] Open-EPI or others can be used to calculate sample sizes, but note that ODAN and Open-EPI should not be used for nutrition indicators.

16 See http://www.smartmethodology.org/ for guidance.

[17] WFP Sampling calculator

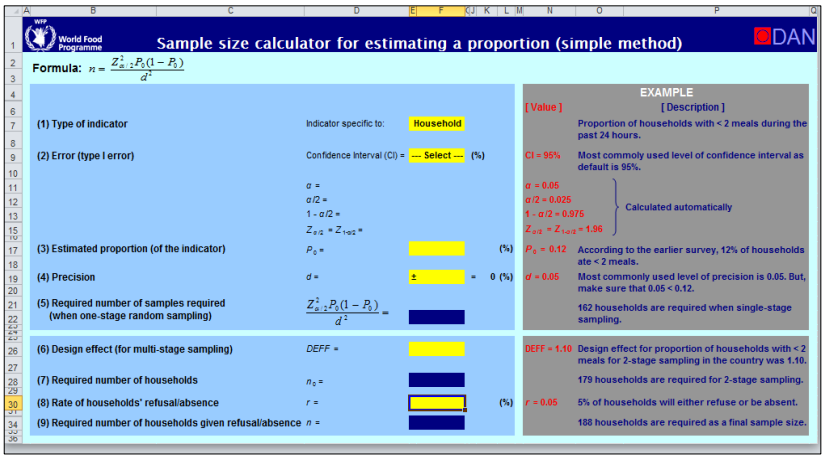


Figure 3.3: ODAN sample size calculator for household-specific food security indicators

3.3.3.4. National sample calculation: a practical example

The main objectives of the JANFSA in a country called Buzu was to determine the prevalence of acute and chronic malnutrition among children aged 6-59 months, and to understand the link between household food insecurity and malnutrition. Therefore, sample size calculations were based on the prevalence of nutrition outcome indicators estimated from previous surveys (i.e. SMART 2010).

This JANFSA was conducted within broader demographic surveys so the number of households per stratum followed sample size calculations based on comparative technical and financial considerations set by the National Bureau of Statistics. The sample size for each of the 17 provinces (strata) was aligned with the one estimated by the local bureaux of

http://parkdatabase.org/documents/search/search:ODAN%20calculator

statistics, which was 396 households per each 'rural' province and 756 households in the capital of Buzu.

Table 3.3: Country sample size and precision of main anthropometric indicators for children aged 6-59 months (Buzu)

Province	Sample				% non-response rates		GAM (Confidence interval 95%)			Chronic malnutrition (CI 95%)		
	Planned number of HHs	Average HH size	% children aged <5	Planned number of children <5	Household	Child	Prevalence	Design Effect	Precision	Prevalence	Design Effect	Precision
River	396	4.6	18	322	2	2	5%	1.33	3%	56%	1.05	6%
Hill	396	5	16	316	2	2	7%	1.33	3%	60%	1.05	6%
South	396	5.1	16	324	1	5	3%	1.1	2%	50%	1.13	6%
North	396	4.9	17	330	1	5	6%	1.28	3%	48%	1.02	6%
West	396	4.8	18	344	1	2	7%	1.33	3%	51%	1.05	6%
East	396	4.7	14	258	0	5	4%	1.28	3%	60%	1.02	7%
South-west	396	4.7	17	317	0	5	4%	1.28	3%	67%	1.02	6%
South -east	396	4.6	16	292	1	2	7%	1.19	3%	56%	1.08	6%
North-west	396	4.3	18	299	1	2	7%	1.19	3%	60%	1.08	6%
North-east	396	5.2	18	357	0	5	7%	1.1	3%	62%	1.13	5%
Central	396	4.8	15	279	1	5	4%	1.28	3%	64%	1.02	6%
Bubuzi city centre	396	4.5	17	307	0	2	3%	1.19	2%	62%	1.08	6%
Bubuzi north	396	4.7	14	259	1	5	6%	1.1	3%	57%	1.13	6%
Bubuzi South	396	4.5	16	281	0	2	6%	1.19	3%	71%	1.08	6%
Lakeside	396	4.8	17	327	1	5	12%	1.1	4%	55%	1.13	5%
Plateau	396	4.7	18	331	1	5	9%	1.28	4%	64%	1.02	6%
Mining	756	4.9	12	448	1	3	6%	1.17	2%	28%	1.24	5%

Following Table 3.3, the precision degree for acute malnutrition would be estimated at 2-4 percent and for stunting at 5-7 percent. The sample size used in Buzu was adapted to the SMART methodology and ensured more accurate results than the previous DHS at both the national and the province level. Annex 4 contains the case study of Burundi, which covers the sample size calculation, some of the sampling and results of the study.

Wherever possible, final decisions on sample size should be taken in consultation with all JANSFA stakeholders and according to the objectives of the survey, the accuracy of indicators required, the financial resources available and the cost-effectiveness of the assessment.

3.3.4. Determining the final sample size

The proportion of malnourished children in the survey should not be used to measure malnutrition prevalence unless the sample size complies with the level of precision stipulated by the SMART guidelines. Although a survey can be considered valid with 25 clusters, this guidance recommends that surveys contain a minimum of 30 clusters. This will give greater precision for the outcome indicators and reduce the risk of the results being undermined by discrepancies caused by the non-homogeneous distribution of key outcome indicators within the stratum of reference. Clusters should be randomly allocated using PPS.

If the sample sizes differ for the nutrition indicators and the food security indicators, the following applies:

i. If there is a small difference in the nutrition SMART sample size and food security-derived sample size, the larger sample size is taken and both food security and nutrition indicators are assessed in all sampled households.

ii. If there is a large difference between the sample sizes, to reduce cost of the survey, the indicators should be collected with two different sample sizes. An interval will be set at which teams will collect data for the indicators for the smaller sample size. For example, if the sample size for each cluster for anthropometry is 30 households and the one for food security is 15 households, teams will administer the food security questions in every second household selected in each cluster. Hence, the causal analysis between food security and malnutrition indicators can only be conducted among half the households surveyed. It is important to use an interval, since only including food security questionnaires in the first 15 households surveyed might result in a sampling bias.

However, the objectives of the assessment must drive the choice of the outcome indicators and the sample sizes calculated before primary data is collected. The JANFSA outcome indicators must be agreed upon by all stakeholders during the survey design.

3.3.4.1. Selection of replacement clusters

To ensure the appropriate sample size is obtained, extra clusters should be selected per stratum to compensate for inaccessible areas, problems related to insecurity and the rejection of some original clusters. Areas that are known to be inaccessible before the start of the survey should be excluded from sampling, so replacements should only be needed for unexpected reasons. In the design, the ENA software automatically chooses additional clusters called reserve clusters or replacement clusters: three reserve clusters are selected for every 25 to 29 clusters. Reserve households within each cluster should not be included to compensate for non-response or refusal, as this is taken into account during the sample size calculation.

If 10 percent of the original clusters and/or a minimum of 80 percent of the children under 5 targeted[18] are not reached by the survey, all reserve clusters should be included. Three reserve clusters are needed for 25 to 29 clusters; four for 30 to 39 clusters; and five for 40 to 49 clusters.

3.3.5. Participant inclusion criteria

Households are eligible to participate in the assessment if they live within the geographical area of survey coverage. All children aged 0-59 months at the time of data collection who live in selected households are eligible to take part, once consent has been given by the responsible adult. If a selected household has more than one child under 5, all eligible children must be measured, as well as any PLW. Disabled children remain eligible, unless the anthropometric measurements would be influenced by the disability (for example, accurate weight or height measurements would be influenced by missing limbs), in which case measurements are not taken. MUAC should still be recorded where appropriate. Depending on the agreed objectives, women of reproductive age could be included as an additional target group. If the primary caregiver is not the mother, the former is entitled to answer questions relating to child nutrition within the household.

3.3.6. Participant exclusion criteria

Households not living in the defined geographical area are not eligible to participate in the survey. If consent is withheld by the adult household member approached by the survey team, the household will be classified as non-respondent. Individuals in the selected household will be recorded as non-respondent as well, if consent from the responsible adult participation is denied.

[18] If malnutrition prevalence is a primary outcome used for sample size calculations.

3.4. Development of joint indicators

3.4.1. Definitions of indicators

The JANFSA combines standard food security indicators. For the purpose of this guidance, food security indicators have been drawn from WFP guidelines such as the EFSA handbook; the CFSVA guidelines; the CARI technical guidelines; and the FCS-N guidance. Other food security indicators such as the HHS could also be used depending on stakeholder preference and the context. Nutrition, health and WASH indicators are drawn from UNICEF and WHO international standards.

The set of indicators differs depending on the context in which the survey is conducted. This guidance presents a set of core and optional indicators that have been developed and could be expanded to fit the context and objectives of a particular study.

Thus, the context will determine which indicators should be included when developing the data collection tool. Table 3.4 presents the basic set of core and optional indicators[19] that should be considered in a JANFSA. The table is meant to guide discussion at the country office level during the planning phase of a JANFSA. The indicators selected must be in line with the assessment objectives.

The indicators are categorized into two levels: household and individual. At the household level, standard demographic variables reporting information from individuals in selected households is collected. At the individual level, nutritional indicators such as anthropometry and IYCF are collected, together with health indicators such as morbidity and access to health services. For a detailed description of the indicators in Table 3.4, see Section 3.5.

[19] This set of indicators was agreed upon during the consultative workshop held in Nairobi in May 2016.

Table 3.4: Basic modules and indicators collected at the household and the individual level

<table>
<tr><td rowspan="3">Primary core indicators</td><td rowspan="2">Food Security</td><td>Household Level</td><td colspan="2">Individual Level</td></tr>
<tr><td>Demographics:
• Educational level of head of the HH and primary caregiver
• Marital status of head of HH
• Sex of the head of the HH
• Age of HH members
• Size of the HH
• Vulnerable HH members including orphans and vulnerable children, disabled and chronically ill/PLHIV
HH consumption:
• Food Consumption Score
• Household dietary diversity
• Share of food expenditure
Coping strategies:
• Livelihood coping
• Reduced Coping Strategy Index</td><td>Nutrition</td><td>Anthropometry of children 6-59 months:
• Weight for Height
• Weight for Age
• Height for Age
• MUAC
• Bilateral oedema

Anthropometry of PLW:
• MUAC</td></tr>
<tr><td>WASH</td><td>Water and sanitation:
• Access to improved water sources
• Access to safe sanitation facilities</td><td>Health</td><td>Morbidity:
• Diarrhoea
• Acute respiratory infection (ARI)
• Fever</td></tr>
<tr><td>Secondary core indicators</td><td></td><td>HH consumption:
• Food Consumption Nutrition

Income:
• Livelihood activities
• Detailed crop and livestock
• HH assets/wealth</td><td></td><td>Core IYCF indicators: 6-23 months (excluding breastfeeding):[20]
• Minimum dietary diversity
• Minimum meal frequency
• Minimum acceptable diet
• Consumption of iron-rich foods
Women's consumption (15-49 years):
• Minimum dietary diversity</td></tr>
</table>

[20] If these indicators are to be collected, they need to be considered when calculating sample sizes as the sample size needs to reflect the sub-group age-range.

<table>
<tr><td rowspan="3">Optional Indicators</td><td colspan="2">Household Level</td><td colspan="2">Individual Level</td></tr>
<tr><td rowspan="2">Food Security</td><td rowspan="2">Market/financial opportunities:
• Distance
• Access credit
• Debt

FIES:
• Food insecurity scale
Shocks:
• HHs affected by main shocks</td><td>Nutrition</td><td>Nutritional status of reproductive age women:
• MUAC
Breastfeeding[21]:
• Early initiation of breastfeeding
• Exclusive breastfeeding under 6 months
• Continuous breastfeeding at 1 year
• Complementary feeding (6-8 months)
Micronutrient deficiency:
• Vitamin A supplementation (6-59 months)
• Folic acid/iron supplementation (PLW)
• Anaemia (children 6-59 months and women 15-49 years)</td></tr>
<tr><td>Health/WASH</td><td>Access to health services:
• Vaccinations (children 9-59 months)
• deworming (children aged 12-59 months)
Hand washing:
• Primary caregiver's hand washing practices</td></tr>
</table>

3.5. Household-level core indicators

This section explores the household-level indicators shown in Table 3.4 in more detail. The data and modules that are required are covered in Section 4 of the manual.

[21] If these indicators are to be collected, they need to be considered when calculating sample sizes as the sample size needs to reflect the sub-group age-range.

3.5.1. Demographics

Demographic indicators are useful for both food security and nutrition analysis as there is a need to record the age of children between 6 to 59 months as well as the PLW or caregivers. Core indicators include the education level of the head of the household and the caregiver, their age, marital status, the sex of the head of household and the household size. The age of household members and vulnerability indicators such as the presence of orphans, the disabled or members with chronic illnesses should also be included.

3.5.2. Food consumption

3.5.2.1. Household Food Consumption Score

The food consumption questions that will enable analysts to calculate the Food Consumption Score (FCS) should be collected as core indicators. FCS is a proxy measure of household food access using dietary diversity and food frequency. Focusing on the seven days before the interview, it records how many days nine categories of foods (including super cereals distributed by humanitarian organizations) were eaten by anyone in the household (see Table 3.5). It is therefore a household variable and does not measure food frequency or diversity for any single individual in the household. Each food category is given a weight based on the energy and the macro- and micronutrient content of the food/food group. This weight is multiplied by the number of days in the preceding week each food category was eaten. The sub-scores for each food group are then summed up to produce a composite FCS. Generally, a score greater than 35 is considered acceptable; a score between 22 and 35 is considered borderline, and a score of 21 or less is considered poor.[22] Please note that

[22] This varies from country to country when some foods/food groups are used more for flavour and are considered condiments. In other contexts, the thresholds are adjusted to cater to local eating and food preparation habits.

in countries where households have a high sugar consumption, cut-off points of 28 (poor/borderline) and 42 (borderline/acceptable) are usually recommended. The FCS also provides a measure of dietary diversity. For more detail about the FCS, see the WFP *Comprehensive Food Security and Vulnerability Analysis Guidelines*.

3.5.2.2. Food Consumption Score - Nutrition

The Food Consumption Score – Nutrition (FCS-N) methodology uses the same data collection tool as the FCS (see Annex 2, Section 5). It adds an additional dimension to the FCS by analysing household nutrition and protein, vitamin A and iron consumption, using the FCS modules, main food groups and sub groups.

The separate food groups improve the measurement of the consumption of particular nutrient-rich foods versus other less nutrient-rich items that belong to the same general food group. A more detailed food list also helps respondents to recall whether a particular food was consumed or not and whether foods were only consumed in small quantities. Fortified foods (including products such as corn soya blend and Super-Cereal) are of particular interest for FCS-N analysis, and supplementary questions should be asked about the consumption of these foods as part of the food consumption module.

Table 3.5: Example template for calculating FCS

	Food group	Food items belonging to the group	Weight (A)	Over the last 7 days, how many days did your household consume the following foods? (B)	Food group score (A x B)
1	**Cereals, grains, roots and tubers**	Rice, pasta, bread, donuts, sorghum, millet, maize, potato, yam, cassava, sweet potato, taro, other tubers	2		
2	**Legumes / nuts**	Beans, cowpeas, peanuts, lentils, nut, soy, pigeon pea and / or other nuts	3		
3	**Milk and other dairy products**	Fresh / sour milk, yogurt, cheese, other dairy products (excluding margarine / butter and small amounts of milk for tea / coffee)	4		
4	**Meat, fish and eggs**	Goat, beef, chicken, pork, blood, fish – including canned tuna, escargot, and / or other seafood, eggs (meat and fish consumed in large quantities and not as a condiment)	4		
5	**Vegetables and leaves**	Spinach, broccoli, amaranth, cassava leaves, onion, tomatoes, carrots, peppers, cucumber, radish, green beans, lettuce, cabbages, eggplants, pumpkin, etc.	1		
6	**Fruits**	Banana, apple, lemon, mango, papaya, apricot, peach, pineapple, passion fruit, orange, avocado, wild fruits, etc.	1		
7	**Oil / fat / butter**	Vegetable oil, palm oil, shea butter, margarine, other fats / oil	0.5		
8	**Sugar, or sweets**	Sugar, honey, jam, cakes, candy, cookies, pastries, cakes and other sweets (also sugary drinks)	0.5		
9	**Condiments / Spices**	Tea, coffee / cocoa, salt, garlic, spices, yeast / baking powder, tomato sauce, meat or fish as a condiment, condiments including small amount of milk in tea / coffee	0		
	Specialized nutritious foods	Fortified blended food (CSB+, CSB++)	2.5		

If more than one food is fortified with different micronutrients in a given country, each food should be considered with other similar food groups (e.g. flour fortified with iron, or sugar fortified with vitamin A). Any food destined for a specific individual/target group in the household but that is shared among household members (e.g. infant formula) must also be added as a food group. However, these questions should be supplementary: they are not incorporated into the calculation of the overall FCS-N but are included in the analytical discussion.

The list of six food groups plus all the subgroups – a total of 11 food groups – is required for the FCS-N module (Table 3.6). The specific food items to include in each group will vary according to the country.

Table 3.6: Example template for calculating the FCS-N

Food items[3]	FCS Food Groups[4]	Standard Variable name	FCS-N Components
Rice, pasta, bread / sorghum, millet, maize, fonio, potato, yam, cassava, white flesh sweet potato, taro and / or other tubers, plantain[5]	Cereals and tubers	Staples	
Beans, cowpeas, peanuts, lentils, nut, soy, pigeon pea and / or other nuts	Pulses	Pulses	Protein
Fresh milk / sour, yogurt, cheese, other dairy products (Exclude margarine/butter or small amounts of milk for tea / coffee)	Milk and Dairy	Dairy	Protein Vitamin A
Beef, goat, poultry, pork, eggs and fish	Meat, fish and eggs	Proteins	
Flesh meat: *beef, pork, lamb, goat, rabbit, chicken, duck, other birds, insects*		Flesh Meat	Protein Hem iron
Liver, kidney, heart and / or other organ meats		Organ Meat	Protein Vitamin A Hem Iron
Fish / Shellfish *fish, including canned tuna, escargot, and / or other seafood (fish in large quantities and not as a condiment)*		Fish	Protein Hem Iron
Eggs		Eggs	Protein Vitamin A
All vegetables and leaves	Vegetables	Veg	
Orange vegetables (vegetables rich in Vitamin A) *carrot, red pepper, pumpkin, orange sweet potatoes*[6]		Orange Veg	Vitamin A
Dark green leafy vegetables *spinach, broccoli, amaranth and / or other dark green leaves, cassava leaves*		Green Veg	Vitamin A
All fruits	Fruits	Fruits	
Orange fruits (Fruits rich in Vitamin A): *mango, papaya, apricot, peach. (NB: do not included oranges*[7]*)*		Orange Fruit	Vitamin A
Vegetable oil, palm oil, shea butter, ghee, margarine, other fats / oil	Oils and Fats	Fats	
Sugar, honey, jam, cakes, candy, cookies, pastries, cakes and other sweet (sugary drinks)	Sugar	Sugars	
Condiments / Spices: *tea, coffee / cocoa, salt, garlic, spices, yeast / baking powder, tomato / sauce, meat or fish as a condiment, condiments including small amount of milk / tea coffee.*		Condiments	

[3] The table consists of 9 food groups however the nutritional value of the last one is not taken into consideration in the analysis.
[4] The food groups presented here are the same as the ones recommended by FAO for the calculation of the HDDS indicator except that the cereals and tubers are merged http://www.fao.org/fileadmin/user_upload/wa_workshop/docs/FAO-guidelines-dietary-diversity2011.pdf).
[5] Plantain is neither a root nor a tuber, but its nutritional content is similar so it must be recorded here.
[6] Orange sweet potatoes is strictly a tuber but very rich in Vit A and therefore must be included in this orange vegetable group.
[7] Oranges, despite their colour, are **not** rich in vitamin A.

3.5.2.3. Household Dietary Diversity Score (HHDS)

The Dietary Diversity Score reflects the number of different food groups consumed over a given period of time, by a household or an individual. A list of the foods in the FCS_N are used for the Household Dietary Diversity Score (HHDS), but broken down into 12 food groups and data is collected for a 24-hour recall period (see Annex 2, Section 5). The decision on whether to collect household or individual level information depends in part on the purpose and objectives of the survey. Although WFP usually uses a seven-day recall for households, this guidance recommends using a 24-hour recall period so that HDDS can be compared with minimum dietary diversity for women (MDD-W) and for individuals (i.e. child – IDDS). HDDS is a good complement of FCS and FCS-N (Table 3.7).

Table 3.7: Dietary diversity[23]

Household Dietary Diversity	**Minimum Dietary Diversity for women[24]**
Cereals White tubers and roots Vegetables[1] Fruits[2] Meat[3] Eggs Fish and other seafood Legumes, pulses, nuts and seeds Milk and milk products Oils and fats Sweets – sugar/honey Spices, condiments and beverages	Grains, white roots and tubers, and plantains[1] Dark green leafy vegetables Other vitamin A-rich fruits and vegetables[2] Other vegetables [3] Other fruits Meat, poultry and fish [4] Eggs Pulses (beans, peas and lentils) Dairy - Milk and milk products Nuts and seeds
[1] The vegetable food group is a combination of vitamin A-rich vegetables and tubers, dark green leafy vegetables and other vegetables *[2] The fruit group is a combination of vitamin A-rich fruits and other fruits.* [3] *The meat group is a combination of organ meat and flesh including poultry.*	*[1] The starchy staples food group is a combination of Cereals and White roots and tubers.* *[2] The other vitamin A-rich fruit and vegetable group is a combination of vitamin A-rich vegetables and tubers and vitamin A-rich fruit* *[3] The other vegetable group is a combination of other fruit and other vegetables.* *[4] The meat group is a combination of meat and fish.*

[23] Taken from *Guidelines for measuring household and individual dietary diversity*, FAO, 2010

[24] *Minimum Dietary Diversity for women – A guide to measurement*, FAO and USAID's Food and Nutrition Technical Assistance III Project (FANTA), 2016.

3.5.2.4. Household expenditures and food share expenditures

Detailed expenditure information is collected using standard techniques from income and expenditure surveys to calculate the proportion of total monthly household expenditure that is devoted to food purchases. Additional categories of expenditure can be added to assess the relative importance of food purchases compared with other types of household expenditures. For more on how to measure household expenditures, see the WFP *Comprehensive Food Security and Vulnerability Analysis Guidelines.*[2] Food share expenditure is one of the indicators reflected in the household food security classification according to the CARI methodology.

3.5.3. Coping strategies

3.5.3.1. Coping Strategies Index

The Coping Strategy Index (CSI), like the household wealth index, must be designed specifically for each population. Focus groups or key informant interviews are used to determine the nature and severity of various strategies used by a particular population to cope with declining food access or other shocks that result in poor household food security. However, there is also a simplified coping strategies index which contains a standard list of coping strategies; thus the preparatory work to develop a population-specific list of coping strategies can be avoided by using the *reduced coping strategy index* (rCSI) (see Table). Data collection is similar to that for the FCS: the household respondent is asked how many days in the past seven days each of the various coping strategies was used. A composite score is calculated using a table similar to that of the FCS. If series of surveys are available, the rCSI will be compared and the thresholds defining categories will be determined by the mean or median

of the first survey. Subsequent surveys will then use the same cut-off point to ensure comparability. For more on coping strategies and the coping strategy indices, see the WFP *Comprehensive Food Security and Vulnerability Analysis Guidelines*.

Table 3.8: rCSI calculation

Coping strategy	Severity weight (A)	Days used in past 7 days (B)	Score for coping strategy (AxB)
Rely on less preferred and less expensive foods	1		
Borrow food, or rely on help from a friend or relative	2		
Limit portion sizes at meal times	1		
Restrict consumption by adults so that small children can eat	3		
Reduce the number of meals eaten in a day	1		
Composite score: (sum of column)			

3.5.3.2. Livelihood coping strategies

The livelihood-based coping strategies module is used to understand the longer-term coping capacity of households. It gauges how households have adapted to recent crises, such as by selling productive assets, to give a rough idea of how difficult their current situation is and how resilient they would be to future challenges. The livelihood-based coping strategies module must be adapted to suit the local context and the living conditions of the country's poor. The analyst selects strategies from the 'coping strategies master list' (see Annex 6). Strategies have different severity weights; to compose the module, the analyst must select four stress strategies, three crisis strategies and three emergency strategies (ten strategies in total).[25]

[25] WFP Technical Guidance Note: Consolidated Approach to Reporting Indicators of Food Security (CARI).

- **Stress strategies** are those that indicate a reduced ability to deal with future shocks because of a current reduction in resources or an increase in debts.
- **Crisis strategies** directly reduce future productivity, including human capital formation.
- **Emergency strategies** affect future productivity or the human dignity of household members and are more difficult to reverse. Households are assigned a ranking or severity weight based on the most severe behaviours noted. The prevalence of households within each of the three categories is factored in the final food security classification console and algorithm (CARI).

3.5.4. Water and sanitation

3.5.4.1. Safe drinking water

Household members are considered to have access to drinking water from improved sources if their usual source of drinking water provides safe water (piped water, public tap, borehole, covered well, protected spring, rainwater, or bottled water).[26] The distance to safe drinking water and the amount of water available can also be assessed, to understand whether the main drinking-water source is sufficiently close or accessible to ensure an adequate daily volume of water for basic household purposes. The amount of water available can be used to cross-check and elaborate on the availability and access to safe water. Enumerators may also record whether the water has been treated.

3.5.4.2. Adequate sanitation facilities

A sanitation facility is considered adequate if it hygienically separates human excreta from human contact. The types of technology likely to

[26] Best practice materials produced through the WASH Cluster HP project 2007, c/UNICEF.

meet this criterion are as follows: flush to piped sewer system; flush to septic tank; flush/pour flush to pit; composting toilet; VIP latrine; and pit latrine with a slab. Any type of shared or public sanitation facility is considered inadequate or unimproved,[27] and sharing should be assessed with a specific question.

3.5.4.3. Hygiene practices

Adequate hand washing practices and the appropriate disposal of waste are essential hygiene practices. Adequate hand washing is defined as the mother/primary caregiver of a child under 5 reporting that she usually washes her hands in the following cases:

1. After cleaning the infant or young child who has defecated
2. After helping the child use the toilet or latrine
3. After going to the latrine or toilet themselves
4. Before touching food and feeding young children
5. After dealing with refuse[28]

For practical reasons, the availability of soap and/or other cleansing agents on the household premises at the time of the interview is used as a proxy indicator of hand-washing.

3.5.5. Income indicators

3.5.5.1. Livelihood activities

Household livelihood activities are measured by presenting the respondent with a list of possible activities with which household members bring cash, food or services to the household. The respondent is asked to estimate the proportion of total household support provided by each type of activity. The list can be adapted to the geographical area and

[27] Best practice materials produced through the WASH Cluster HP project 2007, c/ UNICEF.
[28] *UNICEF - Facts for Life,* 4th Edition, 2010.

population undergoing the assessment. For more details, including an example questionnaire, see the WFP *Comprehensive Food Security and Vulnerability Analysis.*[2]

3.5.5.2. Crop and livestock activities

Livestock ownership and numbers can be collected to understand the livestock holding, usually measured in tropical livestock units (TLU). Data on crop production or area cultivated, irrigated and rain fed can also be collected, possibly including land ownership.

3.5.5.4. Household wealth

The household wealth assessment is based on the ownership of desirable and durable consumer goods and productive assets, which can be used to grow food or generate household income. The specific items to be asked about in the interview should be determined by qualitative methods before each survey or based on detailed local knowledge, recent livelihood assessments or a list of items used in prior surveys in the same or similar populations. Additional aspects such as materials and structure used for different components of the house (floor, walls and roof), access to improved water sources or hygienic facilities, ownership of land and/or livestock can be included in the final algorithm to estimate household wealth. Based on these parameters, households are divided into wealth quintiles. For more detail about household wealth measurement, see WFP's *Comprehensive Food Security and Vulnerability Analysis Guidelines*.[2]

3.6. Individual-level core indicators

3.6.1. Anthropometric measurements of children aged 6-59 months

Acute malnutrition, also known as wasting, can be categorized as moderate acute malnutrition (MAM), severe acute malnutrition (SAM) or global acute malnutrition (GAM).

- GAM is defined as a weight-for-height indicator below -2 (standard deviations) of the WHO standard or a mid-upper arm circumference (MUAC) below 12.5 cm and/or the presence of bilateral pitting oedema.
- MAM is defined as a weight-for-height indicator between -3 and -2 z-scores (standard deviations) of the WHO standard or by a MUAC of between 11.5 cm and 12.5 cm.
- SAM is defined as a weight-for-height indicator below -3 (standard deviations) of the WHO standard or by a MUAC below 11.5 cm and/or presence of bilateral pitting oedema.

Chronic malnutrition, also known as stunting, can be moderate or severe depending on the degree of growth retardation.

- Moderate stunting is defined as a height-for-age indicator between -2 and -3 z-scores (standard deviations) from the WHO growth standards.
- Severe stunting is defined as a height-for-age indicator below -3 z-scores (standard deviations) from the WHO growth standards.

Underweight indicates low weight-for-age and can also be categorized depending on severity.

- Moderate underweight is defined as a z-score less than -2.0 but greater than or equal to -3.0.
- Severe underweight is defined as a z-score below -3.0.

3.6.2. Undernutrition among PLW

Undernutrition in PLW is measured using MUAC recorded to the nearest 0.1 cm. The thresholds for nutritional status in PLW are defined after

analysing the data. Note that classifications may vary between countries and should be in line with national standards.

3.6.3. Infant and young child feeding indicators

Infant and young child feeding (IYCF) practices directly affect the nutritional status of children under 2 and therefore impact child survival. Improving IYCF practices in children aged 0–23 months is critical to improving the nutrition, health and development of children.[29] WHO's eight core indicators reflect current guidance[30] on breastfeeding, complementary feeding, and the feeding of non-breastfed infants and children under 2 (see Table 3.9).[31] In the JANFSA, five of the eight core IYCF indicators related to complementary feeding have been identified as core indicators; the remaining three breastfeeding indicators are optional.

The selected IYCF indicators should be measured and analysed according to the latest WHO guidelines.[24, 25] For more information, see WHO and UNICEF indicator guidance on IYCF.

[29] The following seven optional indicators are also available: i) children ever breastfed; ii) continued breastfeeding at 2 years; iii) age-appropriate breastfeeding; iv) predominant breastfeeding under 6 months; v) duration of breastfeeding; vi) bottle-feeding; and vii) milk feeding frequency for non-breastfed children.

[30] WHO and UNICEF, 2008. Indicators for assessing infant and young child feeding practices Part 1 Definitions: Conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA. Geneva: World Health Organization.

[31] WHO and UNICEF, 2010. Indicators for assessing infant and young child feeding practices Part 2 Measurement: Conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA. Geneva: World Health Organization.

3.6.4. Health

It is mandatory to collect data on diarrhoea, fever and respiratory infection for children as these indicators have a direct impact on child food utilization and malnutrition.

3.6.4.1. Period prevalence of diarrhoea, acute lower respiratory infection and fever

For the purposes of the survey, the mother or other adult caregiver is asked to count all episodes of diarrhoea, acute lower respiratory infection or fever that occurred in the two weeks preceding the survey. Diarrhoea is defined as three or more bowel movements in a 24-hour period. Any reported episode according to the definition during the past two weeks will be considered. Acute lower respiratory infection is defined as the presence of a cough and rapid or difficult breathing together at any time in the prior two weeks prior to the survey. Fever is defined as the mother/adult caregiver's report of fever without cough at any time in the two weeks preceding the interview.

Table 3.9: WHO eight indicators for assessing IYCF practices[32]

	Indicator	Description
Core Indicators	***Introduction of complementary foods***	The proportion of infants aged 6-8 months who received solid, semi-solid or soft foods during the previous day
	Minimum dietary diversity	The proportion of children aged 6-23 months who received foods from four or more of seven food groups during the previous day
	Minimum meal frequency	For *breastfed children*, the proportion of children aged 6-23 months who received solid, semi-solid or soft foods the minimum number of times or more during the previous day (minimum for children 6-8 months = 2 times; for children 9-23 months = 3 times) For *non-breastfed children*, the proportion of children aged 6-23 months who received solid, semi-solid or soft foods or milk feeds four or more times during the previous day and night
	Minimum acceptable diet	For *breastfed children*, the proportion of children aged 6-23 months who had both minimum dietary diversity and minimum meal frequency, as defined above, during the previous day For *non-breastfed children*, the proportion of children aged 6-23 months who received at least two milk feeds, had minimum dietary diversity not including milk feeds, and had minimum meal frequency during the previous day and night
	Consumption of iron-rich foods	Proportion of children aged 6-23 months who received an iron-rich food or a food that was specially designed for infants and young children that was fortified with iron or a food that was fortified at home with a product that included iron during the previous day and night

[32] The following seven optional indicators are also available: i) children ever breastfed; ii) continued breastfeeding at 2 years; iii) age-appropriate breastfeeding; iv) predominant breastfeeding under 6 months; v) duration of breastfeeding; vi) bottle-feeding; and vii) milk feeding frequency for non-breastfed children.

3.7. Optional household-level indicators

For further guidance on optional household-level indicators, see Table 3.10.

Table 3.10: Reference guidance for optional household-level indicators

Optional household indicators	Guidance
Shocks: - Household affected by main shocks	WFP, 2009. *Comprehensive Food Security & Vulnerability Analysis (CFSVA) Guidelines* - First Edition
Market and financial opportunities: - Distance - Access to credit - Debt	WFP, 2011. *Market Analysis Framework: Tools and Applications for Food Security Analysis and Decision-Making*
Food Insecurity Experience Scale (FIES)	FAO, 2013. *The Food Insecurity Experience Scale Development of a Global Standard for Monitoring Hunger Worldwide*

3.8. Optional individual-level indicators

For further guidance on optional indicators, please see Table 3.11.

Table 3.11: Reference guidance for optional individual-level indicators

Optional individual-level indicators	Guidance
Breastfeeding: - Early initiation of breastfeeding - Exclusive breastfeeding under 6 months - Continued breastfeeding at one year	WHO, 2008. *Indicators for assessing infant and young child feeding practices*, *Part 1: Definitions* WHO, 2010. *Indicators for assessing infant and young child feeding practices, Part 2: Measurement*
Anaemia	WHO, 2001. *Iron deficiency anaemia: assessment, prevention and control: A guide for programme managers*
Vaccination coverage: - Measles - BCG	WHO, 2015. *WHO Vaccination Coverage Cluster Surveys: Reference manual,* version 3, working draft
Vitamin A coverage	WHO, 2011. *Guideline: Vitamin A supplementation in infants and children 6–59 months of age.* Geneva: World Health Organization
Deworming coverage	Hall, A. and Horton S. 2008. *Best Practice Paper: Deworming*. Copenhagen Consensus Center
Iron/folic acid supplementation coverage	WHO, 2001. *Guideline: Intermittent iron and folic acid supplementation in menstruating women*
Water, sanitation and hygiene	UNICEF and WHO, 2015. *25 years: Progress on Sanitation and Drinking Water – 2015 Update and Millennium Development Goals Assessment* UNICEF, 2016. *Strategy for Water Sanitation and Hygiene – 2016-2030* UNICEF and WHO, 2015. *Methodological note: Proposed indicator framework for monitoring Sustainable Development Goals targets on drinking-water, sanitation, hygiene and wastewater* UN Water, 2016. *Integrated Monitoring Guide for SDG 6: Targets and global indicators*
Health	The Demographic and Health Surveys Program website: http://www.dhsprogram.com/

3.9. Developing data collection forms

Once indicators are agreed on, questionnaires should be developed. Ideally, the best practice of both food security and nutrition questionnaires should be followed (see Annex 2 for an example). Data collection forms should be written in standard international languages according to the working context, then translated into local languages. Different translators should then 'back-translate' each local language data collection form into the language of preparation. The original forms and the 'back-translated' forms should be carefully compared. Discrepancies are to be resolved in consultation with survey managers and the two translators.

One single questionnaire is developed that includes both household questions related to food security and individual questions related to nutrition. The questionnaire should be as short as possible and it should only collect data relevant to the desired indicators as this will reduce the risk of poor data quality. An example of an integrated nutrition and food security questionnaire is given in Annex 2 and Annex 3.

The first sheet of the questionnaire (the cover page) is for household identification and general information. A box is dedicated to the household identifier number (IDHH) which is unique to each sampled household. This number should be maximum 5 to 7 digits long to make data cleaning and merging easier. It is reported on each page of the questionnaire. It can be created by combining the cluster number with the number of the household in that cluster:

IDHH = Sequential Code Cluster + Number of household in each cluster

The second sheet of the questionnaire contains a household roster, which lists each household member starting with the head of household. Each

member is then allocated a unique identifier number (IDIND) according to his or her rank in the roster. This means children under 5 and their mothers can be traced if needed.

IDIND = IDHH + Number of individual in the roster

All information about the status of the mother and the care practices follows each child in a single table, either in portrait or landscape layout. The subsequent pages of the questionnaire contain questions that build on the core indicators, such as

- assets
- water and sanitation
- livelihood activities
- expenditure
- food consumption
- health of the children under 5
- food consumption of children under 5
- breastfeeding
- caretaker/mother's care practice

The last sheet (a standalone sheet at the end of the survey) is for anthropometric measurements. For reasons explained in the Data Entry section of this guidance, this last page has approximately the same format as the "Data Entry Anthropometry" interface of ENA software.

Examples of food security data collection tools for the core and optional indicators are presented in Annex 2. The nutrition data collection tools are presented in Annex 3. However, note that the two should be in one questionnaire as depicted by the continuous section numbering in the two Annexes.

A survey manual explaining the food security questionnaire and nutrition measurement standards should be developed and provided to each team at the end of the training.

If data collection is by phone, tablet or PDA, the questionnaire should be uploaded into the gadgets before the training starts.

3.10. Securing equipment

The main equipment required for a JANFSA is electronic weighing scales (Seca), MUAC tapes, measuring boards and an events calendar, which are generally provided by UNICEF, iNGOs or by the nutrition offices of the local ministry of health.

Following the UNICEF training manual "*How to Weigh and Measure Children",*[33] electronic scales from Seca are used to measure weight to the nearest 100 g. Before use, the scales are calibrated against a standard weight of 5 kg. If the measure cannot match the weight by adjustment of the zero and span controls, the equipment should not be used. Spare equipment should also be provided to cover any damaged or lost equipment. If possible, each team should be allocated two measuring scales with reserve batteries. Length and height are measured to the nearest millimetre using height boards (Shorr Infant-Child-Adult height boards).

Additional materials necessary for the survey include a PVC tube of 20 cm to calibrate MUAC brassards (MUAC brassards are for adults and children), and bleach and a sponge to clean equipment when needed.

[33] See http://unstats.un.org/unsd/publication/unint/dp_un_int_81_041_6E.pdf

During the rainy season, bags, caps or umbrellas may be provided. Beans may also be provided to be used in proportional piling. Vitamin A capsules or nutritional additives (micro-nutrient powder, ready-to-use supplementary foods and ready-to-use therapeutic foods) could be included as visual aids when asking mothers specific questions in the nutrition modules.

Forms to record the daily calibration of equipment and to refer moderately or severely malnourished cases to supplementary feeding and therapeutic feeding programmes (if they exist) are also needed for the training and data collection.

3.11. Enumerator training and pre-testing of instruments

3.11.1. Enumerator training

All recruited enumerators and supervisors, irrespective of their experiences in food security or nutrition survey, must attend the entire training session to ensure the uniform interpretation of questions and measurement of children.

3.11.2. Training agenda

Two separate training sessions of interviewers and anthropometrists are run at the same time by the principal investigators and co-investigators.

Survey team members are trained for a minimum of five days depending on the technical skills of the enumerators. At least four days are dedicated to indoor instruction and practice, and one day to pre-testing in the field. An indicative training agenda is presented in Table 3.12.

Table 3.12: Indicative training agenda

DAY	FOOD SECURITY	ANTHROPOMETRY
1	Arrival and registration	
	Introduction and official opening	
	Survey overview and agenda	
	Household IDENTIFICATION (cover page)	
	Demographics	Identification of targeted individuals
	Food consumption	Determining age in months using local or national calendar of events
	Simulation exercise	
	Exchange and feedback	
2	Paired mock interview	Measuring weight
	Income sources	
	Expenditure	Measuring height/length
	Livelihood strategies	Measuring MUAC
	Simulation exercise	Practice
	Exchange and feedback	
	Paired mock interview	Exchange and feedback
3	Food intake and mother's care practices	Theory on standardization
	Breastfeeding	Forming teams and practice
	Infant and young feeding practices	Feedback on standardization
	Disease and healthcare	
4	Preparation and departure to field test	
	Field test	
	Quality control of the questionnaires by supervisors	
	Feedback from supervisors	
5	Global feedback + quick review of all sections with a focus on any sections hardly filled out by enumerators	Training of supervisors/team leaders on daily data entry and data quality checks
	Guidelines on defining Enumeration Area boundaries, on selecting and identifying households	
	Preparing logistics - Defining itineraries	

Enumerators should discuss and review questions and modules of the questionnaire to help ensure their clarity and cultural appropriateness. All

sections of the questionnaire are reviewed during the training. Any unclear questions are reformulated and response options are adapted to local context. The training includes mock interviews in pairs, plenary role-playing where questions are asked in local language(s) and practical exercises.

Anthropometrists (measurers and assistants) are taught how to measure and record height, length, weight, MUAC in children and MUAC in mothers in a standardized way. Trainees practise by weighing and measuring each other and if possible, by weighing and measuring a sample of children brought to the training site during the standardization session. Alternatively, enumerators can be taken to a health centre for this session. It is important that only healthy children aged between 6 and 59 months are included. To determine the age of the child when recorded information is not available, the appropriate local calendar should be discussed during the training as it will be used in the field.

Nutrition training must include a session on standardization to reduce measurement errors during data collection. During the session, the measurements taken are MUAC, weight and height, and the activities proceed as follows:

- Each enumerator measures 10 children aged 6 to 59 months twice, with a time interval between the measurements.
- Enumerators are paired, but each enumerator must carry out the measurements in turn.
- There should only be one pair of enumerators per child at any one time.
- Each child is measured with the same equipment.

- The enumerator data is compared to the reference (supervisor) values.
- The anthropometric data is entered into a computer by the trainer.
- Then, the ENA software calculates a score for each enumerator based on the precision of each measurement (their ability to get the same result) and their accuracy (how close to "true" value) based on either the average or the trainer's measurement values.
- Any enumerator who is unable to measure and record the anthropometry of the children within the calculated acceptable limits should be replaced or retrained.

See the *SMART Manual* for more information on how to conduct and interpret a standardization test.

3.11.3. Field pre-testing

The field pre-test takes place in an area that will not be assessed during the real survey. Enumerators are brought there to test survey procedures, namely:

i) Interviewing the household head or an adult household member
ii) Interviewing the mothers of children under 5
iii) Taking the anthropometric measurements of children and mothers
iv) Sampling households

Each team must survey at least one household with children under 5. A half-day session after the field pre-test is dedicated to discussions and feedback in order to finalize the data collection tools.

Team leaders and supervisors receive a separate training session on common mistakes made during survey data collection, how to supervise

and check the work of teams, how to enter anthropometric data into ENA and how to export and interpret plausibility reports for data quality checks, as well as how to identify selected households.

In each training session, adequate data collection forms, PDAs or Android devices for data collection (if being used) should be available throughout.

3.11.4. Deploying teams to the field

Before deploying the enumerators, ensure that their scales are calibrated and all other equipment is in working order. Each team should have spare equipment such as scales and weighing boards, as well as spare batteries if scales are battery-operated. Any arrangements with government agencies must have been completed – sometimes survey teams need letters of introduction.

PART IV: DATA COLLECTION

4.1. Field data collection

Before leaving for the field, ensure the following has been arranged: transportation for the enumerators and their equipment, sufficient fuel, desk blotter and pens, adequate financial resources for per diem, mobile phone airtime, and a sufficient number of paper questionnaires (if using paper questionnaires). Make sure there are spare materials for taking anthropometric measurements. Materials will need to be checked and calibrated each day.

If PDAs or Android/smartphones are used for data collection, ensure that there are enough car chargers and that each device has its own charger. All devices need to be uploaded with the questionnaire. To make it easy to upload data to the ONA platform from Android devices whilst in the field, the final questionnaire uploaded on the server must be uploaded directly to the device and the data upload must be properly configured. When using smartphones, it is good practice to have the supervisor check the completeness of the questionnaire and upload the data to the server when there is connectivity, ideally every evening.

Once in the field, introduce the survey teams, leaders and supervisor to the local authorities and explain the purpose of the survey, which should also be set out in an official letter of introduction. An announcement on local radio or on display (i.e. adverts) some days before the survey can also help raise awareness and increase the participation of household heads and children under 5.

For more efficient and rapid implementation, a respected member of the community should join each team as a facilitator. He/she will guide the

team and locate the selected households. Community members can easily get information about absent households, and they may help with translation. Local volunteers can also help the anthropometric measurers to carry the heavy equipment from one house to the next.

4.2. Quantitative data collection

4.2.1. Enrolment procedures

This section sets out the practical steps to follow when sampling and collecting data in the field. For more information on methodology, see Section 3.

Use one questionnaire form per selected household. If a household is absent, the facilitator may be able to help trace them. If the household members confirm they will be available later during the survey period, return to that household at least once (maximum twice, if time allows). Never substitute an absent household. Upon arrival in the sampled village, coordinate with local focal points and leaders to ensure that as far as possible, any absent children and women who are eligible for the survey are called for the assessment. Make note of absent children and/or women but do not replace them. As explained in Section 3.3.4, if 10 percent of the original clusters and/or 20 percent of the children under 5 targeted are not reached,[34] all reserve clusters need to be included. Replacement should thus only be done in the form of replacement clusters. The sampling design and sample size calculation by stratum already foresee a standard 5 to 10 percent non-response rate, so absent households, women and children are already taken into account. It is good practice not to share in advance the full list of replacement clusters with

[34] If malnutrition prevalence is a primary outcome used to calculate sample size.

the teams in the field to avoid bias caused by selecting more easily accessible clusters.

The household roster is drawn up and should include all household members – even those who are absent at the time of the survey but who are considered part of the household. All children under 5 and their mothers who meet the inclusion criteria should be included in the anthropometric measurements.

Finally, in urban areas it is advisable to fix appointments with household heads beforehand whenever possible.

4.2.2. Consent process

Survey team members should introduce themselves to an adult in the selected household and explain the purpose, methods and procedures of the survey. They should request verbal consent from this adult for the household to participate in the survey, before enrolling a household in the survey. For children under 5, a parent or caregiver has to give verbal consent before data collection on that child can begin. Even after giving consent, interviewees can refuse to answer some or all of the questions.

For each selected household or individual, record whether consent was given and whether data collection was completed, noting if some or all data was not collected and why. This will allow analysts to calculate response rates and determine the reasons for non-response.

4.2.3. Interviews and measurements

Interviews are conducted by the trained survey team members, who must read the interview questions exactly as they are written on the interview

form. Ensure that the interviews are conducted with as much privacy as possible.

Assess children's ages using a local calendar developed before data collection begins. If children have a date of birth on a valid document, such as a birth certificate, identity card or vaccination card, record this date of birth. Before beginning the survey, assess which measure of age (age in months as reported by the mother or local calendar vs. date of birth on a document) has greater validity and is most commonly available. This will help determine how to estimate the age of children when there is a discrepancy between the age derived from the local calendar and the age calculated from the date of birth.

Anthropometric measurements are taken according to standard recommendations using electronic scales and rigid height boards. For children under 5, all measurements are taken using the procedures outlined in the UNICEF training manual *How to Weigh and Measure Children* (see subsection 3.10). Children aged 6-23 months are measured lying down; children aged 24-59 months are measured standing up. The measurer and his/her assistant must always work together to minimise the risk of incorrect measurement.

Under the coordination of the team leader, after measuring children in the first household, the anthropometrists should go directly to the next household without waiting for the enumerators to finish interviewing the first household head and the mother(s). If the anthropometrists have to visit more households than the enumerators,[35] they can measure the

[35] This happens when financial or technical constraints mean that the largest sample size calculated cannot be used for assessing both nutrition and food security indicators. If there is a big difference between the sample size calculated from nutrition indicators and the one

children of those households who will not be interviewed. This optimizes the team's time, hence the human and financial resources.

4.2.4. Notifying participants of their individual results

For some outcomes, the result is available immediately upon data collection and may be communicated to survey subjects or parents. For example, wasting and stunting can be classified as moderate or severe immediately after measurements are completed using field look-up tables or the automatic calculation of smartphones. If an individual child is identified as having moderate or severe wasting, advise the caregiver to take him/her to the nearest health facility for a follow-up as soon as possible. The team leader should also complete a referral form to give to the caregiver, which tells the health facility personnel why the child is being referred.

calculated from food security indicators. ***See Section II-2, p.21***

4.3. Qualitative data collection

4.3.1. Process of qualitative data collection

If resources permit and this has been factored in the planning, qualitative data can also be collected to complement the quantitative survey. Unstructured qualitative data collection requires a certain set of skills and can only be done if the team has this capacity. Rapid appraisal techniques are required to administer a pre-prepared checklist of questions. If the JANFSA foresees qualitative data collection, focus group discussions should be organized where the quantitative surveys are being carried out. Depending on the availability of the enumerators and the schedule, one to three focus group discussions can be held in the sampled area. The discussions can include a food security and nutrition problem causal analysis, which is best done on cards that can be moved around to show the relationship of the issues established in the discussion.

Figure 4.1: Problem tree components

The technique used in the causal analysis can be based on a problem tree (see Figures 4.1 and 4.2). To understand the causes of malnutrition, a women's focus group discussion is most effective. The problem tree is based on the principle that there is usually a problem that can easily be described (the tree trunk). Each problem has effects (the results of the problem), e.g. high malnutrition in a community can lead to mortality, morbidity, low school attendance. Solving the effects means tracing back to the health of the tree stump and the roots (the causes). It is important to dig deep into the causes; the

problem tree establishes cause and effect to ensure that root problems are identified and then addressed.

Causal analysis comprises the following generic steps:

- Write your problem statement in the middle then identify one or two initial core problems; thereafter, identify related problems/constraints.
- Write causes in the bubbles below (build the roots of the tree). The roots have branches/ offshoots and represent the relationship between the different causes.
- Write effects in the bubbles above (build the branches of the tree). The effects of the problem can also be interrelated.
- Use callouts to add comments.
- Make sure the bubbles are connected with 'connector lines', so you can move them and they stay 'stuck' to their related problem.
- Analyse and identify cause and effect relationships.
- Check the logic and draft the problem tree diagram.

The problems in the tree can be turned into solutions, forming an objective tree.

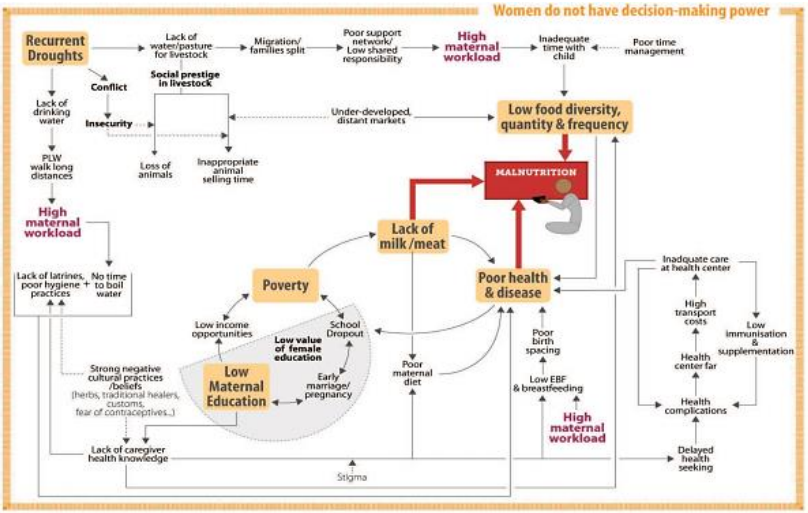


Figure 4.2: Kenya - Isiolo problem tree/causal analysis[36]

4.4. Data quality control

4.4.1. Quality control in the field

Data quality control begins with adequate training of survey personnel, as mentioned above. The team supervisor should also oversee that data collection is conducted in compliance with quality standards, using well-calibrated equipment throughout the survey. The mandatory standardisation test during nutrition training should help reduce the risk of measurement errors during data collection.

[36] ACF Kenya, Isiolo Nutrition Causal Analysis Report, 2014

It is best to conduct a mock data collection session in a village or neighbourhood close to the training centre for supervisors to identify any systemic errors or biases before the actual data collection begins.

After data collection is completed at each house and before the team moves on, the team leader should check that all data collection forms have been completed and the data recording is accurate. Team leaders need an open communication channel with the survey managers and they should be encouraged to ask questions and report difficulties during data collection. If there are problems, new policies and procedures or revisions of existing policies and procedures are communicated to all survey teams.

Every evening, team leaders gather together the completed forms (if paper questionnaires are used) from their team and they enter anthropometric data into the ENA software to generate plausibility reports and analyse data quality.

The purpose of the quick data analysis in the field is to improve the quality of anthropometric data collection daily. It is crucial that team meetings are called at the end of each day to discuss the quality of the data based on plausibility reports and to provide recommendations on how to improve it, if necessary.

Plausibility reports give an overall score of the quality of the collected data, which is automatically classified as “Excellent”, “Good”, “Acceptable” or “Problematic”. The score is a combination of different scores on missing data, any incorrect measurements, age distribution, sex ratio, digit preference for weight, digit preference for height, and digit preference for MUAC.

Poor data is also immediately flagged in the ENA software and has to be checked (by asking enumerators to return back to households) or documented.

Similar reports can be produced for household-level data if data entry starts immediately after data has been collected or if data is uploaded on a web portal such as ONA. Rapid exploratory analysis can highlight unusual trends which may indicate inaccurate or biased data collected by one or more survey teams. The supervisors or the global coordinator can inform team leaders of problems encountered and help rectify them within their teams.

4.4.2. Data quality control using PDAs or Android devices, ODK, ONA and ENA software

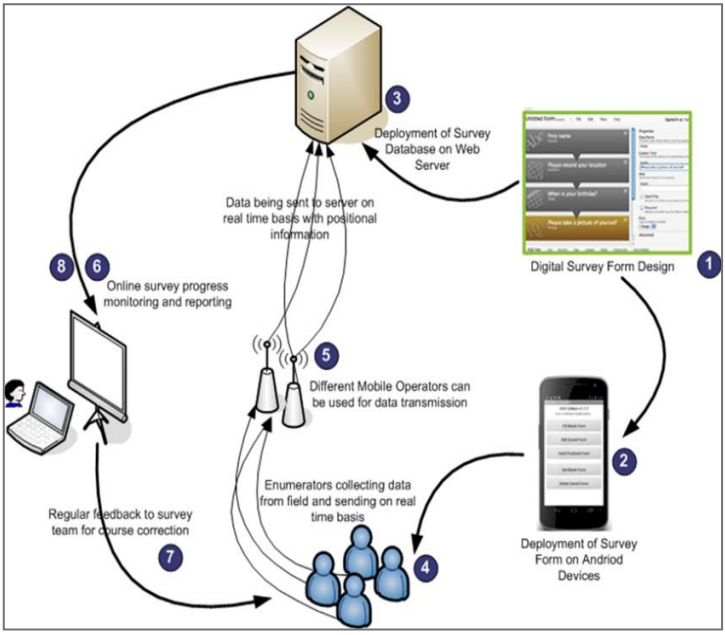


Figure 4.3: Data flow systems for quality control

If PDAs or Android devices are used for the survey, data should be uploaded to the server every evening, if there is connectivity. This is after the supervisor has cleared the data in terms of completeness and quality assurance. The daily assessment of data quality is key to spotting systemic errors and to instructing or replacing underperforming enumerators, if need be. If there is insufficient internet connectivity or other technical

problems, the Kobo toolbox[37] can be used. Data can be uploaded and visualized in ONA and quality checked, with feedback given to the supervisor and team members.

As the data is sent via the 3G or Edge network, it is available immediately for analysis. The downloaded data should be analysed daily using the SMART *plausibility check*, and feedback given to the teams. WHO *anthro* for mobile devices can be used to improve data quality as it flags extreme and/or potentially incorrect z-scores for each indicator.[38] With the WHO flags and the request for random re-measure, the survey coordination team can identify keying errors, gross errors and data manipulation during data collection and respond quickly to prevent these errors from invalidating the survey results. Note that WHO *anthro* flags are different than ENA for SMART: WHO *anthro* needs to be considered as complementary, but data quality assurance and plausibility checks will be used in the end.

[37] See https://kobo.humanitarianresponse.info The Kobo toolbox is available at no cost for UN and humanitarian actors, and hosted by OCHA.

[38] Flags HAZ z-score <-6 and >5; HAZ z-score <-6 and > 6 excluded; WHZ z-scores <-5 and >5 excluded.

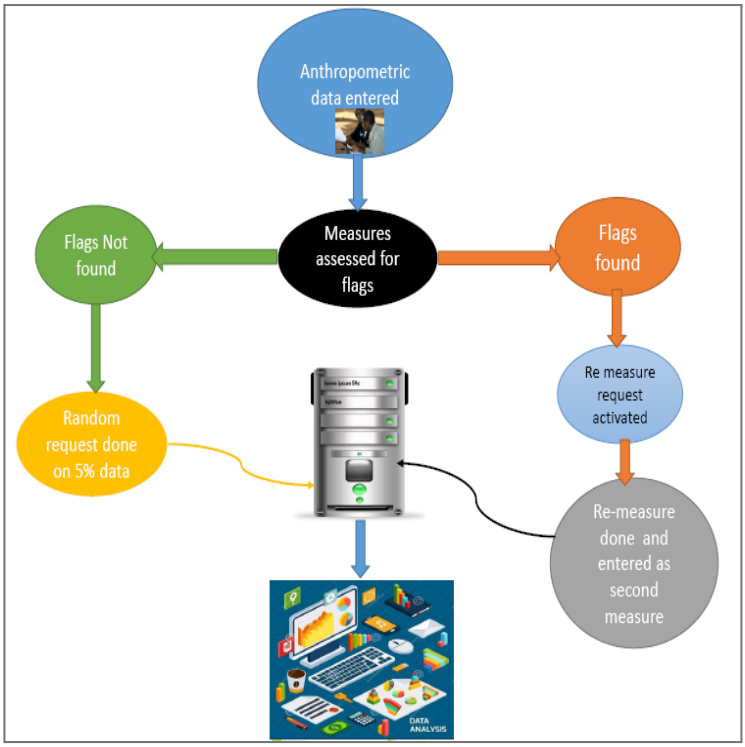


Figure 4.4 Nutrition data quality check

PART V: POST-DATA COLLECTION – ENTRY AND ANALYSIS

5.1. Data entry

5.1.1. Data entry software

If paper questionnaires are used, data entry for the food security component of the survey can be done in *Access* or *CSPro*, or any other software that the assessment team is comfortable with. For the anthropometric data, the same software or SMART-recommended software ENA[39] and/or Epi Info[40] is used. For analysis combining food security and nutrition, data is transferred to SPSS or STATA. Where Android devices or PDAs are used, data can be transferred directly to ENA or *Epi Info* for nutrition and to SPSS or STATA for food security.

5.1.2. Data entry process

If paper questionnaires are used, specific data entry masks should be created in any of the above-mentioned software. The data masks should have data entry rules such as range limits, permissible values and other methods of preventing keypunching errors. As mentioned above, data entry should be done as soon as possible after the questionnaire forms are completed, to allow rapid exploratory analysis to discover unusual trends that may indicate inaccurate or biased data collected by one or more survey teams, to address any data collection problems and to improve data quality.

[39] http://www.cdc.gov/globalhealth/healthprotection/errb/researchandsurvey/enasoftware.htm

[40] https://www.cdc.gov/epiinfo/index.html

Data entry masks are developed as soon as the data collection tools have been finalized, and the masks are refined after the tools are field-tested. Afterwards, the masks are tested with a few completed questionnaires. The trial dataset produced is exported into the software, where a pre-analysis is done so that the survey coordinator can check that all sections of the questionnaire are covered and that all response modalities have been considered. Only validated data entry masks should be used.

Analysis scripts (syntaxes) should be produced for the final outputs for household/individual and food security/nutrition indicators using the trial dataset immediately at the start of the survey or before data entry ends, based on the analysis plan (Annex 7). This will reduce the time between data collection and the dissemination of the results.

Data entry starts before or just after data collection is completed and after the identifier number of each questionnaire (IDHH) and the identifier numbers of each child and his/her mother (IDIND) have been checked.

The data entry team is composed of data entry clerks and checkers. They are trained on how to enter data into the chosen software, how to save it, how to add cases and how to delete or correct wrong cases to avoid duplication. Each clerk should be able to enter around 70 questionnaires of 11 pages or about 240 child measurement lines per day. The role of checkers is to verify the number of questionnaires entered by each clerk at the end of the day and to archive questionnaires. The survey coordinator supervises the data entry.

Data entry clerks should be paid on the basis of the number of questionnaires or children entered. If payment is calculated on a daily rate,

the quota of 70 questionnaires or 240 children per day can be used as the reference.

Children's anthropometric data is entered twice to minimize data entry errors: first by the survey supervisors in the field during the data collection, and then by data entry clerks. The two separate datasets are then compared to reveal discrepancies which may indicate data entry errors. Double data entry should ideally be done for all questionnaires to avoid data entry errors.

Where PDAs or smartphones are used, these are programmed to minimize data entry errors at data collection, with features such as range limits, permissible values and skipping rules. The data is uploaded to the database server daily or regularly, so data can be checked for errors whilst teams are still in the field. Data can be uploaded into the analysis software as soon as the first few questionnaires are uploaded. Data analysis scripts can then be developed based on the analysis plan (Annex 7).

5.2. Data cleaning

Every dataset contains errors, and adequate time must be allocated to cleaning the data. Data cleaning is quick if the steps in Section 4.4 are implemented.

Separate data cleaning should be done for the household and individual datasets in the data entry software. Further cleaning is also done after exporting the data from *CSPro* or *Access* into SPSS, STATA or other statistical software used for food security and nutrition analysis. Anthropometric data should be analysed in ENA and exported to other statistical software for further analysis.

5.2.1. Some basic principles in household data cleaning

Data cleaning is done in several stages.

Data cleaning

- Each participating household and each household member (including children under 5 and their mothers) has an identifier number. This number must be unique to ensure that each child can be paired with his or her household later. Hence, the first stage of data cleaning consists of identifying duplicate identifier numbers (both for household and for individuals) and cleaning them.
- Record clearly how the data has been cleaned.
- Save the database cleaned with a different file name

Using logic in data cleaning

- Frequency distributions, sorting, tabulating and cross-tabulating are commonly used in data cleaning. Cleaning syntaxes/scripts can also be used to clean illogical values.
- Compare variables within a file to check for logical issues.
  - Compare the data between two or more variables within the same case to check for logical issues. For example, can the head of the household be less than 17 years old?
- Check for consistencies within a set of cases for a household across similar questions/variables
  - E.g. size of household vs. total number of individual household members.
  - If there is a spouse, it is expected the spouse will be a different gender.
- Sort the variable in the file in various ways (ascending or descending) to look for odd data.
  - Decision rules for when to change a value and when NOT to change a value should be available before cleaning for each variable.
- When problems are identified, but the data cannot be corrected: If there is no data entry error, and there are no means to help you determine where an error is, **you must leave the data as it is**.
- Recode as 'SYSMIS' or "-9999" depending on how you are analysing the data.

5.2.2. Nutrition data cleaning

For anthropometric measurements entered into nutrition software, the comparison between the two datasets (field-level and office-level) runs automatically once the data has been entered twice. Data cleaning is done as per the SMART[41] methodology through the ENA software. Standard criteria are applied to exclude z-scores, which are judged to be unfeasible and most likely due to measurement errors. ENA examines the data and automatically flag values outside the usual expected WHO standard

[41] Measuring Mortality, Nutritional Status, and Food Security in Crisis Situation - SMART METHODOLOGY, version 1 April 2006.

ranges.[42] These values should be recorded, reviewed and checked against those on the questionnaires or digital data forms for correction were feasible.

Data should never be deleted, but the report should cite the number and percentage of children excluded by flags. Any identified errors are corrected by going back to the relevant data in the questionnaires or by asking the enumerators or team leaders for details. Plausibility reports can help draw conclusions on data accuracy. If feasible and necessary, survey teams may return to the field to re-collect data of inadequate quality.

For other variables, data cleaning consists of examining frequency distributions, sorting, tabulating, cross-tabulating and using trends to detect errant and illogical values. One simple way to check data quality is to compare some demographic indicators to previous studies to validate whether the sample really represents the studied population. The principal investigator and co-investigators can all participate in the data cleaning.

5.3. Data matching

In the dataset containing both households and individuals, the household is the unit of analysis (the case). This dataset is used to calculate food security indicators and to conduct all analyses related to household.

For nutrition analysis, the dataset is restructured so that children aged 6-59 months become the unit of analysis (the case). This dataset is used to calculate and analyse IYCF indicators, disease and treatments, vaccination and other preventive treatments, the undernutrition of PLW, pre- and

[42] More information can be found in the guidance note *The SMART plausibility check for anthropometry,* (October 2015).

postnatal care, adequate hand-washing, and sanitation facilities. When analysing IYCF indicators, aggregation to a reasonable sample size is recommended to produce meaningful results if the sample size per cluster is too small. After the anthropometric dataset has been cleaned, z-scores and global malnutrition prevalence (wasting, stunting and underweight) are automatically calculated. This dataset, including the z-scores, is exported into statistical software and matched with the previous dataset to investigate associations between nutrition status and food security. Before exporting the data, key nutrition indicators are selected and the dataset restructured based on the household identifier number (IDHH), such that all the individual key indicators for each household will fall under each IDHH. Then, one big dataset gathering together the whole volume of collected information and all food security and nutrition indicators is created. This dataset is used to analyse the links or associations between individual indicators and household indicators.

Other data restructuring and matching may be required for more analysis, for example, between mothers and the data from demography roster.

5.4. Data analysis and interpretation

5.4.1. Creating weights for the household

Data to produce aggregated results (national or regional) need to be weighted if sampling has not been designed using PPS per strata (see Table 5.1). This is the case with the minimal sample size suggested by the two-stage sampling where population size is not considered in the calculation. Sample weight means the number of individuals that one individual in the sample represents in the total population of the aggregated area (country or region). Sample weights are different for households and for children.

Table 5.1: Example of sample household weights for Buzu

Strata No. (A)	Strata name (B)	Projection Pop_2014	Projection HH_2014 (D)	HH size (E)	Sample Size (F)	HH weight (G) = D/F	Pop. weight (H) = G x E
1	River	296,185	56,627	5.2	153	370.111	1935.851
2	Hill	551,880	107,383	5.1	287	374.156	1922.927
3	South	592,318	120,894	4.9	266	454.488	2226.76
4	North	349,086	76,271	4.6	251	303.87	1390.781
5	West	273,154	57,405	4.8	198	289.926	1379.567
6	East	881,719	202,101	4.4	380	531.845	2320.314
7	South-west	440,510	92,006	4.8	266	345.887	1656.054
8	South - east	326,544	64,325	5.1	177	363.418	1844.879
9	North-west	424,347	86,842	4.9	341	254.669	1244.42
10	North-east	303,543	60,584	5	188	322.254	1614.59
11	Central	364,151	77,433	4.7	373	207.596	976.276
12	Bubuzi city centre	1,279,586	271,565	4.7	788	344.626	1623.84
13	Bubuzi north	1,173,918	257,883	4.6	510	505.653	2301.799
14	Bubuzi South	796,605	166,240	4.8	613	271.191	1299.519
15	Lakeside	1,038,642	236,086	4.4	648	364.33	1602.843
17	Plateau	109,377	19,980	5.5	83	240.717	1317.797
18	Mining	321,985	66,752	4.8	357	186.98	901.92
19	River	130,661	29,327	4.5	107	274.086	1221.135
Grand total		9,654,213	2,049,704	4.7	5986		

5.5. Analysis software

Before any analysis is done, a detailed analysis plan should be developed, preferably immediately after the study tools are finalized. The plan details the type of indicators, tables and graphs that can be generated from the data (see Annex 7 for an example). Data analysis is done using computer software, which accounts for all the aspects of complex sampling used in the survey, including cluster sampling and stratified sampling. Usually SPSS, STRATA or SAS is used to analyse food security survey data. Access to this software is common in government statistical offices and other agencies.

ENA software should be used to run daily data quality checks and data analysis of global acute malnutrition, stunting and underweight prevalence. ENA is an open software and can be downloaded from the website.[43] It is best to download the latest version, as there are regular updates.

The final analysis of the main outcome indicators should be conducted through SPSS, STRATA or SAS. ENA datasets must be merged with the other household data before proceeding to this final stage.

In general, data analysis includes calculating proportions to derive the prevalence of various food security, nutrition and health indicators, as well as the averages (mean for normally distributed data and median for non-normally distributed data) of various continuous measurements (see Annex 7).

[43] http://smartmethodology.org/survey-planning-tools/smart-emergency-nutrition-assessment/

5.6. Assessing nutrition and food security linkages

According to the UNICEF framework, the link between household food security and child nutrition status is indirect. Individual nutrition is first influenced by individual food consumption and health status (immediate causes), and after that by household food access, health practices, and health and sanitation access (underlying causes). This is the key starting point of the linkage analysis, which can be achieved by the following:

- ***Cross tabulation and difference tests*** – (Chi-square or non-parametric tests for a small number of cases, within *categorical/ordinal variables*), for example, between the non-introduction of complementary food in children aged 6-8 months and the number of meals within the households the day before the survey, to understand whether the non-introduction is due to lack of food in the household or to ignorance or the low level of education of the mother.

- ***Bivariate correlation and Analysis of Variance (ANOVA)*** – between *continuous variables,* for example, between household diet diversity score (HDDS) and the children's dietary diversity scores (IDDS), to check whether the children are not given some foods even if the household consumes them.

- ***Multivariate analysis*** – depending on the results of bivariate analysis, appropriate multivariate analyses explore *the strength of association between various independent variables* and indicators, controlling for possible confounding variables. A multivariate analysis using multiple logistic regressions can be used to get odd ratios, and least square regressions to reveal the effect of independent variables on malnutrition prevalence.

Using only two classifications of malnutrition – "malnourished/normal" – and two categories of food insecurity can help compare the linkages in a clearer way. Separate analysis is done for stunting and wasting. Table 5.2 shows how results can be presented. Only differences, correlations and coefficients of regression whose p-values are below 0.05 are considered to be significant.

Food security indicators are correlated with nutritional status indicators to determine the degree of association between them. For such correlations, the statistical significance of differences between subgroups is assessed using Chi square adjusted for cluster and stratified sampling. Examples of correlation from the basic analysis are shown in Table 5.2.

Table 5.2: Example of linkage between food security and nutrition

Nutrition indicators	Child status in household	Food secure	Mildly food insecure	Moderately food	Severely food insecure	Chi square	P value
Wasting	None	93	91	92.1	86.8		
	At least one child	7	9	7.9	13.2	5.918	0.116
Stunting	None	78.1	71	71.7	77.1		
	One child	17.6	21.7	22.4	16	11.974	0.063
	Two or more children	4.3	7.4	5.9	6.9		
Underweight	None	83.6	77	77.9	75.7		
	One child	14	17.1	18.1	16.7	15.118	0.019*
	Two or more children	2.4	5.9	3.9	7.6		
MUAC	None	95.4	91	92.7	91.7		
	At least one child	4.6	9	7.3	8.3	7.797	0.050*

As with any other food security assessment, secondary data should be considered to support the analysis and the interpretation of the results. Such data may include recent trends in economic indicators, policies, recent population movements, changes in market conditions and the price of staple foodstuffs, and trends in the incidence rates of diseases that have a substantial effect on child nutritional status. Both quantitative and qualitative data should be used for this purpose.

5.6.1. Exploring associations

Most nutritional analyses use associations between variables in one way or another. This applies to targeting and to possible causality – hence it influences intervention design. Associations can first be studied as one-on-one (or one-way) – referring to the association of a dependent variable (or outcome) with an independent (or determining, or classifying) variable. The structure of the data starts to become clear at this stage, using simple tabulations. Table 5.3 summarizes the interrelation between the malnutrition rates of children aged 6-59 months and a number of relevant household food security-related indicators. Valid associations usually show up for the first time with such tabulations. If they do not, they are unlikely to appear magically at a later stage.

Table 5.3: Example of association between nutrition and household food security indicators

		Wasting	Stunting	Underweight	MUAC
I. Food Share of Total Expenditure, Shocks, and Coping Strategies	CSI	✗	✗	✗	✗
	Food expenditure share	✓	✓	✓	✓
	Number of income sources	✗	✓	✗	✗
	Number of coping strategies	✗	✗	✗	✗
	Number of shocks experienced by the household	✗	✓	✓	✗
II. Demographics	Household size	✓	✓	✓	✓
	Number of children under 5	✓	✓	✓	✓
	Illness of household head	✗	✓	✓	✗
	Household head education level	✓	✓	✓	✗
	Age of household head	✓	✓	✓	✓
	Sex of household head	✓	✓	✓	✓
III. Household Socio-economic Characteristics	Wealth quintal	✓	✓	✓	✓
	Toilet facility	✓	✓	✓	✓
	Safe drinking water	✗	✗	✗	✗
	Land size category in hectares	✓	✓	✓	✓
	Tropical livestock unit ownership- total livestock	✓	✓	✓	✓

✓ Significantly associated ✗ Not significantly associated

5.6.1.1. General approach for programme content

Considerable progress can be made by analysing simple two-by-two tables.[44] Tabular analysis and the presentation of data can be used to show the meaning of more complex associations. Clear presentation of results is also essential for good communication.

5.6.1.2. Confounding – 'dealing with alternative explanations'

Mathematically, possible confounding is said to exist when two or more independent variables are associated both with each other and with the dependent variable of interest. Since determinants of nutritional status are usually linked, if analysts are interested in the relationship of one of these, they have to control for the others. Moreover, they are often interested in isolating the effect of one, usually because they are looking for guidance as to which specific interventions may improve nutrition.

5.6.1.3. Causal models to address interactions

Causal factors to address interactions can also be done when one factor modifies the relation between another possible causal factor and the outcome variable (see Figure 5.1).

[44] Note: these are not cross-tabulations – they have the outcome variable in cells

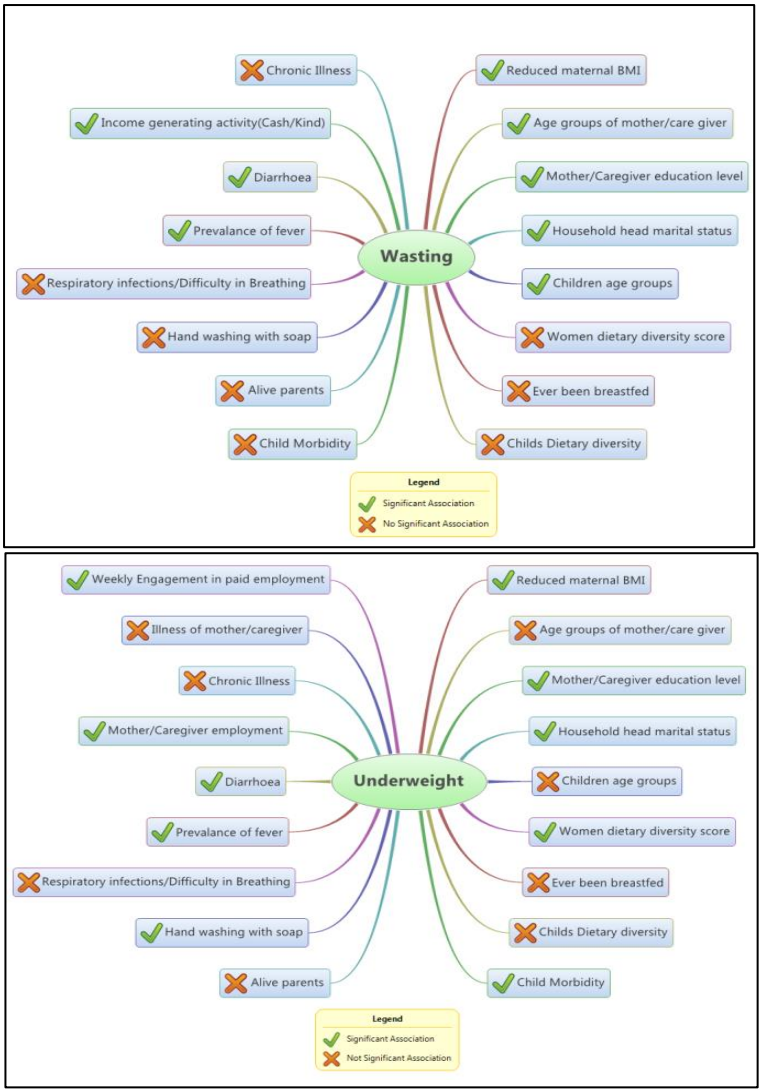


Figure 5.1: Example of statistic correlation between the minimum set of indicators and wasting/ underweight in children aged 6-59 months

5.7. Food security status and the UNICEF analysis framework

Once all indicators are calculated and datasets are merged, variables can be associated using the UNICEF analysis framework to explore the causes of acute malnutrition and stunting based on immediate and underlying factors. Separate linkages can be found by examining data on younger children (6-23 months) and older children (24-59 months) or by gender.

The correlation between components of nutrition and food security can also be visualized following the UNICEF conceptual framework as presented in Figure 5.2.

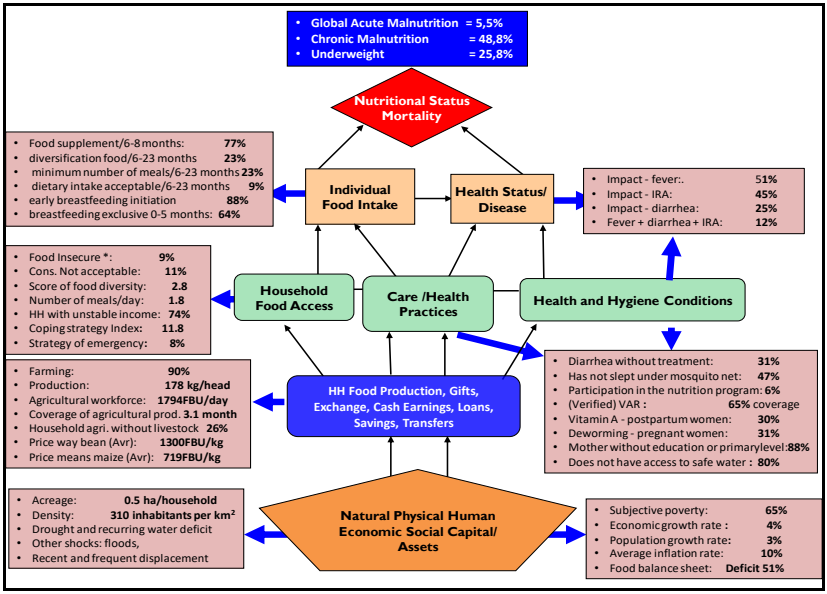


Figure 5.2: An example conceptual framework for analysing malnutrition

PART VI: DISSEMINATION

Before completing data analysis and the first draft report, a communication plan should be formulated to set out how the results will be disseminated. The plan should establish when the results and findings will be presented and when the draft and final reports will be available. It should also define which formats will be used to communicate the results to different audiences and stakeholders. Consensus should be reached on data interpretation, and technical analysis as well as the visual presentation of results must be tailored to specific audiences.

6.1. Presentation of preliminary findings

Before starting to write the report, the preliminary findings are presented internally between the investigator and co-investigators. This allows the analysts to discuss inconsistencies in results and any potential additional exploration of the data that may be required. The results of the analysis are then presented externally to users of the information for discussion and validation.

6.2. Report writing

JANFSA reports contain at least three sections, describing

I. the food security situation

II. the nutrition situation, and

III. the link between the two.

The report begins with a context overview. The survey methodology must be clearly presented and transparent for readers, which means explaining how the sampling, training and data collection were carried out. The report should also document the limitations of the study, any problems

encountered in the field, the definition of each indicator and the thresholds used for indicators. There should be a map of the assessed area, and the results should be presented concisely with the aid of graphs, diagrams and tables. The messages from the analysis must be clearly articulated. Avoid simply reporting statistics; explain their interpretation and the implications for the needed response.

The principal investigator and the co-investigators take part in the writing. Secondary and qualitative data is needed to give depth to the interpretation of the findings from the survey. Tentatively, a JANFSA report should not exceed 30 pages. However, the length of the report will vary according to the level of details needed and the topics covered.

The draft report should first be shared with the stakeholders for internal review. Once comments are received, the survey results and report can be finalized. It is good practice to come up with the initial recommendations and conclusions of the analysis and discuss these with programme managers and decision-makers so as to develop a set of actions before finalizing and incorporating the recommendations into the report, if time allows.

6.3. Distributing the report and planning a coordinated response

Once all comments and recommendations are received, the report is revised and finalized. Once endorsed, the final report should be distributed widely to all relevant organizations and agencies, and it may be published in the sectoral literature. Most sponsoring agencies also post these reports on websites or disseminate them electronically to other interested parties.

Before any reports are prepared, the authorship of publications or reports based on the results of this survey should be discussed and agreed upon

by all stakeholders (especially governments). Such publications must be reviewed and approved by every organization that took part in the survey. This process may take a long time so it is necessary to plan ahead. To facilitate the endorsement process, it is good practice to provide a short summary of the main findings and recommendations (2 to 4 pages) to high-level decision-makers. How the summary is presented is critical as it determines how the findings are received.

Once the survey results are finalized, the assessment team writing the report and the programme managers should make specific recommendations addressing the findings. A smaller set of specific recommendations will be far more useful than a generalized set of actions that could be applied to any population with substantial malnutrition prevalence.

A final workshop to present results can be organized in the country to share the findings with the relevant institutions and organizations.

Following the workshop, the investigators and agencies working on food security and nutrition should draw up a coordinated programme response comprising specific projects and activities to tackle the underlying causes of food insecurity and malnutrition in all affected areas and populations.

Figure 6.1 summarizes the relationship between FCS and GAM across 17 provinces in Burundi by showing the prevalence of households with inadequate food consumption and/or unacceptable acute malnutrition rates of children aged 6-59 months compared to the national mean prevalence. The added value of the JANFSA is that it combines individual and household-level information collected within the same households to make it possible to assess the linkages and the impact of determinants of food insecurity and malnutrition on key food security and nutritional

outcome indicators. This type of visual representation can be extended to a wide range of food security indicators, key determinants of malnutrition and outcome indicators to meet the programmatic needs of stakeholders.

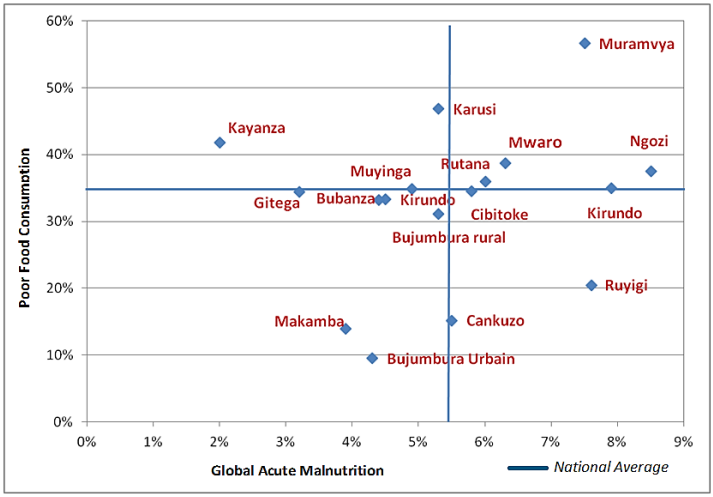


Figure 6.1: Distribution of 17 provinces in Burundi according to food insecurity and GAM rates

Thanks to these linkages, the JANFSA helps humanitarian and development decision-makers identify the most appropriate programme response tools to tackle the underlying causes of food insecurity and malnutrition in the short to long term at national and local level. To be effective, however, the JANFSA method must be well understood, endorsed and implemented in consultation with all actors involved from the early stages of the survey design onwards.

Country offices should be aware of the risk of misinterpretation of joint assessment outcomes as well as of the misuse of findings, notably when no association is found between food insecurity and malnutrition

indicators. For example, one could incorrectly conclude that there is no need to address a food security component in a nutrition-specific response plan if there is no evidence of food insecurity being conducive to malnutrition, or vice versa. Stakeholders must be aware that indirect (as much as direct) connections exist between the main determinants of food security and malnutrition, even when key outcome indicators diverge. Therefore, food security and nutrition programming should take into consideration the impact of decision-making on such determinants, in order to address underlying factors of medium to long-term food insecurity and malnutrition.

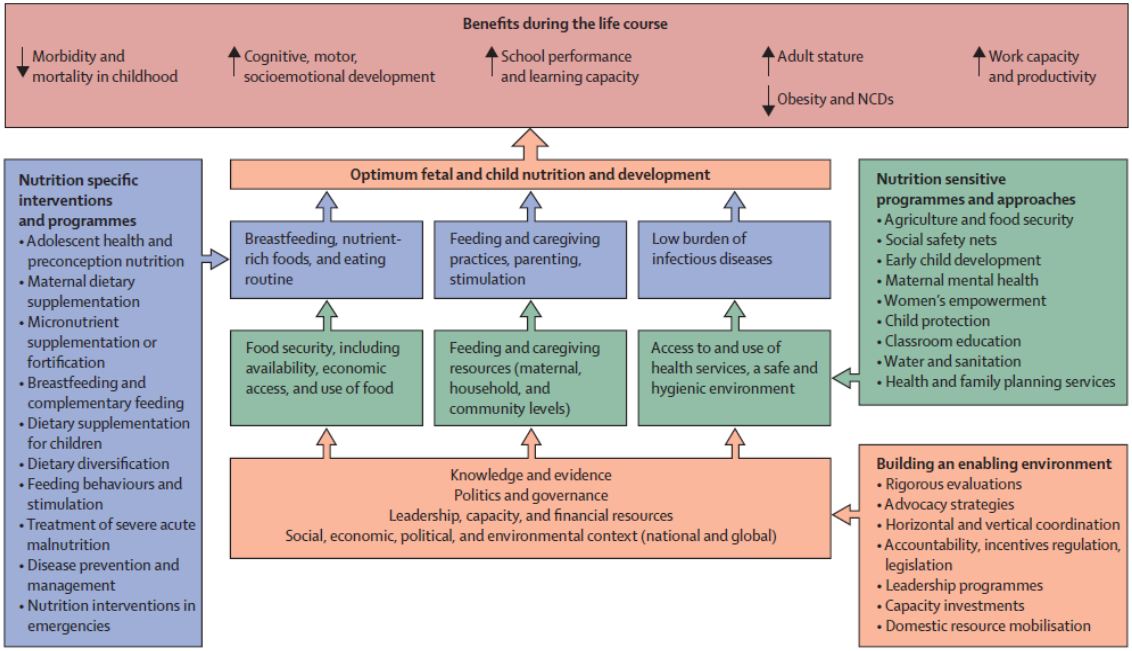
When deciding how to address malnutrition, nutrition-specific and nutrition-sensitive programmes should be considered. Nutrition-sensitive programmes take place in sectors complementary to nutrition and are designed to address some of the underlying and basic determinants of malnutrition. Though the primary objective is not specifically related to nutrition, nutrition-sensitive programmes must include a nutrition objective, outcomes and indicators that are measureable.

6.4. Legal considerations on data

Based upon the arrangements with the host government, the final dataset and all other materials created or used during the survey will belong to the partners that led the study and any other organizations or agencies that participated in the survey planning and implementation. In some cases, it may be advisable for one or more technical consultants to maintain a copy of the final electronic dataset to be able to answer queries and perform additional analyses not included in the final written survey report.

The actual paper data collection forms, although they do not contain specific 'identifying' information, may have information that could be used to identify specific households or individuals. As a result, both the paper data collection forms and the computer dataset must be kept in locked cabinets when not being used. The final deposition of survey materials, including computer datasets and paper forms, will be determined by the organizations or agencies that planned and implemented the survey.

Annex 1: The Lancet series on Maternal and Child Nutrition (2013)



Annex 2: Food security data collection form

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

Introducing and asking for consent: GOOD MORNING, WE ARE FROM _____. WE ARE WORKING ON A PROJECT CONCERNED WITH NUTRITION AND FOOD. I WOULD LIKE TO TALK TO YOU ABOUT THIS. THIS INTERVIEW WILL TAKE ABOUT 30 TO 45 MINUTES. ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL/SECRET AND YOUR ANSWERS WILL NEVER BE IDENTIFIED. AFTER I ASK YOU SOME QUESTIONS ABOUT YOUR HOUSEHOLD, I WOULD LIKE TO SPEAK WITH SOME OF THE WOMEN, AS WELL AS THOSE WHO TAKE CARE OF YOUNG CHILDREN WHO LIVE IN YOUR HOUSEHOLD. CHILDREN UNDER FIVE WILL BE ALSO WEIGHED AND THEIR HEIGHT MEASURED. CAN I START?

Section 0 : Household identification

This section must be completed by the interviewer BEFORE administering the questionnaire

1. Province : _____ Code |__|__| 2. District : _____ Code |__|__| 3.Village/Pace : _____ Code |__|__| 4. Cluster Number : |__|__|__|
5. Household Number : |__|__| 6. Date : |__|__|/|__|__|/2014
7. Team number : |__|__| 8. Interviewer Number : |__|__|

This section must be completed by the interviewer AFTER administering the questionnaire

Status of household questionnaire: |__|

1- Complete;
2- Could not locate household or household does not exist;
3- No one home temporarily;
4- Household moved to another;
5- No household members available;
6- Household refused participation;
7- Other (specify: _____)

Status of children and mothers questionnaire: |__|

1- Complete;
2- No eligible children;
3- One or more eligible children or women absent;
4- One or more eligible children or women not available;
5- One or more eligible children or women refused;
6- Other (specify :_____)

Signature of supervisor: _____

Section 1 : Demography

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

FIRST, I WOULD LIKE TO ASK YOU SOME GENERAL QUESTIONS ABOUT THE PEOPLE WHO LIVE IN THIS HOUSEHOLD.

N°	1.01- Who usually lives in this household?	1.02- Male or female?	1.03- How old is this person at his/her last birthday?	1.04- Relationship with head of household?	1. 05- Highest level of education?	1. 06- Does (NAME) suffer from a chronic illness (≥ 3 months)?	1. 07- What was the major disease that (NAME) suffered during the last 6 months?	1. 08- Is (NAME) an orphan (only for children under 18)?	1. 09 What is marital status of head of household?
	Do not forget persons who are not at home at the moment of interview	1=Male 2=Female	Put 0 for baby less than 1 year	1=Household head 2=Household head husband or wife 3= Son/Daughter 4= Household head siblings 5= Household parents 6= Other relationship 7= No relationship	1=None 2=Literate 3=Primary school 4 = Secondary school 5= University 6= Other (specify: ……)	0 = No 1= Yes	0= NOT BEEN ILL 1 = FEVER 2 = DIARRHOEA 3 = RESPIRATORY INFECTION 4 = MALARIA 5 = DENGUE 6 = PHYSICALLY CHALLENGED 7 = MENTALLY ILL 8 = OTHER...	0 = No 1= Both parents dead 2= Father dead 3 = Mother dead	1=MARRIED MONOGAMOUS 2 MARRIED POLYGAMOUS 2=LIVING TOGETHER 3=WIDOWED 4=DIVORCED 5=SEPARATED 6=SINGLE /NEVER MARRIED
01		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	|___|
02		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
03		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
04		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
05		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
06		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
07		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
08		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
09		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
10		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
11		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
12		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
13		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
14		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	
15		|___|	|__|__|	|___|	|___|	|___|	|___|	|___|	

Section 2 – Facilities and assets

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

2.01	How many rooms does the household use for sleeping?			___|___| Parts / rooms
2.02	What is the main source of lighting for the household?	|___|	1 = electricity (company) 2 = oil lamp 3 = gas lamp 4 = torch	5 = solar power 6 = candle 7 = fire (wood, straw, etc.) 8 = generator 9 = no lighting
2.03	What is the main source of cooking fuel used by the household?	|___|	1 = purchased firewood 2 = collected firewood 3 = charcoal 4 = gas	5 = electricity 6 = kerosene 7 =Other (Please specify) ……
2.04	How long does it normally take to find the wood	|___|	1 = less than 30 minutes 2 = between 30-60 minutes	3 = between 1-3 hours 4 = more than 3 hours
2.05	What are the main difficulties faced by these persons during the collection/transport of wood?	1st |___| 2nd |___|	1 = insecurity 2 = scarcity of wood 3 = long distance of the place of collection from home	4 = high cost 5 = other (Please specify) ……
2.06	What is the main source of drinking water for the household?	|___|	1 = Tap water at in the house/ homestead 2 = Public/ Neighbor tap water 3 = Deep borehole (with pump) 4 = Protected well in the yard/ homestead 5 = Public Protected well	6 = Water tank /truck 7 = Rain water collected 8 = Unprotected traditional wells 9 = Surface water (stream, River, Lake, rain...) 10 = Mineral water (bottle/bag) 11 = other (Please specify) ……
2.07	How many liters of water did you and your household members use on average, each day for the last 7 days?			
	|____|____| 1. **No. of** drums 200 litres |____|____| 2 **No of** drums 100 litres |____|____| **3 No. of** 50 litres buckets |____|____| **4 No. of** jerrycans/buckets **25** litres			|____|____| **5 No. of** jerrycans/buckets**20** litres |____|____| **6 No. of** jerrycans/buckets **15** litres |____|____| **7 No. of** jerrycans/buckets **10** litres |____|____| 8 **No. of** jerrycans/buckets **5** litres |____|____| **9. No. of** bottles of water **1.5** litres
2.08	Do you treat the water before drinking it?	|___|	1 = no 2 = yes, we boil water 3 = yes, we filter the water with a cloth 4 = yes, we allow waste to settle 5 = yes, we filter the water (sand or ceramics)	6 = yes, we apply solar disinfection of water 7 = yes, we use water bleach, chlorine 8 = yes, we apply another treatment (to be specified)……

2.09	What type of toilet does your household use?	|___|	1 = Ventilated Pit Latrine (VIP) 2 = Traditional Latrine/ hole open 3 = Toilet with flush/sewerage system 4 = Bush/Nature 9 = other (Please specify)
2.10	Is this an individual, shared or public toilet?	|___|	1= Individual, in the household 2= Shared with other households (max 5) 3= Community (public) 4= No toilet 9= Other (specify):……
2.11	How does the household dispose solid waste or garbage?	|___|	1= collected by public /private vehicle 2= public container closed 3= open pit 4= dumped anywhere 9= Other (specify):……

2.12	Does anyone in your household own any of the following items? (Reply by) **0 = No or 1 = Yes** to all the boxes) <u>NB: If the equipment DOESN'T WORK</u> Responding by <u>No = 0</u>	01	Bed	| __ |	17	Motorcycle	| __ |
		02	Sofa set	| __ |	18	Car	| __ |
		03	Mattress	| __ |	19	Generator	| __ |
		04	Fan	| __ |	20	Washing machine	| __ |
		05	Table	| __ |	21	Air conditioner	| __ |
		06	Chair(s)	| __ |	22	Dish-washer	| __ |
		07	Refrigerator	| __ |	23	TV	| __ |
		08	Rug / carpet	| __ |	24	Computer/ laptop	| __ |
		09	Gas lamp	| __ |	25	Video-DVD-VCD player.	| __ |
		10	Iron	| __ |	26	Radio	| __ |
		11	Sewing machine	| __ |	27	Cell-phone	| __ |
		12	Oven / micro-waves	| __ |	28	Fixed telephone	| __ |
		13	Electric gas stove	| __ |	29	Trolley/animal drawn-cart	| __ |
		14	Kerosene Stove	| __ |	30	Yoke beam	| __ |
		15	Boat	| __ |	31	Jewellery	| __ |
		16	Bicycle	| __ |	32.	Another (to be specified)	| __ |

Section 3 – Livelihood activities

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

3.01 - Please tell me; During the past year how people in this household earned money or other things the household needs. *(Use the codes below)*	**3.02 - Give the proportion of income from this source in total income.** *(Use proportional piling if needed)*	**3.03 – Who is participating in this activity?** *(Use the number of household members in the roster)*	**3.04- Who manage income from this activity?** *(Use the number of household members in the roster)*
Main |__|__|	|__|__|__|%	|__|__|	|__|__|
Second |__|__|	|__|__|%	|__|__|	|__|__|
Third |__|__|	|__|__|%	|__|__|	|__|__|
Income code : 1 = Agriculture and sale of crops 2 = Livestock and sale of animals 3 = Brewing 4 = Fishing	5 = Unskilled labour 6 = Skilled labour 7 = Handicrafts/artisan work 8 = Use of natural resources	9 = Petty trading 10 = Seller, commercial activity 11 = Remittances 12 = Salaries, wages (employees)	13 = Begging, assistance 14 = Government allowance (pension, disability benefit) 99 = Other (specify .....)

3.05	What are the main constraints limiting the household income and livelihoods?	1st |___|___| 2nd |___|___| 3rd |___|___|	**1** = Access to land 2 = drought 3 = lack of grazing land 4 = Deforestation 5 = low access to credit 6 = high prices for primary materials	7 = lack of support (e.g., sanitary, veterinary, agricultural, etc.) 8 = insecurity 9 = debts 10 = serious disease of one or more members of the household 11 = other (specify).....
3.06	Does the household practice agriculture?		0 = No 1 = Yes	|___|
3.07	Does your household have access to agricultural land? **MAXIMUM OF 2 ANSWERS**	|___| |___|	1 = No 2 = Yes, personal property 3 = Yes, communal land 4 = Yes, around Homestead	5 = Yes, rent the land 6 = Yes, practice sharecropping 7 = Yes, borrowed land 8 = other (Please specify).....	If not →go to **3.14**
3.08	What is the total size of agricultural land owned by members of your household?	|___|___|.|___| Hectares	99 = Don't Know	
3.09	What proportion of the cropping area is irrigated?	|___|___|	1 = Nil 2 = < 5%	3 = 5 to 10% 4 = 10 to 25%	5 = > 25%
3.10	What area was planted to crops in (year)?	|___|___|.|___| Hectares		
3.11	Did you practice farming for your own account or on behalf of another person**?**	|___|	1 = own account 2 = for another person 3 = for own account and other person	

3.12	What are the main reasons the household did not practice agriculture? **(THEN GO DIRECTLY TO SECTION =)**	|___|	0 = I am not a farmer 1 = health problem 2 = lack of land 3 = other economic activity	4 = lack of money to buy inputs (seeds, sanitary products etc.) 5 = lack of water 6 = lack of knowledge in this area 7 = other (Please specify)……

3.13	What area was planted under each crop in (state year) and what was the harvest that was obtained? Start with main crop followed by 2nd main, etc. **Crop Codes:**		**3.13.1 Crop Type**	**3.13.2 Area Planted**		**3.13.3 Harvested Quantity**	
	1 = sorghum 2 = wheat 3 = barley 4 = teff 5 = maize 6 = Millet 7= potatoes	8 = Pulses 9 = beans 10 = groundnuts 11 = Sesemi 12 = Vegetables (carrots, onions, cabbage, green leafs, beans, etc.)	**(use codes)**	**Area cropped**	**Unit of Measurement**	**Quantity harvested**	**Unit of measurement**
			1st |___|___|	|___|___|.|___|		|___|___|___|___|.|___|	
			2nd |___|___|	|___|___|.|___|		|___|___|___|___|.|___|	
			3rd |___|___|	|___|___|.|___|		|___|___|___|___|.|___|	
			4th |___|___|	|___|___|.|___|		|___|___|___|___|.|___|	
			5th |___|___|	|___|___|.|___|		|___|___|___|___|.|___|	

3.14	Does your household own any livestock?	| __ |	0 = no 1 =Yes	If no → **go to 4.01**
3.15	**If Yes;** Are farm animals kept within the living area of the household?	| __ |	0 = no 1 =Yes	
3.16	How many of the following livestock does your household currently own? *(Write the number of Heads of animals, including 0 if the household does not have this type of animal)*			

1. Cattle (oxen, cows, etc.)	|__|__|__|__|__|	5. Donkeys	|__|__|__|__|__|
2. Camels	|__|__|__|__|__|	6. Poultry (Chicken, Duck, Guinea fowl etc.)	|__|__|__|__|__|
3. Goats	|__|__|__|__|__|	7. Other (Please specify)……	|__|__|__|__|__|
4. Sheep	|__|__|__|__|__|		|__|__|__|__|__|

3.17	What are the three main constraints for livestock and livestock production in your household in the last 12 months ***(in order of importance)***?	1st |___| 2nd |___| 3th |___|	**1 =** Pest and diseases 2 = lack of grazing /pasture 3 = lack of water 4 = lack of veterinary services 5 = insecure	6 = insufficient work 7 = lack of market for livestock 8 = flight 9= Other (specify)……

Section 4 – Credit and expenditures

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

Code	**4.01 -** In **the last 30 days,** how much money did household members spend on the following items? *(Write 0 if no expenditure)*	**4.01.a -** Purchases with **CASH**	**4.01.b -** Purchases with **CREDIT**
	Rice	|___|___|___|___|___|	|___|___|___|___|___|
	Wheat flour	|___|___|___|___|___|	|___|___|___|___|___|
	Millet/Sorghum	|___|___|___|___|___|	|___|___|___|___|___|
	Bread	|___|___|___|___|___|	|___|___|___|___|___|
	Meat	|___|___|___|___|___|	|___|___|___|___|___|
	Fish and seafood	|___|___|___|___|___|	|___|___|___|___|___|
	Chicken	|___|___|___|___|___|	|___|___|___|___|___|
	Bean	|___|___|___|___|___|	|___|___|___|___|___|
	Peas and lentils	|___|___|___|___|___|	|___|___|___|___|___|
	Vegetables	|___|___|___|___|___|	|___|___|___|___|___|
	Nuts	|___|___|___|___|___|	|___|___|___|___|___|
	Fresh fruit	|___|___|___|___|___|	|___|___|___|___|___|
	Eggs	|___|___|___|___|___|	|___|___|___|___|___|
	Milk, yogurt, other milk products	|___|___|___|___|___|	|___|___|___|___|___|
	Oil, butter, other fat	|___|___|___|___|___|	|___|___|___|___|___|
	Sugar or other sweets	|___|___|___|___|___|	|___|___|___|___|___|
	Salt, spices or other condiments	|___|___|___|___|___|	|___|___|___|___|___|
	Coffee, teas or other drinks	|___|___|___|___|___|	|___|___|___|___|___|
	Beer, other alcohol, cigarettes	|___|___|___|___|___|	|___|___|___|___|___|
	Soap	|___|___|___|___|___|	|___|___|___|___|___|
	Transport	|___|___|___|___|___|	|___|___|___|___|___|
	Firewood or charcoal	|___|___|___|___|___|	|___|___|___|___|___|
	Kerosene	|___|___|___|___|___|	|___|___|___|___|___|

Code	**4.02 -** In **the past 6 MONTHS,** how much money did household members spend on each of the following items or services?	**4.02.a -** Purchases with **CASH**	**4.02.b -** Purchases with **CREDIT**
	Medical expenses	|___|___|___|___|___|	|___|___|___|___|___|
	Education, school fees	|___|___|___|___|___|	|___|___|___|___|___|
	Clothing, shoes	|___|___|___|___|___|	|___|___|___|___|___|
	Water and electricity	|___|___|___|___|___|	|___|___|___|___|___|
	Furniture	|___|___|___|___|___|	|___|___|___|___|___|
	Celebrations, social events, funerals, weddings	|___|___|___|___|___|	|___|___|___|___|___|
	Construction or house repair	|___|___|___|___|___|	|___|___|___|___|___|
	Repaying debts	|___|___|___|___|___|	|___|___|___|___|___|
	Hiring labor	|___|___|___|___|___|	|___|___|___|___|___|
	Livestock	|___|___|___|___|___|	|___|___|___|___|___|
	Veterinary expenses	|___|___|___|___|___|	|___|___|___|___|___|
	Equipment, tools, seeds	|___|___|___|___|___|	|___|___|___|___|___|
	Agricultural Material	|___|___|___|___|___|	|___|___|___|___|___|
	Other long term expenses (specify……)	|___|___|___|___|___|	|___|___|___|___|___|

Section 5 – Food consumption

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

	Focus on food consumed by the household	5.2 In the last 24 hours (from this time yesterday to now) did your household consume food from any these food groups?	5.3 Over the last 7 days, how many days did your household consume the following foods?	5.4 What was the main source of the food in the past 7 days?
1	**Cereals, grains, roots and tubers:** rice, pasta, bread, sorghum, millet, maize, fonio, potato, yam, cassava, white sweet potato	|_____|	|_____|	|_____|
2	**Legumes / nuts :** beans, cowpeas, peanuts, lentils, nut, soy, pigeon pea and / or other nuts	|_____|	|_____|	|_____|
3	**Milk and other dairy products:** fresh milk / sour, yogurt, cheese, other dairy products (Exclude margarine / butter or small amounts of milk for tea / coffee)	|_____|	|_____|	|_____|
4	**Meat, fish and eggs:** goat, beef, chicken, pork, blood, fish, including canned tuna, escargot, and / or other seafood, eggs (meat and fish consumed in large quantities and not as a condiment)	|_____|	|_____|	|_____|
	If 0 skip to question 5			
4.1	**Flesh meat:** beef, pork, lamb, goat, rabbit, chicken, duck, other birds, insects	|_____|	|_____|	|_____|
4.2	**Organ meat:** liver, kidney, heart and other organ meats	|_____|	|_____|	|_____|
4.3	**Fish/shellfish:** fish, including canned tuna, escargot, and / or other seafood (fish in large quantities and not as a condiment)	|_____|	|_____|	|_____|
4.4	**Eggs**	|_____|	|_____|	|_____|
5	**Vegetables and leaves:** spinach, onion, tomatoes, carrots, peppers, green beans, lettuce, etc.	|_____|	|_____|	|_____|
	If 0 skip to question 6			
5.1	**Orange vegetables (vegetables rich in Vitamin A):** carrot, red pepper, pumpkin, orange sweet potatoes,	|_____|	|_____|	|_____|
5.2	**Green leafy vegetables:** spinach, broccoli, amaranth and / or other dark green leaves, cassava leaves	|_____|	|_____|	|_____|
6	**Fruits:** banana, apple, lemon, mango, papaya, apricot, peach, etc.	|_____|	|_____|	|_____|
	If 0 skip to question 7			
6.1	**Orange fruits (Fruits rich in Vitamin A):** mango, papaya, apricot, peach	|_____|	|_____|	|_____|
7	**Oil / fat / butter:** vegetable oil, palm oil, shea butter, margarine, other fats / oil	|_____|	|_____|	|_____|
8	**Sugar, or sweet:** sugar, honey, jam, cakes, candy, cookies, pastries, cakes and other sweet (sugary drinks)	|_____|	|_____|	|_____|
9	**Condiments / Spices:** tea, coffee / cocoa, salt, garlic, spices, yeast / baking powder, lanwin, tomato / sauce, meat or fish as a condiment, condiments including small amount of milk / tea coffee.	|_____|	|_____|	|_____|

FOOD SOURCE CODES

	1 = Own production (crops, animal) 2 = Exchange of food for labor 3 = Gifts from neighbors/relatives	4 = Market (purchase on cash and credit) 5 = Borrowing 6 = Food assistance	7 =Hunting 8=Fishing 9=Gathering

Section 6 – Shocks and Coping

NUMBER OF QUESTIONNAIRE: |__||__||__|-|__||__|

6.01	During the **past 12 months**, has your household experienced difficulties or shock for the survival of its members?	| __ |	0 = no 1 = Yes	If not →Go to **6.03**

6.02.A		**6.02.B**	**6.02.C**												**6.02.D**	**6.02.E**
In order of severity, please mention three major shocks affecting your household during the last **12 months?** **DO not list. Let the household respond spontaneously** ***(See codes below)***		Has the shock or problem caused a reduction or loss of income (nature or cash)? ***0 = No*** ***1 = Yes***	Please indicate in which period of the year that shock manifested itself? **[circle the months]**												Can the household recover from the decrease of income or sudden impact? **1 = not at all** **2 = partially** **3 = fully**	What <u>main</u> strategies where used by your household to compensate for the consequences of the shock? ***(See strategies below codes)***
1st shock	|__|__|	**1st** |__|	J	F	M	A	M	J	J	A	S	O	N	D	**1st** |__|	1st |__|__|__|
2nd shock	|__|__|	**2nd** |__|	J	F	M	A	M	J	J	A	S	O	N	D	**2nd** |__|	2nd |__|__|__|
3rd shock	|__|__|	**3rd** |__|	J	F	M	A	M	J	J	A	S	O	N	D	**3rd** |__|	3rd |__|__|__|

<u>Code shocks (A)</u>
1 = late rains / drought
2 = rains / floods
3 = Erosion / landslide
4 = locust swarms / Infestation / insects / straying of animals (fields destroyed by the animals)
5 = diseases of crops
6 = bush fire / fire
7 = home damaged, destroyed
8 = human epidemics (meningitis, malaria etc.)
9 = death of an active member of the household
10 = death of another Member of the household
11 = serious illness or injury of a member of the household
12 = unusual diseases of livestock
13 = loss/lack of employment of a member of the household
14 = reduced income of a member of the household
15 = increase in the purchase price of food products
16 = increase in the non-food products purchase price
17 = increase in the purchase price of oil
18 = increase in the purchase price of animal feed
19 = lower prices for the sale of cattle / livestock products
20 = excessive death of cattle
21 =theft of money, tools for the household, or personal effects
22 = flight animals
23 =conflict/violence
24 = other (Please specify)
25 = no shock

<u>Code of survival strategies (E)</u>
1 = cheaper foods or less preferred
2 = borrow food or count on the help of friends, neighbours or household
3 = buy food on credit
4 = reduce the amount of food consumed per meal
5 = reduce the number of daily meals
6 = spend days without eating
7 = seek temporary work outside the community
8 = long (greater than 6 months) migration
9 = reduce expenditures to the level of health and/or education
10 = spend the savings
11 = sell household equipment and goods (car, motorcycle, bicycle etc.)
12 = borrow money
13 = sell agricultural tools
14 = sell agricultural inputs (seeds, fertilizers, etc.)
15 = practise illegal or risky income generating activities
16 = sell the non-reproductive cattle
17 = sell breeding livestock
18 = sell his/her land
19 = work in exchange for food
20 = send children to work for money / food
21 = send children living with parents
22 = beg
23 = work occasionally or under contract
24 = increase the small trade
25 = reduce expenditure on education
26 = nothing
27 = other (to be specified)

6.03	e **last 7 days**, has your household done any of the current things to cope with a lack of food or money? **READ PROPOSALS**	How many times over the last 7 days? Frequency (in **number of days**, from 0 to 7)
Relied on less preferred, less expensive food		| __ |
Borrowed food or relied on help from friends or relatives		| __ |
Reduced the number of meals eaten per day		| __ |
Reduced portion i.e. size of meals		| __ |
Reduction in the quantities consumed by adults/mothers for young children		| __ |

6.04	During the **last 7 days**, has your household done any of the current things to cope with a lack of food or money to get?	1 = no, because I did not need to 2 = No, because I already sold these assets and cannot continue to do so	3 = Yes 4 = not applicable
ld domestic goods (radio, furniture, refrigerator, TV, jewellery etc.)			| __ |
ent savings or sold more livestock than usual			| __ |
nt household members to eat elsewhere			| __ |
curred more debt or borrowed money /food from relatives and friends			| __ |
ld productive assets or means of transport (sewing machine, wheelbarrow, bicycle, car etc.)			| __ |
duced essential non-food expenditures such as education, health, fertilizers, fodder, veterinary, etc.			| __ |
ithdrew children from school			| __ |
ld House or plot of land or last female livestock			| __ |
acticed illegal or risky income generating activities, e.g. Theft, prostitution, etc.			| __ |
egged			| __ |

Annex 3: Nutrition data collection form

WE WOULD LIKE TO CONTINUE WITH THE INTERVIEW OF MOTHERS OR CARETAKERS OF CHILDREN UNDER FIVE. FIRST, WE WOULD LIKE TO START WITH SOME QUESTIONS ABOUT HEALTH IN THE RECENT PAST.

Section 7 – Identification of Children under five **NUMBER OF QUESTIONNAIRE:** |__||__||__|-|__||__|					
Start with the youngest children 0 to 59 months					
.01	**Number of the child from the roster**	|___|___|	|___|___|	|___|___|	|___|___|
.02	**Name**	----------	----------	----------	----------
.03	**Sex: 1=Male 2=Female**	|___|	|___|	|___|	|___|
.04	**Age in completed months**	|___|___|	|___|___|	|___|___|	|___|___|
Section 8 – Health of children under five					
.01	**In the past 2 weeks, has (*NAME*) had any fever?** *0 = No -> **8.04** 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.02	**If yes, has (*NAME*) been taken to a health centre for treatment of fever?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.03	**If no, why not?** Disease not serious Lack of money Health centre too far Other (specify .....)	|___|	|___|	|___|	|___|
.04	**In the past 2 weeks, has (*NAME*) had any diarrhoea?** *0 = No -> **8.07** 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.05	**If yes, has (*NAME*) been taken to a health centre for diarrhoea?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|

.06	**If no, why not?** Disease not serious Lack of money Health center too far Other (specify ……)	|___|	|___|	|___|	|___|
.07	**In the past 2 weeks, has (*NAME*) had any difficult or rapid breathing with cough?** *0 = No -> **8.11** 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.09	**If yes, has (*NAME*) been taken to a health centre for cough?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.10	**If no, why not?** Disease not serious Lack of money Health centre too far Other (specify ……)	|___|	|___|	|___|	|___|
.11	**Has (*NAME*) ever received measles vaccine?** 0 = No 1 = Yes (vaccination book seen) 2= Yes (mother's memory) 3= Not applicable 9 = Don't know	|___|	|___|	|___|	|___|
.12	**Did (*NAME*) receive a vitamin A capsule in the past 6 months?** *(Show mother vitamin A capsule)* *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.13	**Did (*NAME*) receive deworming medication in the past 6 months?** *(Show mother deworming tablet)* *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.14	**Did (*NAME*) sleep under ITN last night?** *(look if the ITN exists)* *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|

Section 9 – Food consumption of children under five **NUMBER OF QUESTIONNAIRE:** |__||__||__|-|__||__|					
.01	**Did (*NAME*) eat any solid, semi-solid, or soft foods yesterday during the day or at night?** *0 = No 1 = Yes-> **Section 10** 9 = Don't know*	|___|	|___|	|___|	|___|
.02	**Is yesterday a normal day for (*NAME*) or not?** *0 = No 1 = Yes*	|___|	|___|	|___|	|___|
.03	**How many times?**	|___|	|___|	|___|	|___|
.04	**Yesterday during the day or at night, did (*NAME*) eat/drink any of (*FOOD GROUP ITEMS*)?** *0 = No 1 = Yes 9 = Don't know*				
	Porridge, bread, rice, noodles, or other foods made from grains	|___|	|___|	|___|	|___|
	Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	|___|	|___|	|___|	|___|
	White potatoes, white yams, manioc, cassava, or any other foods made from roots	|___|	|___|	|___|	|___|
	Any dark green leafy vegetables	|___|	|___|	|___|	|___|
	Ripe mangoes, ripe papayas, or (insert other local vitamin A-rich fruits)	|___|	|___|	|___|	|___|
	Any other fruits or vegetables	|___|	|___|	|___|	|___|
	Liver, kidney, heart, or other organ meats	|___|	|___|	|___|	|___|
	Any meat, such as beef, pork, lamb, goat, chicken, or duck	|___|	|___|	|___|	|___|
	Eggs	|___|	|___|	|___|	|___|
	Fresh or dried fish, shellfish, or seafood	|___|	|___|	|___|	|___|
	Any foods made from beans, peas, lentils, nuts, or seeds	|___|	|___|	|___|	|___|
	Cheese, yogurt, or other milk products	|___|	|___|	|___|	|___|
	Any oil, fats, or butter, or foods made with any of these	|___|	|___|	|___|	|___|
	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits	|___|	|___|	|___|	|___|
	Condiments for flavor, such as chilies, spices, herbs, or fish powder	|___|	|___|	|___|	|___|
	Grubs, snails, or insects	|___|	|___|	|___|	|___|
	Foods made with red palm oil, red palm nut, or red palm nut pulp sauce	|___|	|___|	|___|	|___|
.05	**Yesterday during the day or at night, did (*NAME*) consume any iron fortified foods?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
.06	**Yesterday, during the day or at night, did (*NAME*) consume any food to which you added a Micro-Nutrient Powder?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|

Section 10 – Breastfeeding at 1 year (children 12-15 months)					
0.01	**Is (*NAME*) still breastfed?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
0.02	**Was (*NAME*) breastfed yesterday during the day or at night?** *0 = No 1 = Yes 9 = Don't know*	|___|	|___|	|___|	|___|
10.03	**During the last 24 hours (day and night), how many times did (*NAME*) drink the following liquids?**				
	Breast milk	|___|___|	|___|___|	|___|___|	|___|___|
0.03a	Milk such as tinned, powdered, or fresh animal milk	|___|___|	|___|___|	|___|___|	|___|___|
0.03b	Juice or juice drinks	|___|___|	|___|___|	|___|___|	|___|___|
0.03c	Yogurt	|___|___|	|___|___|	|___|___|	|___|___|
0.03d	Plain water	|___|___|	|___|___|	|___|___|	|___|___|
0.03e	Infant formula	|___|___|	|___|___|	|___|___|	|___|___|
0.03f	Thin porridge	|___|___|	|___|___|	|___|___|	|___|___|
0.03g	Any other liquids	|___|___|	|___|___|	|___|___|	|___|___|
0.03h	**Was (*NAME*) given any vitamin drops or other medicines as drops yesterday during the day or at night?** 0 = No 1 = Yes 9 = Don't know	|___|	|___|	|___|	|___|
0.03i	**Was (*NAME*) given ORS yesterday during the day or at night?** 0 = No 1 = Yes 9 = Don't know	|___|	|___|	|___|	|___|

Section 12 – Anthropometric measurements of children 6-59 months				
Number of the child (6-59 months) from the roster	|__|__|	|__|__|	|__|__|	|__|__|
Sex (F or M)				
Date of birth (JJ / MM / AA)	_/__/__	__/__/__	__/__/__	__/__/__
or Age in months				
Weight (0,1 kg)				
Height (0,1 cm)				
Edemas (Yes = Y No = N)				
MUAC (mm)				
Comments / Observations				

Section 13 – Anthropometric measurements of PLW				
N. **Woman in the household rooster**	|__|__|	|__|__|	|__|__|	|__|__|
Name of the woman				
MUAC (mm)				
Comments / Observations				

END OF THE SURVEY

Annex 4: Summary of pilot case study in Burundi (*CFSVAN, 2014*)

In February 2014, an integrated nutrition and food security pilot assessment was undertaken in Burundi, covering 17 provinces. The CFSVA was carried out by United Nations agencies – WFP and UNICEF – together with government organizations such as the Ministry of Public Health represented by the Bureau of Nutrition (PRONIANUT), the Ministry of Agriculture (the Agricultural Planning Department) and the National Bureau of Statistics (ISTEEBU).

Survey workers were recruited by ISTEEBU and PRONIANUT with a margin of 10 percent extra personnel. Thereafter, an intensive 10-day indoor training course on food security and nutrition was done by survey team members. Interview training included discussions about the questionnaire, translation and role playing. Measurement training involved taking and recording age, height, weight, MUAC and oedemata. One day was dedicated to measurement standardization where trainees measured and weighed each other as well as a sample group of children brought to the training site. Another day was dedicated to pre-testing the questionnaire and all survey procedures in the field. At the end of the training, based on their performance on standardization, the trainees were hired for data collection. Non-selected trainees were held as reserves. A separate training session was offered to team leaders and supervisors on the use of ENA-SMART software for anthropometric data entry in the field to produce daily plausibility reports, which helped supervisors to correct immediately any mistakes and to ensure data quality.

Each data collection team was composed of three people: one measurer and two interviewers who helped the measurer when needed. Each team covered one cluster per day. The consent of each respondent was required before interview and measurements. Absent households were not replaced and absent eligible children or women were sought; the survey team returned to these households to complete data collection if they had enough time.

Anthropometric data was double entered on ENA-SMART v. 2011 – one dataset was entered by each supervisor at the end of the day of data collection, and another by data entry clerks at the end of data collection session. The two datasets were compared to check for and correct errors. Food security and other nutrition data were entered on CSPro v.5. Z-scores and malnutrition prevalence were calculated using ENA-SMART before being exported into SPSS v. 18 to be linked and analysed with food security and other nutrition data. Correlations between putative risk factors and nutritional status were analysed. Adjusted Chi square or ANOVA was used to test the statistical significance of any differences, while separate analysis was done on younger (0 to 23 months) and older (24 to 59 months) children (see table below). The results indicated that the possible factors for wasting in Burundi are as follows:

- *Child's gender (specifically for younger children)*
- *Introduction of complementary foods at 6 months*
- *Fever (younger children)*
- *Diarrhoea*
- *Measles vaccination*
- *Use of ITN (younger children)*
- *Mother's GAM*
- *Access to safe water*
- *Use of firewood (in urban areas)*
- *Household food consumption*
- *Current stock*
- *CSI*

Certain income sources are also associated with wasting in younger children such as petty trading, labouring, brewing and livestock sale; and certain shocks such as water deficits and disease. It is observed that wasting in Burundi is not related to the following:

- *Child's breastfeeding practices*
- *Minimum dietary diversity or frequency of meal*
- *Minimum acceptable diet*
- *ARI*
- *BCG vaccination*
- *Vitamin A intake*
- *Deworming*
- *Caregiver*
- *Household head gender*
- *Livelihood strategies*
- *Household food insecurity*
- *Practice of agriculture*
- *Duration of crop production*
- *Food assistance*

Results of integrated nutrition and food security assessment in Burundi

Malnutrition		**Wasting**	**Stunting**
Prevalence among children 6-59 months		5.40%	51.40%
Situation		Precarious	Critical
Gender		Boys > Girls	Boys > Girls
Prevalence among children under 6 months		4.30%	25.50%
IYCF indicators	**Level**		**Bivariate significant association**
Early initiation of breastfeeding	88.2%	No	Yes
Exclusive breastfeeding under 6 months	64.3%	No	No
Continued breastfeeding at 1 year	84.5%	No	Yes
Continued breastfeeding at 2 years	81,8%	No	No
Introduction of complementary foods	74.7%	Yes	Yes
Minimum dietary diversity	22.9%	No	Yes
Minimum meal frequency	23.4%	No	No
Minimum acceptable diet	9.1%	No	Yes
Consumption of iron-rich foods	63.2%	No	Yes

Disease			
Fever	50.1%	Yes	Yes
Acute Respiratory Infection	45.4%	No	No
Diarrhoea	25.2%	Yes	Yes
Preventive treatments			
Measles immunization 9-59 months	96.3%	Yes	Yes
BCG vaccination	97.5%	No	No
Vitamin A intake 6-59 months	88.9%	No	No
Deworming 12-59 months	85.7%	No	Yes
Sleeping under ITN	52.0%	Yes	Yes
Mother status			
No education or primary level	77.7%	No	Yes
GAM	3.5%	Yes	Yes
Activity	64.3% farmers	No	Yes
Child's principal caretaker	96,3% mother	No	No
Household status			
Headed by a woman	20.9%	No	No
Use of unsafe water	19.5%	Yes	Yes
Use of firewood	89.9%	Yes	Yes
Unacceptable food consumption	42.9%	Yes	Yes
Emergency livelihood strategies	8.5%	No	Yes
Food Insecurity Index	32.4%*	No	Yes
Unstable income within a year	72.4%	No	Yes
Practice of agriculture	90.5%	No	Yes
Duration of production	3.1 months	No	Yes
Duration of current stock	0.7 month	No	Yes
CSI	11.8 (mean)	Yes	Yes
Food assistance in past 6 months	1,0%	No	No

From the results, possible factors for stunting in Burundi are as follows:

- *Early initiation of breastfeeding*
- *Continued breastfeeding at 1 year*
- *Introduction of complementary foods*
- *Minimum dietary diversity*
- *Minimum acceptable frequency*
- *Consumption of iron-rich foods*
- *Fever*
- *Diarrhoea (specifically for younger children)*
- *Measles vaccination*
- *Deworming and use of ITN*
- *Mother's status (education, GAM, activity)*
- *Access to safe water (older children)*
- *Use of firewood*
- *Household food consumption*
- *Livelihood strategies (older children)*
- *Household food insecurity*
- *Stability of income*
- *Practice of agriculture*
- *Duration of crop production*
- *Current stock (older children)*
- *CSI*

Some household characteristics are also associated with stunting:

- *Household size*
- *Easy access to safe water*
- *Mother collecting firewood, water or both*
- *Some incomes sources*
- *Some shocks (hailstorm and disease)*
- *Number of meals*

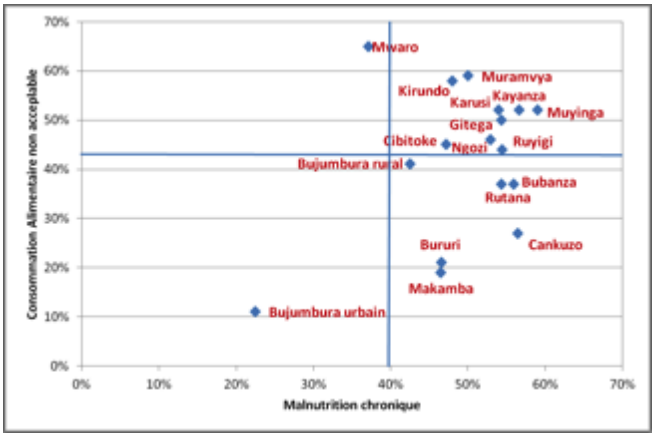
It is observed that stunting in Burundi is not related to the following:

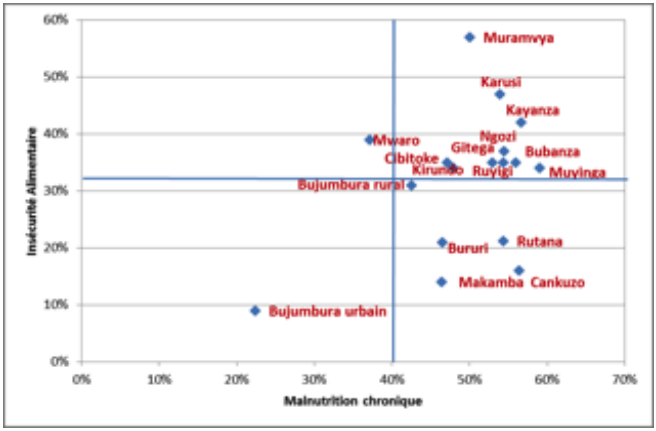
- *Exclusive breastfeeding for children under 6 months*
- *Minimum meal frequency*
- *ARI*
- *BCG vaccination*
- *Continued breastfeeding at 2 years*
- *Vitamin A intake*
- *Caregiver*
- *Food assistance*

To measure intra-distribution food within the household, a module on dietary diversity of children under 24 months during the day before the survey was included in the household questionnaire. Every child aged 6 to 8 months who did not eat the day before the survey lived in households who ate something, which shows that the non-introduction of foods at this age is not really related to a lack of food in the household, but rather to the ignorance of the mother of this practice. So, the dietary diversity of children 6 to 23 months is weakly correlated with household dietary diversity because there are certain foods that are not given to children even though they are eaten by the household such as “tubers, roots, grains”, “legumes and nuts” and “other fruits”. Nevertheless, if the household drank “milk” or ate “eggs” or “meat”, they also fed them to children.

These pilot findings also show that geographically, high rates of food insecurity do not always match high rates of malnutrition.

Food insecurity vs. malnutrition in Burundi





Annex 5: Key technical recommendations from pilot projects

Lessons learned from JANFSA experiences in Uganda, Burundi, Eritrea and Djibouti, along with the expertise of the workshop participants in assessing nutrition and/or food security, are reported in the table below. They should be considered when developing the minimum standards required for the successful implementation of a JANFSA.

TOPIC	KEY RECOMMENDATIONS FROM LESSONS LEARNED
Planning and coordination/ inter-agency engagement	
Planning	*The specific objectives of a JANFSA should be determined and clearly stated and agreed upon by all stakeholders before undertaking the study.* *Terms of reference including specific instructions on how to design surveys for the JANFSA addressing the objectives must be developed and agreed upon by partners before the study commences.*
Coordination	*Ensure that relevant government authorities endorse the joint approach* *Establish a Technical Working Group (TWG) with clear Terms of References (TORs) and road map to ensure common understanding and commitment* *TWG TORs developed and to specify:* *Common objectives for the JANFSA, including one on joint advocacy to obtain wider stakeholder buy-in and securing funding for the JANFSA* *The minimum TWG composition, which is suggested to include one coordinator and representation from specialists in food security, nutrition, information management; programme managers representing WFP and UNICEF among other technical staff from government; and other stakeholders including NGOs and donors*

Technical expertise required	*The JANFSA needs a single expert on food security and nutrition or two experts, one for each subject, who are willing to learn and work together* *A survey coordinator should be appointed to gather and finalize all outputs of the assessment: questionnaires, field reports, datasets, tables and findings, and the final report* *From each of the participating agencies, focal persons should be appointed to work with the coordinator. If consultants from UNICEF and WFP are involved in the analysis, it is important that the selection process starts early enough to ensure that the relevant competences are available when required.*
Memorandum of Understanding (MOU)	*A MoU among governmental entities involved and other key actors such as UNICEF, WFP is needed to agree on financial contributions as well as technical, managerial and administrative elements. The MoU should specify the roles and responsibilities through the whole process from the design phase to the dissemination of the report including the timing of the various activities; the outputs; and the task division during data collection, data entry, data cleaning, data analysis, report writing, data access and ownership.*
When to do a JANFSA	*The timing of a JANFSA should follow previous years' assessment periods to present trends of both nutrition and food security over time. A discussion among stakeholders needs to take place well in advance, with the objectives of the survey agreed by all parties. Seasonality is an additional element to factor in, given that peaks of acute malnutrition and food insecurity rarely coincide. It is important that all stakeholders identify the calendar of ordinary surveys and set an ideal timing for the joint survey accordingly. This consultation will limit risks of bias for the results of both components.* *The timing of a JANFSA should also be considered to optimize its results, fit into country plans and reviews, and to be useful to stakeholders*
How to conduct a JANFSA	*Ideally, the JANFSA should be conducted as an independent survey. To optimize resources, it can be combined with some specific surveys such as WFP CFSVA or EFSA, a SMART, etc. if the results must be produced quickly for immediate programme response.* *Although it often leads to higher levels of precision due to high sample size, linking the JANFSA to national surveys such as DHS*

	or LMS could be challenging as the release of the data is normally delayed, which affects timely analysis and report writing.
Analysis plan	*A clear list of indicators and information to be collected must be agreed upon by all stakeholders during the design of the survey, including the overall analysis plan. The plan must include a clear calendar for each step such as data collection and treatment (entry, cleaning, and analysis) dissemination of results, etc., and name specific roles of each stakeholder in each phase.* *Ensure that consensus is reached on data interpretation and that technical analysis and the visual presentation of results are tailored to specific audiences*
Where to do a JANFSA	*The objectives of the JANFSA should determine the coverage and the depth of analysis. The objectives must therefore be clear and endorsed by all stakeholders before the survey design is finalized* *Ensure an optimal level of collaboration on the implementation of JANFSA: joint development of JANFSA survey protocol (inclusive of analysis plan), joint planning including logistics*
Survey methodology /Sample design	
Precision estimate of the outcome of interest	*Technical expertise for sampling is necessary to design multi-stage samples for multiple outcome measures. Alternatively, there is need to investigate the approach used by DHS for this – often the comparison of districts for food security and/or nutrition/anthropometric indicators can be done but this is not needed for IYCF*
Sample size depends on objectives of survey	*Sample size calculation methods must follow the objectives of the survey. If one of these is to estimate malnutrition levels, the prevalence of wasting or stunting must be used, as in the case of Burundi.* *If the JANFSA is undertaken to link child nutritional status to household food security, the design based on precision and prevalence estimate of main food security outcome indicators is sufficient to calculate the minimum sample size* *If the objective of the JANFSA is to calculate the prevalence of malnutrition (GAM, stunting or underweight), the sample size should be determined using SMART-compliant methodology and assumptions for both nutrition and food security indicators,*

	under these circumstances: *If there is a small difference in the nutrition SMART sample size and food security derived sample size, the larger sample size is taken and both food security and nutrition indicators are assessed in all sampled households;* *If there is a large difference between the two sample sizes, to reduce cost of the survey the particular indicators should be collected with the sample size design for food security and nutrition respectively. An interval will be set at which teams will collect data for the indicators that require a smaller sample size. For example, if the sample size based on estimate of nutrition outcome indicators is 800 HH and the one for food insecurity is 400 HH, teams will administer the food security questions only in every second household selected in each cluster to create the linkage between the two surveys. Hence, the causal analysis between food security and malnutrition indicators can only be conducted among these 400 HHs.*
Consensus on sampling design	*In a joint assessment involving two agencies or more, there must be formal consensus on the sampling design before the terms of reference are endorsed to ensure adequate transparency of the methodology used and trustworthiness of the results.* *Define the optimum precision level for key nutrition and food security indicators necessary for the objectives defined for the JANFSA, keeping in mind that a compromised sample size may invalidate survey results* *Apply globally accepted technical guidelines and accepted standards for sampling, checking data quality, training for enumerators, data interpretation*
Standards	The *confidence intervals for the main indicators should be set at agreed levels e.g. at 90 or 95 percent. It is advisable to set the design effect (DE) and non-response rate based on experiences from previous surveys. In any case, DE should not be lower than 1.5 for double-stage cluster surveys and not lower than 2 when the number of clusters per stratum is less than 25 (not recommended, not compliant with SMART which recommends 30). The sample size must be agreed upon by the agencies through discussions on how to maximize precision levels in line with available budget resources and should be mainly determined by the objective of the assessment. As much as*

	possible, the joint survey must be compliant with SMART standards, especially if the objective to determine malnutrition prevalence
Eligibility (conversion of individuals into households)	*The final household sample size calculation is the result of the conversion from individuals based on the eligibility (average number of children under 5 in each stratum). Eligibility is calculated in each stratum by multiplying average household size by the proportion of children under 5*
Tools	
Preparation & printing	*Remote areas are unlikely to have an automated printing service. Also, depending on the sample size this can be a very time-consuming exercise. It is important to consider this during the planning phase so that arrangements can be made in advance to print and transport the final questionnaire to the field*
Consensus on indicators	*All actors involved must fully agree on the structure of the questions, notably for the areas of mutual interest*
Modules structure (HH and individual)	*For an effective linkage in JANFSA, food security and nutrition questions should be collected jointly in each household in a single questionnaire (but using two different modules). A JANFSA questionnaire is usually at least 11 pages long*
	In a standard JANFSA questionnaire, any information concerning mother status and care practice should follow each child in a same table either in portrait or landscape layout
Field procedures, training and team compositions	
Team composition	*Each team comprises enumerators and anthropometrists and must cover one cluster per day. Each team needs at least two cars. This practical consideration is important especially when working in remote areas. As much as possible, anthropometrists should measure children and women aged 15-49 concurrently with enumerators' interviews.* *In some cases, it is recommended to include in the budget one specific line for facilitators or locally hired casual labour charged with carrying the weighing boards. This may be helpful for assessments conducted in remote areas in which enumerators*

	will have to walk long distances. Alternatively, the community could be asked to provide volunteers to help the team establish a stationary weighing station where children are taken after the individual interviews are completed. The best option must be identified on a case-by-case basis. *In a JANFSA, the enumerators should be divided between food security and nutrition measurements. Depending on the area covered, one enumerator (the interviewer) can interview 5 to 10 households per day. Enumerators taking anthropometric measurements should always work in pairs and can measure 15 to 30 children per day.* *The number of households to be covered per day by each enumerator has to be included in the contract.* *Supervisors should have skills in nutrition or food security, with strong local field supervisory expertise because anthropometry requires particular supervision, as lapses in measurement techniques will quickly degrade the quality of the survey data, if left unchecked. The survey coordinator must be an expert in both domains*
Training	*It is not mandatory that food security enumerators attend nutrition training and vice versa. However, supervisors should attend both trainings* *JANFSA training lasts for five days, including one day for the field test* *Standardized test for anthropometry is necessary, in compliance with SMART standards*
Field procedures	*If facilitators or local casual labourers are used, an allowance should be provided for each of them; a small budget should be allocated to each of the team leaders for this purpose* *If possible, each team should be provided with two scales with reserve batteries* *For urban clusters, it is better to make the interviews during evenings where possible if the head of household is working. Hence, it is best to make an appointment with the head of household in advance*

Data treatment	
Data entry	*Anthropometry measurements must be entered in nutrition software (ENA for SMART, WHO-anthro or EPI-INFO) to be able to compare them to a reference population to obtain the z-scores and to view flags. Z-scores allow the classification of each child as malnourished or normal, while flagged data can be corrected, removed, or kept as well but not considered in the analysis* *Before entering data:* *Data entry clerks should be selected through a written test or among those who performed successfully during previous surveys* *Data entry clerks should be trained on how to enter data, save, add cases, delete or correct any wrongly entered cases to avoid duplication* *Each questionnaire has to be checked particularly for its number and for the ID of each child and his/her mother* *Data entry clerks should be paid on the basis of the number of questionnaires or children entered. Payment can be calculated on a daily basis using the quota of 70 questionnaires or of 240 children per day* *Food security and anthropometric data should be entered every day to check for biases and errors, by running plausibility report each time.* *Double data entry (field level and office level) is recommended for anthropometric measures*
Data cleaning	*Data cleaning should start with ID checks for households and for children to make sure that each child can be paired with his or her household later*
Data analysis and report	*Any aggregated results (at national level for example) should be weighted when the sample size collected per strata is not Population Proportionate to Size (PPS)* *In the beginning, data analysis should be conducted separately in the HH dataset to calculate the main HH-level indicators, and in the children's dataset for children's level indicators. Crossed analysis should be conducted according to the analysis plan after merging the two datasets* *The DDS for children aged 24-59 months should always be done*

	to fully analyse intra-household food distribution
Report dissemination	*A detailed dissemination plan or communication strategy (including outputs and communication channels for preliminary findings and final results) should be drafted in the survey design stage and formally agreed upon by all stakeholders. Dissemination should follow this strategy* *Ensure use of the information for better programming and response analysis to improve joint food security and nutrition programming. Clearly articulate results including interpretation and implications in terms of needed response. Ensure that the report includes joint action points* *Involve the government and other stakeholders in the various reporting stages (draft to final version)*

Annex 6: Master list of livelihood coping strategies

	Strategy	Category1	Rationale/discussion
1	Sold household assets/goods (radio, furniture, television, jewellery etc.)	Stress	Selling off household assets is equivalent to spending down savings – a sign of stress, or mild food insecurity
2	Spent savings	Stress	Incurring more debt to meet food needs or spending down savings are signs of stress, or mild food insecurity
3	Sold more animals (non-productive) than usual	Stress	Items indicating reduced ability to deal with future shocks due to current reduction in resources or increase in debts
4	Sent household members to eat elsewhere	Stress	Incurring more debt to meet food needs or spending down savings are signs of stress, or mild food insecurity
5	Purchased food on credit or borrowed food	Stress	Incurring more debt to meet food needs or spending down savings are signs of stress, or mild food insecurity
6	Borrowed money	Stress	Incurring more debt to meet food needs or spending down savings are signs of stress, or mild food insecurity
7	Moved children to less expensive school	Stress	Used in Malawi, Gambia and other countries as a sign of stress
8	Sold productive assets or means of transport (sewing machine,	Crisis	Selling off productive assets is a crisis strategy, or moderate food insecurity

	Strategy	Category1	Rationale/discussion
	wheelbarrow, bicycle, car, etc.)		
9	Withdrew children from school	Crisis	This decreases human capital, a productive asset, so is considered a crisis strategy, or moderate food insecurity
10	Reduced expenses on health (including drugs) and education	Crisis	This decreases human capital, a productive asset, so is considered a crisis strategy, or moderate food insecurity
11	Harvested immature crops (e.g. green maize)	Crisis	-
12	Consumed seed stocks that were to be saved for the next season	Crisis	This action decreases productive assets, affecting next year's harvest, which is a crisis strategy
13	Decreased expenditures on fertilizer, pesticide, fodder, animal feed, veterinary care, etc.	Crisis	Items that directly reduce future productivity, including human capital formation
14	Sold house or land	Emergency	Items that affect future productivity and are more difficult to reverse, or more dramatic in nature
15	Begged	Emergency	Items that affect future productivity and are more difficult to reverse, or more dramatic in nature, includes loss of human dignity

	Strategy	Category1	Rationale/discussion
16	Engaged in illegal income activities (theft, prostitution)	Emergency	Items that affect future productivity, but are more difficult to reverse, or more dramatic in nature, includes loss of human dignity
17	Sold last female animals	Emergency	Specific to livestock producers; Items that affect future productivity, and are more difficult to reverse
18	Entire household migrated	Emergency	Items that affect future productivity, but are more difficult to reverse, or more dramatic in nature

Annex 7: Example of Analysis Plan

SECTION	*NECESSARY DATA*	*TYPE OF ANALYSIS*	*QUESTIONNAIRE*	
			HOUSEHOLD	*NUTRITION*
1. Demographics/ Household composition	Number of persons per household Number of people per age group Number of households headed by women Sex of household head Marital status of head of household Level of education of HH members Common diseases in the HH Prevalence of HHs with chronic diseases, physic/mental disabilities, orphans. Grade	**Descriptive analysis and crossing with the main indicators of food security and nutrition - types of households, compared to the previous years if data is available and between strata:** Average household size Pyramid of age % of households with orphans, chronic diseases, or persons with disabilities % of households according to the sex of the head % of households according to the marital status of the head Dependency ratio/Economic dependency ratio The population by category of food security Number of households by sex of head of household food security category Frequency of most common diseases and cross-tabulation with food insecurity & food expenditure (notably for HH head) Correlation between morbidity of mothers, PLW, MUAC and GAM CU5 % HH's members with disease seeking for treatment	**x**	**x**

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
	of the head of household Grade level of the other members of the household Main diseases of these last 15 days (children >59 months and adult)	% Head of household with education overall and by gender Level of education attained by HH head % of population with education % of literate adults Prevalence of various diseases by gender and age groups MUAC of PLW by level of education of woman Nutrition status CU5 by grade of mother		

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
2. Household food consumption	Frequency of consumption by type of food (7 days recall) and 24 hour recall	**By stratum, rural/urban, sex of HH head; Income, Water and association with nutrition indicators:** Average number of days of consumption for each (Group of) food (Usual and 7 days) **Food Consumption Score** (Usual and 7 days) of each household: % households by food consumption score group and other HH characteristics **Dietary diversity score** of each household – (Usual and 7 days) by other HH characteristics Analysis ***Beyond the score*** to identify access to micronutrients by class of food consumption- FCS-Nutrition. **Household Dietary Diversity Score** (Usual and 7 days) Average consumption of main food groups by FCS groups and other characteristics of the Household (24 hour recall) % Change in FCS and food groups Usual compared to fasting period	**x**	**x**

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
3. Sources of food and access to markets	Source of food eaten during the last 7 days by main food type.	**Triangulate sources with the level of food insecurity – food consumption - coping** major sources of the foods consumed by households (%) during the last 7 days (cash purchase, purchase credit, own production, food aid) % households who have depended upon purchasing (cash) these last 7 days % households who have depended on gifts, food aid and barter these last 7 days % households who have depended on own production these last 7 days % households have depended on credit purchases these last 7 days	**x**	
4. Sources of income and livelihoods	Main sources of household income Contribution of each activity in the income Constraints	**<u>By stratum, rural/urban, sex HH head, migrants; Income, Water :</u>** **Disaggregation by strata and triangulation of main income indicators below with the level of food insecurity – food consumption – coping and nutrition levels** % households by number of active members % households by source of income % by category of people who manage resources (sex of manager)	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Main 3 main constraints for the income and livelihoods Main income sources by wealth quintile Main income sources by food expenditure share – Regroup main livelihood source by per capita expenditure Food security by Number of income sources		
5. HH assets and household sanitary	Number of rooms Type of water source Distance to water source Water treated Source of lighting and energy source Distance to fire/wood source, if applicable Problems encountered to fetch wood, water sources.	**Asset ownership and Wealth Index (index of wealth or well-being) - comparison to previous studies and between strata - crossing with the main indicators of food security.** Wealth index – based on asset ownership; power source for lighting; floor walls, roof type; toilet access; number of sleeping rooms per HH, source drinking water, livestock ownership, etc. Number of members per room (crowding) -% households crowded Number of assets owned and % of households Land/livestock ownership owned **criptions and the household typologies depending on their conditions of life by stratum** The most commonly used lighting. The most used energy source for cooking.	**x**	x

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
	Sanitation: toilet and disposal of waste materials Types of assets and goods including animals Profile of a poor household in each community	Average time taken to collect firewood Access to firewood: % of households and time for the collection of wood. Difficulties faced during collection of firewood and water **Descriptions and the sources and availability/consumption of water, treatments, type of toilets and triangulation with malnutrition of children and women 15-49. All analyses shall be conducted by strata and by rural/urban** % of households with access to safe drinking water by season and water treatment % HHs using Water treatment and types of treatments Average time taken to collect water by admin level and livelihoods % of households following provided time for the collection of water by season Difficulties faced during collection/transport of water % of households with good Sanitation and garbage disposal % of households using improved toilets % of households by type of toilet use % of households by type of waste disposal		

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
6. Expenditure	Borrowing (access, sources and frequency) Main sources and reasons for borrowing Amount of debt Main food/non-food expenditures	**By stratum, environment (urban/rural), gender of the Income categories, household size, sex of head of household composition, FCS, mobility; income; access to safe water**: % households having recourse to borrowing cash in the last 12 months. Average time of repayment for outstanding debt (by HH characteristics and by region, urban/rural) % main loan sources % main use of loans Average monthly expenditure for food per household (cash + imputed) Average monthly expenditure for Local Currency per household (cash + credit) Average monthly expenditure for cereals/tubers per household (cash + credit) Per capita expenditure compared to Poverty levels % credit to HH expenditure % credit to total HH food cost % share of cash to total food expenditure % contribution of each item group to total HH expenditure Cross between FCS, HDDS and **Food Expenditure Share – FES** Cross-analysis of the FES (stratum, middle) with:	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Age/level/sex of education of the HHH Wealth quintiles Expenditure share of non-food items, on agriculture **Nutrition** Crosstab % malnourished CU5/women and FES Crosstab FES - HDDS (stratum, environment, sex HH head) Crosstab FES - WDDS (stratum, environment, sex HH head) Crosstab FES - IDDS (stratum, middle, sex HH head)		
7. Agriculture	Access to agricultural land Modes of access to land Area accessed on average Accessed/owned (irrigated/rain-fed) average Production by crop Main constraints	**By stratum, environment (urban/rural), gender of the Income categories, household size, sex of head of household composition, FCS, mobility; income; Disaggregation by strata and triangulation with the level of food insecurity – food consumption – coping and nutrition levels** % households practicing agriculture Prevalence land tenure (ownership, rent, etc.) Average area irrigated and rain-fed. main constraints % per stratum % households practicing agriculture (rain-fed /irrigated) with food security and food consumption (FCS/HDDS)	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		% landholding and food security status of household % of HH of farmers by food insecurity classes (characterization) **Nutrition** Crossing households practicing agriculture and WDDS/IDDS Comparison % households practicing agriculture and malnutrition levels (DHS 2010 and present study). % Main constraints for agricultural % HH production and cross-check food insecurity (either by filter in only those areas with a minimum % of HHs e.g. 20%, or by recoding 0-20%, 21 to 50%, over 50% and cross-tab with food insecurity)		
8. Livestock	Proportion of households with animals Number of heads by species by HH Constraints for livestock herding Most common diseases	**By strata/community (urban/rural) and at the national level:** % households with animals Average type of livestock holding and *Tropical Livestock Units* (TLU) animal owned Average animal TLU possessed/dead/sold by mobility-middle-stratum % main constraints and most common diseases Crossing TLU - food consumption (FCS, HDDS) Crossing TLU - categories of food security	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Nutrition Crossing TLU – malnutrition CU5 Crossing TLU - MUAC women 15-49 by stratum Crossing TLU - WDDS and IDDS by stratum/medium **Triangulate with community data (Section 4 FGD - livestock)** % HHs owning livestock, Numbers of heads for each species of animals Recode areas in function of % HH who own livestock and cross-check food insecurity (either by filter in only those areas with a minimum % of HHs e.g. 20%, or by recoding 0-20%, 21 to 50%, over 50% and cross-tab with food insecurity) % Main constraints for livestock production by severity and frequency		
9. Livestock and Agriculture (ANALYSIS OF SPI THROUGH SATELLITE IMAGERY)		Mapping of the communities according to the received rainfall (good, low, or none) Community mapping where the rain allowed the renewal of grazing Community mapping where the status of the herd is improved Community mapping where water and grazing reserves will suffice until the next season		

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		% of communities with insufficient water sources improved per month both for livestock and people Mapping by community of the average time needed to access to water by season. Qualitative assessment of rainfall and distribution in relation with seasonal calendar Evolution of rainfall (SPI) and NDVI (2014 and early 2015 compared to long term historic average)		
10. Shock and household survival strategies	Households affected negatively by a shock over the last 12 months Main and more serious shock Impact on the household income and recovery Seasonality of the shock The shock survival strategies	**Disaggregation shocks by strata and triangulation with the level of food insecurity – food consumption – coping and nutrition levels** % HHs experiencing shocks over the 12 last months % most frequent shocks type reported % households where the shock had an impact on income Most frequent period of the year when the shock manifested % households who were able to recover from the effects of the shock Cross-tab between households experienced a shock by groups of food consumption	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Crossing households experienced a shock with the level of *LLH coping* by stratum and environment. Crossing strategies of survival adopted by categories of food security Graph of the months with the highest frequency of shocks % HHs adopting survival strategies (total and by type)		
11. Frequency and nature of food - consumption coping strategies	Strategies adopted in the last 7 days Frequency Severity	**Disaggregation rCSI and LLH CSI by strata and triangulation with the level of food insecurity – food consumption – mobility - and nutrition levels** **Reduced CSI** calculation at national level Comparative analysis between areas/strategy/different (rural/urban) environments Crosstab rCSI by sex of head of household and composition of the household **Nutrition** Crossing rCSI in urban/rural with malnutrition anthro CU5 - MUAC stratum/environment women. Crossing rCSI - Women Dietary Diversity Index by stratum/environment (urban/rural).	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Crossing rCSI - Dietary Diversity Index, children 6-23 months by stratum/environment (urban/rural). Crossing rCSI - SMART by province and district results.		
12. Frequency, nature and severity of food adaptations (Livelihoods (LLH) coping) strategies	Strategies of LLH coping adopted in the last 30 days Severity of the strategies adopted	Creation **LLH coping** : allocation of the class of severity in household and the prevalence % of households that have adopted strategies of stress/crisis/emergency Comparative analysis of the different prevalence of *LLH coping* between areas/strategy/media (rural/urban) Crossing of *LLH coping* by sex of household head and by household composition Final calculation of the categories of food security (CARI) through *LLH coping*.	**x**	
13. Characterization - Identification of profiles of food insecurity	Proportion of household per category of food security Descriptive information of food insecure	**Characterization of food insecure households, disaggregated by strata, urban/rural regions - crossing and regression between category of food security by stratum/environment (urban/rural) and the following indicators:** Sex of household head	**x**	

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
(urban/ rural)	and food secure household	Household size and composition Level of education of the household head Household mobility (migrants) Presence members with disabilities, orphans, chronically ill, elderly. Migration patterns (HH with migrants compared to HH without migrants – HH receiving remittances vs. HH with no remittances) Expenditures and share of Food and non-food expenditure Expenditure by food group Assets owned Access to water (distance and quantity) Number and type of sources of income Number of adults having a source of income Dependence on transfers from outside the household Wealth index (quintiles) Active in farming households Average parcels' size Tropical Livestock Units (TLU) Category and number of animals rCSI & LLH coping Access to assistance Type of shocks suffered Favourite type and current assistance (if applicable)		

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Cross-tabulations FS classes with following nutrition indicators: Malnourished PLW - MUAC Malnourished Children 6-59 (GAM & stunting) Compare over time with % GAM and stunting analysis from previous years WDDS/IDDS (crossing households and prevalence) Minimum Meal Frequency (Children 6-23 months) Minimum Dietary Diversity (Children 6-23 months) Minimum Acceptable Diet (Children 6-23 months) Consumption iron-rich foods (Children 6-23 months) cross-tab FCS of the household and MAM/SAM CU5 cross-tab FCS of the household and stunting CU5 Difference HDDS-IDDS by % malnutrition CU5 (GAM, stunting) Difference HDDS-WDDS by % malnutrition PLW (MUAC)		

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
14. Women in reproductive age 15-49 and mothers/ primary caregivers – HEALTH AND HYGIENE	Anthropometry of women Food consumption of children Practices of mothers	**Descriptive analysis and calculation of the prevalence of GAM and stunting by category - comparison to previous years and between strata.** % women PLW with moderate/ acute malnutrition (MUAC < 210) % women PLW severe acute malnutrition (MUAC < 180) % PLW who attended ANC % PLW who received folic acid/iron supplementation % women who give water safe to drink for children less of 5 yrs % women using SOAP to wash hands	**x**	**x**
15. Health and access to healthcare – children 0-59 months	Disease of children under 5 (VAR, BCG) vaccines Treatment of diseases Deworming and vitamin A Using impregnated mosquito net	**Descriptive analysis and calculation of the prevalence of GAM and chronic malnutrition by category - comparison to previous years and between strata.** % children having been vaccinated against measles, % children having been vaccinated against tuberculosis % children having received a capsule of vitamin A for the last 6 months % of children who received treatment of deworming during the last 6 months		**x**

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		% children who slept under an impregnated mosquito net last night % children who had fever during the last 2 weeks % children who had ARI during the last 2 weeks % children who had diarrhoea during the last 2 weeks % children who have been ill and treated Main reasons of non-treatment for the above diseases		
16. Maternal breast-feeding Children 0-23 months	Anyone who takes care of the child Care in a nutritional service Prenatal check-ups Taking folic acid prenatal Continuous breastfeeding at 1 year	**Descriptive analysis and calculation of the prevalence of GAM and stunting by category - comparison to previous years and by strata + rural/urban. Cross-tabulation with GAM/stunting prevalence of the following:** % children per type of primary caregiver % children who benefit from the care of a nutritional service % children whose mother underwent pre-natal checks during pregnancy % children whose mother received a ration of folic acid or iron during pregnancy % of children aged 12-15 months who are still breastfed	**x**	**x**

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
17. Child feeding - 6 to 23 months	Feeding of young children during the last 24 hours (6 to 23 months) Types of food consumed Enriched food	**Descriptive analysis and calculation of the prevalence of GAM and stunting by category - comparison to previous years and between strata.** % children who eat soft, semi-solid or solid food yesterday Number of average times that children 6 to 23 months consumed from foods other than liquids yesterday % non-breastfed children receiving minimum milk feedings % children with Minimum Dietary diversity (MDD) % children with Minimum Meal Frequency (MFF) % children with Minimal Acceptable Diet (MAD) % children who ate a food fortified with iron % children who consumed a micronutrient powder		**x**
18. Anthropom-etric measureme -nts --	Anthropometric measurements or each child less than 5 years in the household Sex	**Descriptive analysis and crossing by age and sex.** Z score weight-height (ENA) Z score weight-age (ENA) Z score size-age (ENA)	**x**	**x**

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
children 6 to 59 months	Age Date of birth Weight Height Oedema MUAC	Prevalence of GAM, MAM, SAM (order of analysis) Prevalence stunting (global, moderate, severe) Prevalence underweight, inadequate weight moderate, insufficient weight Severus. Analysis of direct Analysis household : for households with CU5 malnourished define: **Food security category** Food consumption Difference HDDS - IDDS (intra-household distribution) Wealth Index FES Mothers MUAC (GAM & CM) Access to water Water quality (source) Water treatment Health and access to health services, Vaccination coverage (BCG, measles), deworming, Vit A, Impregnated Mosquito Nets Indicators hygiene (use of soap, etc.) Good parental cares (feeding, use of soap, etc.) Level of education of mother/head of household Profession of mother/head of household		

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
		Wealth quintile of HH Main income sources Others (if necessary)		
19. Anthropometric measurements PLW	Anthropometric measurements for each PLWI n the household Age MUAC	**Descriptive analysis and crossing by age and sex and strata (regions +urban vs. rural).** Prevalence of PLW with MUAC below 210mm and 180 mm, respectively Prevalence (order of analysis) Analysis household : for households with malnourished women define correlation with: Food security category FCS Difference HDDS – WDDS Poverty (wealth quintile and FES) Access and quality of water Health and access to health services, vaccinations Indicators hygiene Level of education of mother/head of household Profession of mother/head of household Wealth quintile of HH Main income sources Others (if necessary)	**x**	**x**
Combining food	FCS; CARI MUAC	Cross tabulation, between the non-introduction of complementary food in	**x**	**x**

SECTION	NECESSARY DATA	TYPE OF ANALYSIS	QUESTIONNAIRE	
			HOUSEHOLD	NUTRITION
security and nutrition	• Stunting • Underweight • Wasting	children between 6 to 8 months and the number of meals of the households or health practices • Bivariate correlation between household diet diversity score and children score diversity • Multivariate of the Z-scores on food consumption score or food security index, on livelihood strategies, on food expenditure and on wealth quintile or poverty index. • Determine geographical areas that are above or below the nutrition and food security thresholds. • Characterization of households that fall below or above both food security and nutrition thresholds (Use food security profiles applied together with nutrition data)		

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