**The United Republic of Tanzania**
MINISTRY OF HEALTH AND SOCIAL WELFARE

TRAINING PROGRAMME FOR NUTRITION OFFICERS
at Regional and District levels

Module Three
Monitoring of Nutrition Situation

Facilitator's Guide
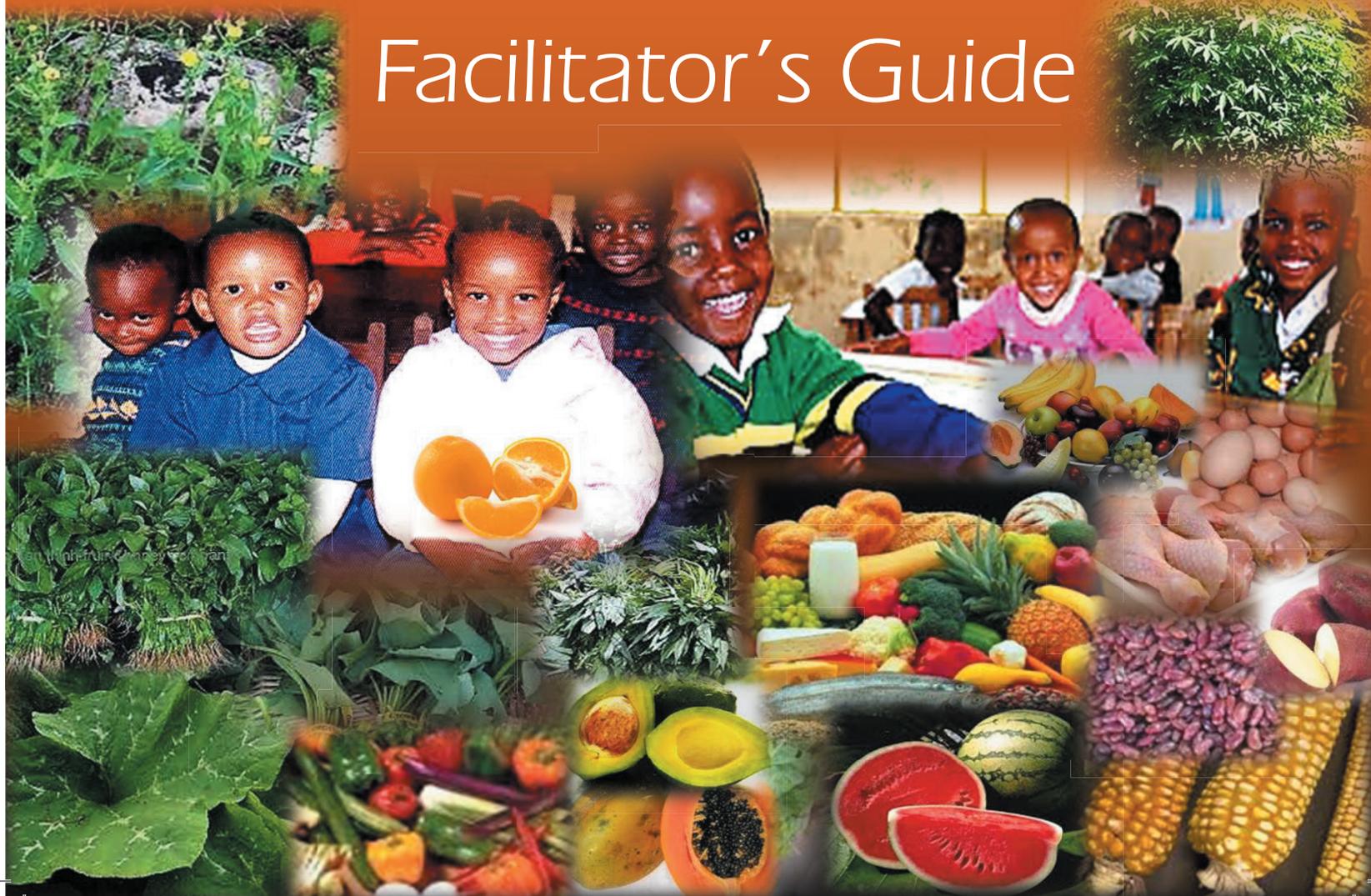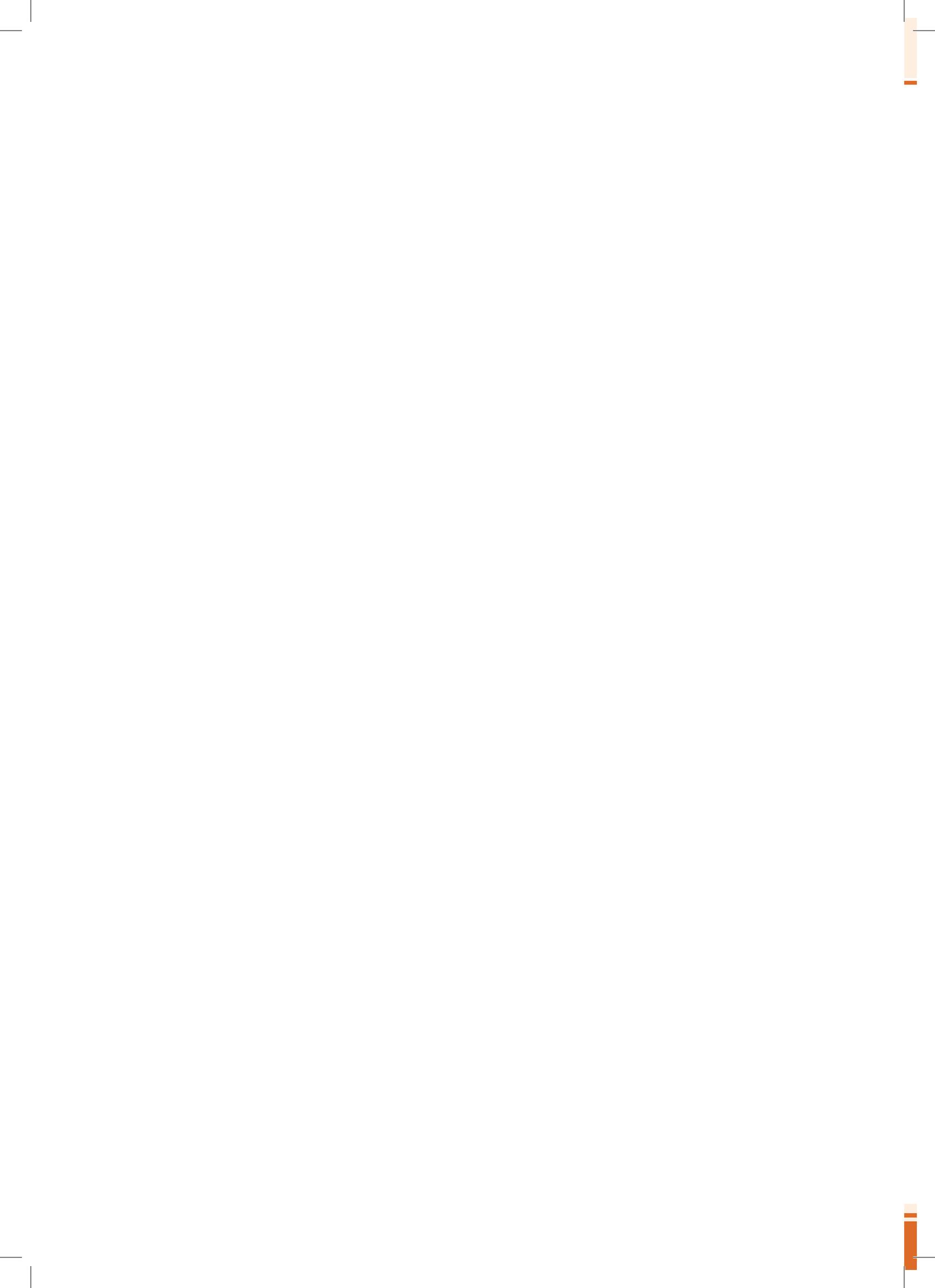
Training Programme for Nutrition Officers at Regional and District Levels

Module 3

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TANZANIA FOOD AND NUTRITION CENTRE

Centre for Development Innovation

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PREFACE

The existence of the newly recruited and the ongoing process in recruiting the district nutrition officers, district nutrition focal persons as well as the Ministerial nutrition focal persons further emphasizes for a need to have an established formal in-service training programme. According to the Needs Assessment done on newly recruited nutrition officers, it was observed that there is there was a lack of skills in assessing nutrition status, designing and planning for nutrition activities, data management, and monitoring and evaluation of nutrition activities. The purpose of this module is to acquaint nutrition personnel with knowledge on nutritional assessment systems, designing and planning of nutritional activities, data management and communication, monitoring and evaluation.

The main focus of this module is on Monitoring of nutrition situation. The module describes various nutrition activities commonly conducted in the country and rationale for their use. The module aims at imparting knowledge and skills on various methods of assessment of nutrition status, surveillance and intervention, different research methods. Ethical principles pertaining to the conduct of nutrition activities are also explained. The module covers monitoring and evaluation of nutrition programs and projects and establishment of monitoring systems and evaluation plans. Computer software needed for management, analysis and interpretation of data and formats of disseminating nutrition information are also described.

This module on Monitoring of nutrition situation has been developed to enable nutrition officers to apply relevant nutrition assessment systems in a given context, and demonstrate correct procedures for collecting dietary, biochemical, anthropometric, and clinical data in nutrition assessment of individuals and population groups. The module will enable NOs to apply research methodologies in designing, planning and conducting nutrition activities for a specific purpose. It is also anticipated that NOs will be able to relate ethical principles in the design, collection, use and dissemination of nutrition data and information. It is expected that NOs will be able to use appropriate statistical methods to analyze nutrition data. It will empower them to design monitoring and evaluation system for nutrition programs/projects for their quality, implementation and effectiveness.

This module is practical oriented, competence-based and relevant within the context of Tanzania. It is envisaged that the module will enhance knowledge, skills and confidence of the nutrition officers in implementing their tasks and monitoring of nutrition situation.

ACKNOWLEDGEMENT

The compilation of this module involved a number of stakeholders from various organizations and institutions. The content was greatly enriched with experiences and valuable lessons, advices, support and contributions of nutritionists and other stakeholders. We acknowledge their valuable inputs and support in this endeavor.

We are indebted to UNICEF for providing financial and technical support throughout the process of developing this module. In a very special way we thank Ms. Gelagister Gwarassa and Franscisca Tarimo for providing expertise and guidance on development of training material.

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We are also indebted to all participants who attended the stakeholders' workshops for their valuable contributions in improving this module.

ABBREVIATIONS

ANC	Ant Natal Care
BMI	Body Mass Index
CTC	Care and Treatment Clinics
DDS	Dietary Diversity Score
FFQ	Food Frequency Questionnaire
Hb	Haemoglobin
HDDS	Household Dietary Diversity Score
IYCF	Infant and Young Child Feeding
LBW	Low Birth Weight
MDG	Millennium Development Goal
OPD	Outpatient Department
PMTCT	Prevention of Mother To Child Transmission
SAM	Severe Acute Malnutrition
SPSS	Statistical Product and Service Solutions
RCH	Reproductive and Child Health
MAM	Moderate Acute malnutrition
M&E	Monitoring and Evaluation
MUAC	Mid-Upper Arm Circumference
NBS	National Bureau of Statistics
NOs	Nutrition Officers
TDHS	Tanzania Health and Demographic Survey
TFNC	Tanzania Food and Nutrition Centre
UNICEF	United Nations Children's Fund
VAD	Vitamin A Deficiency
WHO	World Health Organization

GUIDE FOR FACILITATORS

A. Module Format and Duration

The entire training takes 32 hours, not including health breaks or opening and closing ceremonies. The training can be conducted over 32 hours or spread out over a longer period. The module is divided into five independent sessions that can be taught separately or be combined into package as needed. The five sessions are listed below.

i. Overview of Nutrition assessment systems
ii. Nutrition assessment methods
iii. Designing and planning of nutrition activities
iv. Data management, analysis and Interpretation
v. Monitoring and Evaluation of nutrition program and projects

B. Facilitators

The course requires at **least 3 facilitators** for a class of **40 participants** to support practical sessions, demonstrations, small group discussions and role-plays. At least two facilitators should be a nutritionist. One facilitator should be the training coordinator. The course coordinator may be a nutritionist or a trained trainer. The facilitators should have the following:

- Knowledge of various nutrition aspects maternal and child nutrition, nutrition and HIV
- Familiarity with the health care system and relevant service delivery protocols
- Experience in using adult learning methods and participatory training techniques
- Skills in counseling and communication
- Knowledge of various national guidelines and protocols in health and nutrition issues
- Conversant with all nutrition assessment software (ENA, WHO Anthro, WHO AnthroPlus and SPSS) and their use in data management and statistical analysis.
- Have basic computer skills as well as nutritional and statistical software knowledge

C. Participants

This in-service training programme is meant for Nutrition Officers and Multi-sector Focal Persons working on nutrition activities in regions and districts or any other staff in need of these skills. This module requires participants to have access to computers.

D. Venue

If possible, conduct the training in the district/council or region where it is easily accessible to participants. The participants should be pooled from the nearby regions. The venue should be comfortable and have enough space to post the flipcharts and project slides onto a white screen or wall and for participants to work in small groups of no more than six per group.

E. Training Materials

i) The **Facilitator's Guide** contains information that the course coordinator needs to plan the course and facilitators to lead participants through the training, including the following:

> ➤ Detailed instructions on how to facilitate each module
> ➤ Sample timetable for 24 hours training
> ➤ Pre- and post-tests
> ➤ Daily evaluation form for participants
> ➤ Instructions for preparing of field practice visits
> ➤ Copies of the PowerPoint slides used during the training

ii) The **Participants' Manual** contains content for the course and can be used in the workplace afterwards. The Participant manual also contains exercises, case studies and field practice guide for participants to use during practical sessions.

iii) The **Job Aids** are practical tools for participants to use during the training and take back to their workplaces to help them when dealing with various nutrition interventions

iv) The **PowerPoint** slides book and/or on a CD reinforce the training content. Facilitators without access to an LCD projector can use overhead transparencies or copy the wording of the slides onto flipchart pages.

F. Supplies and Equipment

Checklist for the Course

- One copy of the **Facilitator's Guide** for each facilitator
- One copy of **Pre-test** in the **Facilitator's Guide** for each participant
- One copy of **Daily Evaluation Form** in the **Facilitator's Guide** for each participant for each day of the course
- One copy of the **Participants Manual** for each facilitator and participant
- One set of **Job Aids** (laminated cards and wall charts)
- One copy of Essential Nutrition Interventions at District level
- One copy of *Management of Acute Malnutrition: National Guidelines* (2009) for each facilitator and participant
- Training PowerPoints on a CD
- Copies of the updated timetable for each facilitator and participant
- Flipcharts and stands
- Marker pens
- Masking tape

- LCD projector and computer or overhead projector and transparencies (if you don't have this equipment, copy the PowerPoint slides onto a flipchart)

- Name tags for participants

- Writing pads or notebooks for facilitators and participants

- Pens and pencils for all participants

- Paper for printing or photocopying

- At least 6 long surge protector extension cords

- 900 index cards (300 yellow, 300 green and 300 pink)

- Any other materials listed in the introduction to the module

- Course certificates for participants

- Printer and cartridge

- Handouts

- Weighing scales (child, adult)

- Length/height board/ Stadiometer

- MUAC tapes

- Skin fold calipers

- BMI charts

- Hemoglobinometer and consumables

- Glucometer and consumables

- WHO-Anthropometric training video

- Nutrition/statistical software SPSS, WHO Anthro, WHO AnthroPlus and ENA

G. Training Principles

i) **Performance –based** training teaches participants tasks they are expected to do on job

ii) **Active participation** increases learning and keeps participants interested and alert

iii) **Practicing a** task is more effective than hearing about it

iv) **Immediate feedback** increases learning

Below are suggestions for applying these principles in this course:

- Create a supportive learning environment by making participants feel confident that their contributions will be received respectfully.
- Build trust by showing commitment to the course and willingness to share your experience.
- Build teamwork by encouraging active participation.
- Stress the immediate usefulness of the material for participants' daily work.
- Do not read directly from slides or flipcharts. Instead, make the points in your own words and add examples and practical problems.
- Ask participants to share culturally appropriate stories to illustrate important points.
- Pace the training to make sure participants can absorb the information.
- Give participants opportunities to practice what they learn and address questions that arise during the practice.

H. Training Methods

The module use different training methods, among others are:
  i) Presentations
  ii) Brainstorming
  iii) Demonstrations/ practical
  iv) Field practice visit
  v) Case studies
  vi) Drama
  vii) Stories

I. Teaching/Learning materials

- Flipchart and flip chart stand or PowerPoint slides
- Laptop computer
- LCD projector
- Marker pens
- Plain paper
- Masking tape
- Name tags for all participants
- Writing pads or notebooks for all participants
- Pens and pencils for all participants
- Course timetable

J. Before the Training

i)   Review the objectives of the course and prepare needed materials.

ii) Discuss the training methods and assignments with the other facilitators.

iii) Make sure the LCD and computer are functioning correctly, that you can operate them and that the projected slides are visible on the screen or wall. If you do not have a projector, transfer the information from the slides onto flipcharts or posters.

iv) Read each session through to familiarize yourself with the information.

v)   Print or photocopy needed handouts before each session.

vi) Make preparations for the site practice visit

vii) The software should be installed prior to the start of the training

K. During the Training

Your role as a facilitator is to present each session, introduce key concepts, lead group discussion and exercises, answer questions, explain ideas, clarify information, give constructive feedback and encourage participants to discuss how they can apply the information in their workplace.

i)   Show respect for the other facilitators and work as a team.

ii)   Try to learn participants' names and use them whenever possible.

iii) Encourage group interaction and participation early. The first two days, interact at least once with each participant and encourage participants to interact with each other.

iv)   Begin each day by distributing copies of Daily Evaluation Form to all participants. Ask them to return the completed forms to you at the end of the day.

v)   Then take 5 minutes to review the key points covered the previous session. This can be done by facilitators or participants, preferably the participants. Review helps participants remember information and see connections between what they are learning and their work. You can also use review to discuss questions or concerns about the training so far, highlight useful participant insights or new knowledge and identify topics that need reinforcement or are irrelevant to the participants' work.

vi)   After the review give a brief overview of the session(s) for that day.

vii) Adjust the time of each module as needed.

viii) Consult participants throughout each module to assess their comprehension and attentiveness. Praise or thank them when they do an exercise well, participate in discussion, ask questions, or help each other.

ix)   Divide participants into small groups from the same health facilities or regions, if possible, so they can help each other apply the skills learned in the training when they

are back in their workplaces. During group work, each facilitator should facilitate no more than two groups at a time.

x) Be available after each session to answer questions and discuss concerns. Instead of talking with the other facilitators during breaks, talk with the participants.

xi) Review the day's training with the other facilitators and plan the following day for 30−45 minutes at the end of the day. Discuss the day's training, go through the daily evaluation forms and use the results to improve the next days' sessions. Praise what the other facilitators did well and discuss any problems with the training content, methods or timing. Go over the daily evaluation forms to identify ways to improve subsequent training sessions

L. After the Training

i) With the Course coordinator, review the results of the participant evaluations to discuss how to improve the course in the future.

ii) With the Course coordinator, discuss the way forward e.g. plan follow-up of the trained participants on the job.

M. Advance preparation

* Review PowerPoint slides (copy the information onto a flipchart if you do not have an LCD projector).
* Review Session 3.1, 3.2 , 3.3, 3.4 and 3.5 in the Participants Manual.
* Test all equipment to make sure that they are functioning and accurate
* Practice using MUAC tapes, Skin fold calipers, measuring length, weight and height and using BMI charts to assess and classify nutritional status
* Make sure there is a scale and length/height measure in front of the class
* Find out what community services are available in the area (economic strengthening, foods security, PLHIV support groups)
* Make logistical arrangement for hospital visit (session of management of malnutrition)
* Make sure you have installed software (SPSS, ENA, WHO-ANTHRO and excel)

INTRODUCTION

Malnutrition has remained high over many years without significant improvement especially on chronic malnutrition. Currently, emerging problems of over nutrition and dietary related diseases increase the burden in health care system. Improved nutrition is important for improving intellectual and economic development. Malnutrition in Tanzania has created a new challenge that calls for the acceleration of both short-term and long-term efforts to address the situation. Among the key challenges for scaling-up of nutrition interventions in Tanzania include inadequate human resource. However, the Tanzania government is making progress in recruiting and positioning nutrition officers at the District, Regional and Ministerial levels. The existence of the newly recruited and the ongoing process in recruiting the district nutrition officers, district nutrition focal persons as well as the Ministerial nutrition focal persons further emphasizes for a need to have an established formal in-Service training programme.

This module describes various nutrition activities commonly conducted in the country and rationale for their use. The main focus of nutrition activities will be assessment methods, surveillance and interventions. Nutrition officers will learn different research methods and integrate them in nutrition activities. Ethical principles pertaining to the conduct of nutrition activities will be explained. The module will also cover monitoring and evaluation of nutrition programs and projects and establishment of monitoring systems and evaluation plans. Computer software needed for management, analysis and interpretation of data and formats of disseminating nutrition information will be examined.

A. Purpose
The purpose of this module is to acquaint nutrition personnels with knowledge on nutritional assessment systems, designing and planning of nutritional activities, data management and communication, monitoring and evaluation

B. Learning Objectives
At the end of training, participants will be able to:
   i.   Describe key nutrition assessment systems
  ii.   Describe different methods and indicators of nutrition assessment
 iii.   Explain the nutrition assessment methods
  iv.   Describe scientific methodologies and techniques in designing and collecting nutrition and nutrition-related data
   v.   Analyze nutrition and nutrition-related data using various software
  vi.   Interpret data resulting from nutrition activities using various software
 vii.   Disseminate nutrition information to various audiences
viii.   Describe monitoring and evaluation systems for nutrition program/projects
  ix.   Develop a monitoring and evaluation plan for various nutritional interventions

C. Learning Outcomes

Upon completion of this module, the nutrition officers will be able to:

i. Apply relevant nutrition assessment systems in a given context
ii. Demonstrate correct procedures for collecting dietary, biochemical, anthropometric, and clinical data in nutrition assessment of individuals and population groups.
iii. Apply research methodologies in designing, planning and conducting nutrition activities for a specific purpose
iv. Apply ethical principles in the design, collection, use and dissemination of nutrition data and information
v. Use appropriate statistical methods to analyse nutrition data
vi. Design monitoring and evaluation system for nutrition programs/projects for their quality, implementation and effectiveness
vii. Interpret data on monitoring and evaluation and recommend appropriate nutrition actions.
viii. Communicate nutrition information to various audiences and levels using various methods and techniques

D. Learning points

3.1 Overview of nutrition assessment systems

3.1.1 Nutrition surveys and screening
3.1.2 Surveillance system
3.1.3 Challenges of nutrition surveillance systems

3.2 Nutrition assessment methods

3.2.1 Dietary assessment - Quantitative and Qualitative methods
3.2.2 Anthropometric measurements
3.2.3 Biochemical assessment
3.2.4 Clinical examination/ assessment
3.2.5 Vital statistics, socio-economic and ecological variables
3.2.6 Preventing and Managing malnutrition

3.3 Designing and planning of nutrition activities

3.3.1 Study design, sampling, sample size
3.3.2 Ethical consideration in conducting nutrition activities
3.3.3 Mobilization of resources for survey and field work organization
3.3.4 Data collection methods and sources

3.4 Data management, analysis and Interpretation

3.4.1   Data analysis using appropriate software

3.4.2   Interpret data resulting from nutrition activities

3.4.3   Disseminate nutrition information to various audiences

3.5 Monitoring and Evaluation of nutrition program and projects

3.5.1   Introduction to Monitoring and evaluation

3.5.2   Indicators for assessing nutrition activities

3.5.3   Guidelines and steps in conducting monitoring and evaluation activities

3.5.4   Management of information systems for nutrition

3.5.5   Process and Outcome/impact evaluation designs

OVERVIEW OF MODULE 3

Aim

Introduce participants and facilitators to each other, introduce the course objectives and expected outcomes and allow participants to discuss their expectations of the course and take a pre-test.

Learning objectives

By the end of the session, participants will be able to:

i) Appraise their expectations and relate them to the objectives of the module
ii) Assess their knowledge about nutrition

Introduction and Training Overview

- Introduce yourself to the participants and allow each participants to introduce themselves
- Conduct a pre-test to assess participants' knowledge on nutrition
- Present the module purpose, objectives and learning outcomes and keep them in view on flipchart during the session and then present the total duration of the training and the learning points
- Discuss expectations and relate them to the objectives of the course

General objective

To build upon and consolidate knowledge and skills in monitoring progress of nutrition activities

- Present the session learning objectives
- Show Slide 3.1 Module learning objectives

Learning objectives

At the end of the training, participants will be able to:
i. Describe key nutrition assessment systems
ii. Describe different methods and indicators of nutrition assessment
iii. Explain the nutrition assessment methods
iv. Describe scientific methodologies and techniques in designing and collecting nutrition and nutrition-related data
v. Analyse nutrition and nutrition-related data using various software
vi. Interpret data resulting from nutrition activities using various software
vii. Disseminate nutrition information to various audiences
viii. Describe monitoring and evaluation systems for nutrition program/projects
ix. Develop a monitoring and evaluation plan for various nutritional interventions

Learning outcomes

Upon completion of this module, the nutrition officers will be able to:
i. Apply relevant nutrition assessment systems in a given context
ii. Demonstrate correct procedures for collecting dietary, biochemical, anthropometric, and clinical data in nutrition assessment of individuals and population groups.
iii. Apply research methodologies in designing, planning and conducting nutrition activities for a specific purpose
iv. Apply ethical principles in the design, collection, use and dissemination of nutrition data and information
v. Use appropriate statistical methods to analyze nutrition data
vi. Design monitoring and evaluation system for nutrition programs/projects for their quality, implementation and effectiveness
vii. Interpret data on monitoring and evaluation and recommend appropriate nutrition actions.
viii. Communicate nutrition information to various audiences and levels using various methods and techniques

▪ Ask participants to assign the following roles, either daily or for the entire course

> **Chairperson** to lead plenary discussions, ask other participants if there are any questions or comments on each topic and inform the facilitators of any issues arising during the training
>
> > **Timekeeper**
> >
> > **Rapporteur**
> >
> > Any other leadership roles participants think are important

Daily Evaluation

- Explain that participants will evaluate each session daily to improve the training on subsequent days. Distribute copies of **daily evaluation forms** to participants at the beginning of the training module and ask them to fill out a form at the end of each day and give it to the facilitators.

SESSION ONE

3.1 Overview of Nutrition Assessment Systems

Duration 4 hours

Aim of the session

To familiarize participants with nutrition surveys and surveillance systems for use in planning, implementation and evaluation of health/nutrition programs

Show slide 3.2 **Learning objectives of Nutrition assessment systems**

Learning objectives

At the end of the session participants will be able to
- Explain the concepts involved in nutrition assessment system
- Describe the objectives of nutrition surveillance systems
- Be able to identify the main sources of nutrition information
- Describe the variety of indicators and their appropriateness in different contexts
- Explain the importance of including non-anthropometric indicators in a nutrition surveillance system.
- Explain how to effectively use nutrition information to inform an appropriate response.

Description of nutrition assessment systems

Presentation:

- Show slide 3.3 and explain the forms of nutrition assessment systems and its types

Slide 3.3 Forms of nutrition assessment systems

Forms of nutrition assessment systems
Nutritional assessment systems can take one of four forms,
☐ Survey,
☐ Screening
☐ Surveillance
☐ Interventions

3.1.1. Nutrition surveys and screening

Brainstorm: Ask participants to describe meaning of survey, screening, surveillance and intervention.

- Allow time (3 min) for participants to jot down their answers, and then ask 4 participants to share their answers loudly.

- Show slide 3.4 then describe and give examples of surveys, screening, surveillance and interventions

Slide 3.4 **Meaning of Survey and Screening**

Meaning of Survey and Screening

Survey
- This is a method by which information is obtained concerning the nutritional status of a population or a subgroup
- Surveys can identify and describe those subgroups 'at risk' of chronic malnutrition and may establish baseline nutritional data and/or ascertain the overall nutrition status of the population

Screening
- This involves a comparison of an individual's measurements with predetermined risk levels or 'cutoff' points
- Screening is carried out at the individual level as well as on specific subpopulation considered to be at risk

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- Refer participants to the session 3.1 of participant's manual for more details on surveys, screening and their examples

3.1.2. Nutrition Surveillance systems

- Show slide 3.5 and explain on Nutrition Information/Surveillance Systems and its general objective

Slide 3.5 Descriptions of Nutrition Information/Surveillance Systems

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Description of Nutrition Information/Surveillance Systems

Is the ongoing systematic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation, and evaluation of health/ nutritional programs. Surveillance data are used to inform appropriate response strategies.

- Ask participants on types of methods used in Nutrition Information/Surveillance, let them respond to your question and then show slide 3.6 which explain the types of methods used in Nutrition Information/Surveillance

a) Methods used in Nutrition Information/Surveillance

Slide 3.6 Types of methods used in Nutrition Information/Surveillance

Types of methods used in Nutrition Information/Surveillance
   (i) Large scale national surveys (DHS, MICS)
   (ii) Repeated small scale surveys (WASH)
   (iii)Clinic based monitoring (WFA)
   (iv)Sentinel site surveillance (based on selected communities)
   (v) Rapid nutrition assessments (carried out to identify high risk population)
   (vi)Rapid screening based on mid upper arm circumference (MUAC) measurement
  (vii)Selective feeding programme or services statistics monitoring (monitoring the use
        of services such as health facilities)

- Ask the participants on what indicators should be monitored during the Nutrition surveillance?
- Present slide 3.7, and explain on indicators used in nutrition surveillance and information system

b) Indicators used in nutrition surveillance
  ☐ Point out the key points when selecting indicators (Specific Context) to be used.
      Tell the participants that there are two types of indicators
  (i) Indicators used to define nutrition problem
  (ii) Indicators used to analyse causes of the problem

Slide 3.7 **Key points when selecting indicators used in nutrition surveillance**

Key points when selecting indicators used in nutrition surveillance
  ☐ Indicators used to define nutrition problem
  ☐ Indicators used to analyse causes of the problem

- Show slide 3.8 Indicators used to define and analyse nutrition problems

Slide 3.8 Indicators used to define and analyse nutrition problems

Indicators used to define nutrition problem, these include;
- Anthropometric indicators
- Clinical and
- Biochemical indicators
- Dietary indicators

Indicators used to analyse causes of the problem, these include;

Health indicators
- *Morbidity*
- *Vaccination status and supplementation coverage*
- *Water and sanitation*

Caring Practices
- *Care practices*
- *Feeding practices*

Food situations
- *Food security*

c)   Population groups monitored
Brainstorm: Which population groups should be monitored?
- List the responses on flip chart and provide explanation as shown on slide 3.9

Slide 3.9 **Population groups monitored**

Population groups monitored
- Children Under five years of age
- Pregnant and Lactating Women
- Women of child bearing age (15 – 49 years of age)

3.1.3.   Challenges of nutrition surveillance systems
- Show slide 3.8 Challenges of nutrition surveillance systems

Slide 3.10 Challenges of nutrition surveillance systems

Challenges of nutrition surveillance systems

- Sustainability
- Institutional issues
- Linking information to action

SESSION TWO

3.2. Nutrition Assessment Methods

Duration 8 Hours:

Aim of the session
To enable the participants to acquire knowledge and skills for assessing, classifying and managing individuals with malnutrition.
- Present the session learning objectives
- Show slide 3.11 Session learning objectives

Slide 3.11 Session learning objectives

Learning Objectives

At the end of training, participants will be able to
i. Describe different methods and indicators of nutrition assessment
ii. Explain on how to use the nutrition assessment methods
iii. Describe the procedures involved in management of malnutrition

Brainstorm: Meaning of nutrition assessment method
Let each participant respond. List responses on flipchart and compare them with the information on slide 3.12

Presentation: **Nutrition assessment methods**
- Show slide 3.12 and describe Nutrition assessment methods

Slide 3.12 Nutrition assessment methods

Nutrition assessment methods
Nutrition assessment methods are structured ways designed in order to establish nutritional status and requirements of an individual or a population, by objective measurements and it is completed with objective parameters and in relation to specific disease-indications.
The information obtained from nutrition assessment is used to determine the health status of individuals or population groups as influenced by their intake and utilization of nutrients.

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Presentation: Classification of nutrition assessment methods
- Show slide 3.13 and explain classification of nutrition assessment methods
-

Slide 3.13 **Classification of nutrition assessment methods**

Classification of nutrition assessment methods

Nutrition assessment methods can fall under two main categories;
- ❖ Direct methods
- ❖ Indirect methods.

The direct methods deal with the individual and measure objective criteria, these include
- ❖ Anthropometric assessment,
- ❖ Biochemical assessment; (Laboratory assessment)
- ❖ Clinical assessment/Physical examination
- ❖ Dietary intake assessment

Indirect methods use community health indices that reflect nutritional influences. These includes
- ❖ Vital statistics,
- ❖ Socio-economic and
- ❖ Ecological variables

3.2.1. Dietary Assessment

Brainstorm: Meaning of dietary assessment
- Write responses on the flip chart.
- Show slide 3.14 and provide explanations on dietary assessment method and its aim.

Presentation: Dietary assessment

Slide 3.14 The meaning of dietary assessment

The meaning of Dietary assessment

Dietary assessment is an essential part of nutrition assessment. It provides information on the amount and quality of food consumed by an individual or a population group

Eating habits and dietary patterns can also be assessed by using dietary assessment methods

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- Explain to participants that a nutrition worker should be able to compare the information of the estimated amount of nutrients consumed by an individual with recommended nutrient intake, and counsel individuals on how to improve their diets.

Qualitative and quantitative methods of dietary assessment

Presentation: Qualitative and quantitative methods of dietary assessment
- Explain that data from dietary assessment can be collected as qualitative or quantitative

- Show slide 3.15 and explain about qualitative and quantitative methods of dietary assessment

Slide 3.15 Quantitative dietary assessment methods

Quantitative dietary assessment methods

Quantitative dietary assessment methods provide the amount and frequency of various foods consumed by an individual or populations and qualitative dietary assessment methods provide information on the kind of foods consumed, preparation procedures, food preferences, cultural influences and attitudes towards foods

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- Explain that qualitative methods of dietary assessment are particularly useful when an investigator knows little about the subject being investigated - for example, a group's perceptions or beliefs regarding certain foods.
- Qualitative methods also play confirmatory and elucidating roles as well as add depth, and meaning to quantitative results. Ideally, a complete food consumption study will integrate both quantitative and qualitative approaches in order to achieve convergence of results.
- Give examples of qualitative methods like; Observed food consumption, food diary, Dietary diversity scores
- Give examples of quantitative methods like; 24hr dietary recall, food weigh and record

Brainstorm: What are common methods used to assess dietary intake?
- List responses on flipchart and then compare them with the information on slide 3.14
- Show slide 3.16 Methods used in dietary assessments

Slide 3.16 Methods used in dietary assessments

Methods used in Dietary Assessment

| 24 hr dietary recall | Dietary diversity score | Food frequency questionnaire |

| Dietary record / Food diary | Observed food consumption |

Presentation
- Explain that there are different ways to assess diet. Give a brief explanation of each method and make an emphasis on 24-hour dietary recall and food frequency questionnaire.

a) A 24-hour dietary recall.
- Show slide 3.17 and explain about 24 dietary recall

Slide 3.17 A 24-hour dietary recall.

A 24-hour dietary recall
- Is the commonly used method of dietary assessment in which an individual is asked to recall and recount all foods, beverages consumed during a 24 hour period
- A trained interviewer asks the subject to recall all food & drinks taken in the previous 24 hours.
- Actual foods consumed are described, and information on estimated portion weight is collected

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- Explain to participants that; strength and limitation of 24hour dietary recall have been described in the participant's manual
- Remind participants that: When taking a 24-hour recall, it is important for the interviewer to follow certain procedures to insure the following:
- All foods and beverages consumed are listed.
- Amounts of foods are as accurate as possible.
- Respondent is not influenced to say he/she ate foods that were not eaten.
- Refer the participants into session 3.2.1 (a) which explains how to use 24 hour recall methods. Ask a volunteer to read aloud the procedures and considerations in conducting interview in a 24 dietary recall. Give explanation after each point.

- Show slide 3.18 24 hour dietary recall assessment form

Slide 3.18 A sample of a 24 hour dietary recall form

Name……………….…… Age ……..……… Sex …………..…… Area………..………….…

Meal time	Name of food or drink	Ingredients	Household measure	Served	Consumed	Net gram served	Net gram consumed

- Explain that the net gram consumed is calculated based on the food composition table.
  b) Dietary diversity score
- Explain that another method used in dietary assessment is a count of food groups that a household or an individual has consumed in the previous 24 hours
- Show slide 3.19 Dietary diversity score

Slide 3.19 Dietary diversity score

> It is a simple count of food groups that a household or an individual has consumed over the preceding 24 hours.
> - It reflects the diversification of the diet (quality aspects of diet) and
> - Economic ability to access a variety of foods

- Explain that HDDS is meant to reflect diversification of the diet and the economic ability of a household to access a variety of foods. The Individual Dietary Diversity Scores aimed at reflecting nutrient adequacy of an individual. Nine to 16 food groups are commonly used. HDDS uses a set of 12 food groups.
- Refer the group in the participant manual session 3.2.1 that describe the procedures , strength and limitations in using dietary diversity score

c) Food Frequency Questionnaire

Presentation: Food Frequency Questionnaire
- Show slide 3.20 Food frequency questionnaires and give explanation on what is FQ

Slide 3.20 Food frequency questionnaires

> **Food frequency questionnaires**
> ❖ Aim: Assess frequency of consumption of individual foods or food groups in a specified period of time
> ❖ FFQ is designed to provide descriptive qualitative information about usual food consumption pattern, that is, the evaluation of habitual diet over the long term
> ❖ It can also be a semi-quantitive FFQ collecting information of portion size in addition to frequency of consumption
> ❖ The questionnaire consist of a list of food groups and associated set of frequency of use (daily, weekly, monthly)

- Explain that the list of food may focus on specific group of food or foods consumed periodically (seasonally) depending on the focus of the study. This method is also used by epidemiologists to study association between dietary habits and diseases
- Point out that subjects are asked to say how often they usually consume an item of food or drink and how much they have (consume) on the day they consumed it. The assessment of portion sizes can be done by using average portion weights available or by asking subjects to describe amounts in terms of household measures or standard portions

- Refer the group in the participant manual session 3.2.1. Ask a volunteer to read aloud on how to use FFQ and factors to consider when conducting FFQ. Give explanation after each point.

- Show slide 3.2 Sample of FFQ form

Slide 3.21 A sample of FFQ form

Food item	Per day	Per week	Per months
Cereals e.g rice, maize			
Dark green or deep orange vegetables e.g sweet potato leaves, pumpkin leaves, carrots			
Other vegetables (e.g cabbage)			
Legumes e.g beans, peas			
Fruits			
Meat, fish and poultry			
Milk and milk products			
Nuts			
Coffee, tea			
Soft drink			
Alcohol			
Fast food e.g Chips, sausage			

- Refer the group to the participant's manual sub session 3.2.1(c) on how to interpret FFQ data
- Conclude the session by describing the strength and limitation of the FFQ method

Group work: A 24 dietary recall and food frequency questionnaire

- Divide participants into small groups. Explain that each group will practice using one of the methods. Groups 1, 2, and 3 will use 24-hour dietary recall, and groups 4, 5, and 6 will use the food frequency questionnaire. Ask one person in each group to volunteer to share her or his dietary history. Another group member should record the answers. Give the groups 20 minutes for this exercise. Then ask the groups to describe their experience practicing dietary assessment

d) Dietary/Food records

Presentation: Provide explanations on the dietary/food records method, refer slide 3.22

- Show slides 3.22 Dietary/Food records.

Slide 3.22 Dietary/Food records

Dietary/Food records			
Estimated food diaries or records are a prospective dietary assessment method which provides detailed data on food and nutrient intakes. Individuals record details of foods and beverages consumed at the time of consumption, ingredients and if possible Brand names			
Date	Time	What I eat	How much

e) Observed food consumption

▪ Show slide 3.23 Observed food consumption and give description on how and when this method is used

Slide 3.23 Dietary assessment using observed food consumption

Dietary assessment using observed food consumption
Researchers directly observing a participant's food intake and behaviors to ascertain foods, brands and portions consumed.
It is often preferable if a participant is not able to identify who the observer is, so they do not alter their dietary intake
Direct observation can be used to provide an objective measure of an individuals' dietary intake or to validate another dietary assessment method.

3.2.2. Anthropometric Measurements

Presentation

▪ Present slide 3.24 and describe the meaning of nutrition anthropometry

Slide 3.24 Meaning of nutrition anthropometry

Meaning of nutrition anthropometry
Nutritional anthropometry is the measurements of the variations of the physical dimensions and the gross composition of the human body at different age levels and degrees of nutrition.

▪ Explain that chronic in-balance in intake of energy and protein modify the pattern of physical size and relative to body tissues such as fat, muscles and total body water

Brainstorm: What are the different types of anthropometric measurements?

▪ List responses on a flipchart and compare them to the information on the slide 3.25

▪ Present slide 3.25 and explain types of Anthropometric Measurements

Slide 3.25 Types of Anthropometric Measurements

Types of Anthropometric Measurements
Anthropometric measurements are of two types:
  ☐ Measurements that assess body composition (body fat, fat-free mass)
  ☐ Measurements that assess Growth (length/height, weight)

Presentation: Advantages and Limitation of anthropometric assessment
▪ Explain the advantages and limitation of anthropometric assessment methods
▪ Show slide 3.26 Advantages of anthropometric assessment

▪ Slide 3.26 Advantages of anthropometric assessment

Advantages of anthropometric assessment

▪ Procedures are simple, safe, noninvasive and applicable to large sample sizes
▪ Equipment is in expensive, portable, durable, can be made locally
▪ Procedures can assist to identify mild, moderate, and severe states of malnutrition
▪ Methods can be used to evaluate changes in nutrition status over time

▪ Information is generated on past long-term nutritional history

▪ Relatively unskilled personnel can perform measurement procedures

▪ Provided standardized techniques are used, the methods are precise and accurate

Slide 3.27

Limitations of Anthropometric Assessment
  ☐ Relatively insensitive, it cannot detect disturbances in nutrition status over short periods of time or identify specific nutrient deficiencies
  ☐ Unable to distinguish disturbances in growth or body composition induced by nutrient (e.g. zinc) deficiencies from those caused by imbalances in protein and energy intake
  ☐ Non nutritional factors (diseases, genetic diurnal variation, reduced energy expenditure) can reduce sensitivity and specificity of the measurements

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A) Measurements that assess growth (length/height, weight)

Presentation: Measurements that assess Growth (length/height, weight)

Growth parts of the body can be assessed based on two common measurements, these include; weight and height

(i) Measuring weight

- Explain that it is important to have periodic weighing as this helps to track weight change to allow early action. Unintentional weight loss can mean poor health and reduce the body's ability to fight infection. Overweight puts a person at risk of getting chronic diseases eg Diabetes.

- Refer participants on the sub session 3.2.2 on How to weigh children and adults.
- Ask the volunteer to read the information aloud.

Practice
- Demonstrate on how to use the weighing scale (taring scale)
- Place the scale on a flat, hard surface.
- Demonstrate on how to zero the weighing scale and measure weight correctly (if the participants are unfamiliar with this type of weighing scale)
- Explain to participant that if they are using a solar weighing scale they should consider the following tips.

Key points
- The solar panel should be in good light.
- To turn on the scale, cover the solar panel for a second (literally one second). Wait until the number 0.0 appears.
- After the client's weight is displayed, tare the scale by covering the solar panel for only a second and then waiting for the number 0.0 to appear along with figure of a mother and baby.
- If the scale takes a long time to show 0.0 or a weight, it may not have enough light. Reposition the scale so that the solar panel is under the most direct light available.
- Also, if a mother is very heavy (such as more than 100 kg) and the baby is light (such as less than 2.5 kg), the baby's weight may not register on the scale. In such cases, have a lighter person hold the baby on the scale.

- Refer participants to   sub session 3.2.2 of participants manual on How to weigh Adults and children
- Ask volunteers to read the information aloud.
- Demonstrate how to zero the weighing scale and measure weight correctly (if participants are unfamiliar with this type of scale).
- Explain that accurate measurements are important because errors can lead to classifying a client's nutritional status incorrectly and providing the wrong care.

- Errors include weighing clients with too much clothing, measuring clients who are not standing straight, using inaccurate scales.

Practice: **Taking weight**
- Ask participants to form their small groups and then ask each group to choose one person to weigh. One group member should weigh the person while the others observe and record the weight. Watch the groups to make sure they do the exercise correctly.
- Then ask the groups to write the name, sex, pregnancy status, and weight in kg to the nearest 100 g of the person weighed
- Ask each group to weigh the rest of the group members and record their weights, as time permits. Again one group member should weigh the person while others observe and record the weight.
- If possible, bring children to the classroom so the groups can practice weighing them.
- Refer participants to participant's to session 3.2.2 of participant's manual on How to Weigh Children. Ask a volunteer to read the information aloud. Explain that children can also be weighed on a scale. Remind the groups that they can use these job aids in their workplaces when they need to assess children's nutritional status.
- If it is difficult to bring a child to the class, ask one participant to be the mother/caregiver of the child to do demonstration on how to weigh a child. For this demonstration, prepare a "baby" that will weigh over 2 kg, such as 2-3 handbags or a bag holding several water bottles or books.
- Demonstrate how to weigh a child by following the above-discussed steps.
- Refer participants to participant's on session 3.2.2 of participant's manual on How to measure Length and Height and ask a volunteer to read the information aloud.

Practice: **Taking height**
- Ask each group to go to a height board to measure the height of each person who was weighed. The other group members should observe and record the height
- If it is possible to bring children to the classroom, ask the groups to practice measuring them using a length or height board. Show participants a length board for children. Explain that length is measured for children less than 87 cm long and height is measured for children more than 87 cm long and adults.
- Ask the groups to discuss any problems they had measuring weight and height, including equipment (error, zeroing), clothing, reading the equipment, clients not standing straight for height and so on.

Presentation

Slide 3.28 How often an individual should be weighed

How Often Should You Weigh an individual?
• As a general rule, at each health visit.
• Children under 5: Follow the routine RCH clinic weighing schedule.
• Adults
o With normal nutrition status. Every 3 months

> - o   With MAM: Every month
> - o   With SAM: Every 2 weeks
> - o   With normal nutritional status:
> - •   Adult PLHIV with symptoms: At least every month
> - •   Adult PLHIV without symptoms: At least every 3 months

(ii) **Measuring height**

- Demonstrate use of the length/Height board:
- Point out that if the length/height board requires assembling, begin by demonstrating how to assemble and disassemble the board.
- Refer participants to participant's book session.3.2.2 on How to measure length and height and ask the volunteer to read the information aloud
- Explain that if the child is extremely agitated and both legs cannot be held in position measure with one leg in position. If it is not possible to straighten the knees of newborns. Apply minimum pressure because newborns are fragile and could be injured easily.
- If possible use a large doll or even a stick to demonstrate on how to measure length
- Ask participants to refer procedures and demonstrations of measuring height in the participants manual sub session 3.2.2

Video Demonstration: Anthropometry Training Video

- Show selected sections of the WHO-Anthropometry Training Video on measuring weight, length and height, consider the following points

> - •   Show selected section of the Anthropometry Training Video
>
> - •   Explain that this video was used to train staff in the WHO Multi-centre Growth Reference Study (MGRS).
>
> - •   Some of the sections will not apply to this training course, and you will skip those sections. As the equipment used in the course may be different from the equipment in the video, encourage participants to focus on weighing and measuring techniques rather than the equipment itself.
>
> - •   Start the video at the beginning. First you will hear some general information about the WHO MGRS. Then you will view sections that show how to weigh a child using tared weighing, how to measure recumbent length, and how to measure standing height. Stop the video at the end of the session and answer any questions about the weighing and measuring process.

- When you have finished the slide show and everyone has received individual feedback on the Exercise, take a moment to conclude the session.
- Ask participants to refer to the participant's to manual on Summary of Three nutrition indices

- Weight-for-age: Low weight-for-age index identifies the condition of being underweight, for a specific age. The advantage of this index is that it reflects both past (chronic) and/or present (acute) undernutrition
- Height-for-age: Low height-for-age index identifies past undernutrition or chronic malnutrition. It cannot measure short-term changes in malnutrition. A deficit in length-for-age or height-for-age is referred to as stunting.
- Weight-for-height: Low weight-for-height helps to identify children suffering from current or acute undernutrition or wasting and is useful when exact ages are difficult to determine. A deficit in length for age is referred to as wasting
- Explain that the WHZ, BMI and MUAC cut offs are international reference standards used to classify nutrition status that is SAM, MAM, Normal nutrition status, overweight and obesity.

Interpretation of Nutrition Status Based On Indices
- Show slide 3.26 and slide 3.27 and explain on how to interpret nutrition status, ask the participants to refer the their manual on sub session 3.2.2 with information on nutritional indices commonly calculated for young children for more details

- Point out that this three indices (W/A, H/A and W/H and are used to identify three nutritional conditions: underweight, stunting and wasting, respectively

Slide 3.29 Interpretation of Nutrition Status Based On Indices

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Interpretation of Nutrition Status Based On Indices

The nutritional indices commonly calculated for young children are:

Weight for height – an index used to measure wasting or acute malnutrition;

Height for age – an index used to measure stunting or chronic malnutrition;

Weight for age – an index used to measure underweight (or wasting and stunting combined).

Show slide 3.30 and explain the uses of the above 3 indices with Z score classification
Slide 3.30 Interpretation of Nutrition Status Based On Indices

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Interpretation of Nutrition Status Based On Indices cont…

Weight for height
Weight-for-height up to –2SD   = Normal
Weight-for-height <-2SD to –3SD = Moderate
Weight-for-height <-3SD   = Severe wasting

Weight for Age
Weight-for-age up to –2SD   = Normal
Weight-for-age <-2SD to –3SD = Moderate
Weight-for-age <-3SD   = Severe underweight

Height for Age
Height – for- age up to -2 = Normal
Height – for- age <-2SD to –3SD = Moderate stunting
Height –for- age <-3SD   Severe stunting

Discussion

▪ Ask participants if they have any questions about the session on how to weigh and measure children. Discuss whether and how participants can use the procedures taught in their own working places. Ask few participants to volunteers to give their thoughts

Quick assessment

▪ Do quick test on how well participants have achieved the objective set at the beginning of this lesson? Do this by asking different volunteer to answer each question. Do not let them look at their manual. If the participant answers correctly, give him or her reward such as clapping of hands

▪ **Ask the following questions**
   1. Who can define 'anthropometrics' in simple language?
      Answer: Nutritional anthropometry is the measurements of the variations of the physical dimensions and the gross composition of the human body at different age levels and degrees of nutrition.
   2. Who can describe all three of the measurements required to determine child growth?
      Answer: Weight for Age, Height for Age and Weight for Height

   B) Measurements that assess body composition (body fat, fat-free mass)
Show slide 3.31 and explain measurements that assess body composition

Slide 3.31 measurements that assess body composition

Measurements that assess body composition

Methods are based on a model that the body consists of two chemically distinct compartments: fat mass and fat-free mass.
Fat–free mass consists of skeletal muscle, non-skeletal muscle and soft lean tissues, and the skeleton. The techniques can indirectly assess these two compartments and variations in their amount, and proportion can be used as indices of nutritional status
Indices are used to identify individuals who are vulnerable to under- or over- nutrition, and to evaluate effectiveness of nutrition intervention programs

(i) **Body Mass Index**

Presentation: Body Mass Index
- Explain that weight is a reliable index of nutritional status but only gives general information on fat stores or lean muscle mass. For more specific information on these indicators, other anthropometric measurements are needed. Show slide 3.32 and explain on BMI

Slide 3.32 Body Mass Index

BMI
- ➤ BMI is a reliable indicator of body fatness and an inexpensive and simple way to measure adult malnutrition.
- ➤ BMI cut-offs are not accurate in pregnant women or adults with oedema, whose weight gain is not linked to nutritional status. For these groups, use MUAC.

- Explain that BMI is the preferred indicator of overweight and obesity for adults over 18 who are not pregnant or within 6 months post-partum. BMI measures body fat composition compared with that of an average healthy person. If BMI shows that body fat is below established standards, nutrition intervention is needed to slow or reverse the loss.
- Explain that BMI is not accurate in pregnant women and women up to 6 months post-partum because their weight gain is not linked to their nutritional status. Therefore, MUAC is used to measure nutritional status in these groups.
- Explain that BMI is used to assess the nutritional status of adult PLHIV because PLHIV with progressive or late-stage HIV infection can lose muscle faster than weight and weight loss does not indicate the amount of muscle loss. High rates of muscle loss are associated with higher morbidity and mortality.
- Refer the groups to page 30 of participant's manual Finding Body Mass Index (BMI) and ask volunteers to read the sections aloud.
- Write the formula below on a flipchart visible to all the participants. Explain that BMI is calculated by dividing weight in kilos height in metres squared (BMI = kg/m^2).

Weight in kg
(Height in m)^2

- Point out the BMI cut-offs for classification of malnutrition in adults.

BMI	Nutritional status
< 16.0 kg/m^2	Severe malnutrition
≥ 16.0 to < 18.5 kg/m^2	Moderate malnutrition
≥ 18.5 to < 25.0 kg/m^2	Normal nutritional status
≥ 25.0 to < 30.0 kg/m^2	Overweight
≥ 30 kg/m^2	Obese

Source: WHO. 1995. Physical status. The use and interpretation: Report of a WHO Expert Committee. WHO Technical Report series 854.Geneva: Geneva; WHO

- Refer the groups to Job aid BMI Reference Chart. Explain that they can use this chart to find BMI instead of using a calculator. Explain the colour coding if they are not familiar with it.

Practice: **Calculating BMI**
- Ask the groups to find the BMIs for the weights and heights of their colleagues and record the results on the following table. Supervise the groups to make sure each participant does the exercise correctly. Use the table below
- Ask one or two groups to present their results in plenary.

ID	Sex	Height (cm)	Weight (kg)	BMI	Nutritional status
1	F				
2	M				
3	M				
4	F				
5	M				
6	M				

- Ask the groups to discuss any difficulties they had finding BMI on the chart.

(ii) **Mid-Upper Arm Circumference (MUAC)**

Presentation: Mid upper arm circumference
Refer slide 3.33 and explain about MUAC

Slide 3.33 Mid-upper arm circumferences

> **Mid upper arm circumference**
> Mid-upper arm circumference and is correlated with measures of total muscle mass and it is therefore used to predict changes in total body muscle mass and protein nutritional status
> In developing countries, the amount of subcutaneous fat is frequently small, changes in MUAC tend to parallel changes in muscle mass, thus useful in diagnosis of PEM or starvation.
> Changes in MUAC can also be used to monitor progress during nutritional therapy, correlating positively with changes in weight
> Between the ages of 6 months to 5 years, MUAC can be used when ages of children are uncertain
> In emergency situations MUAC is used to screen and admit children

Remind participants that MUAC is a quick and easy way to measure nutritional status because it only requires a tape measure, but it must be done accurately. Even a ¼-inch error can mean a difference in treatment.

- Give each participant a set of four MUAC tapes for different groups (6−59 months, 5-9 years, 10−14 years, Adolescents and adults). Point out the labels for the different groups and the colour coding to indicate nutritional status.
- Explain that the MUAC tape for adults is also used for children 5–17 years of age and for pregnant women and women up to 6 months post-partum.
- Explain to the participants that MUAC cut-off points are based on WHO standards
- Wrap an adult MUAC tape around the middle of a co-facilitator's upper left arm. Find the measurement and ask the groups to identify the person's nutritional status by the colour.
- Refer the groups to Job aid on How to measure MUAC. Ask volunteers to read each step aloud. Explain that the job aid shows a person measuring the MUAC of a child, but the placement of the tape is the same as for adults.

Practice: Measuring MUAC
- Ask one pair in each group to measure each other's MUAC while the other pair observes, makes suggestions (for example, how to place the tape correctly on the arm or keep the tape at eye level) and records the measurements. Give the groups 5 minutes for this activity. Observe each pair and make sure participants are measuring MUAC correctly.
- Ask the pairs to switch roles so that the other pair has a chance to measure each other's MUAC.
- Ask the groups to discuss any problems they had measuring MUAC, for example, not finding the correct mid-point of the upper arm.
- Repeat the demonstration if necessary, stressing areas that need strengthening.
- Then ask the groups to record the MUAC measurements Measurement of MUAC. Supervise the groups to make sure each participant does the exercise correctly.

- Refer pictures of MUAC tapes, show participants how they look like
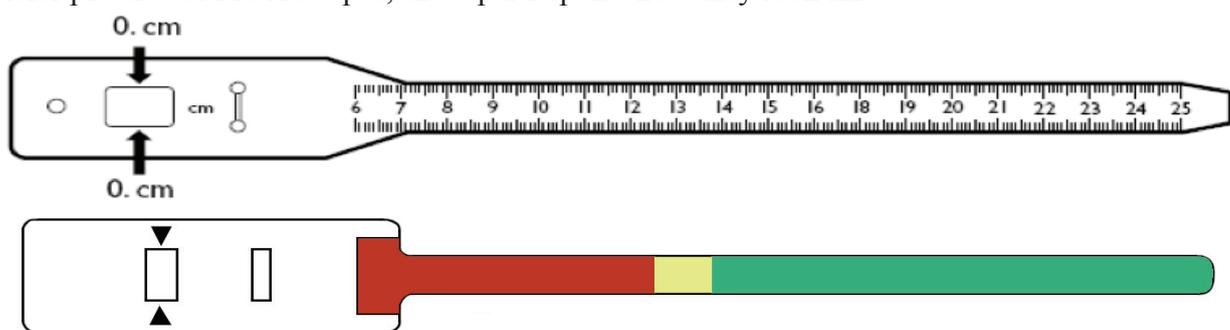
Interpreting MUAC

- Explain to participants how to interpret MUAC measurements, refer the participants to the participant's manual section 3.22

Practice: Measuring MUAC

- Ask one pair in each group to measure each other's MUAC while the other pair observes, makes suggestions (for example, how to place the tape correctly on the arm or keep the tape at eye level), and records the measurements. Give the groups 5 minutes for this

activity. Observe each pair and make sure participants are measuring MUAC correctly. Ask the pairs to switch roles so that the other pair has a chance to measure each other's MUAC.
▪ Ask the groups to discuss any problems they had measuring MUAC, for example, not finding the correct mid-point of the upper arm.
▪ Repeat the demonstration if necessary, stressing areas that need strengthening.
▪ Refer the groups back to How to Measure Mid-Upper Arm Circumference in the participant's manual page 32 and explain that the Participant Manual contains detailed information on this anthropometric measurement

3.2.3. Biochemical assessment

Presentation: Biochemical Assessment
▪ Give the overview of biochemical assessment slide 3.34 Biochemical Assessment

Slide 3.34 Biochemical Assessment

Biochemical assessment is used primarily to detect sub-clinical deficiency states. Biochemical test often can **detect nutrient deficits long before** anthropometric measures are altered and clinical signs and symptoms appear Biochemical tests can also be used to examine the validity of various methods of measuring dietary intake or to determine if respondent are underreporting or over reporting what they eat Can also be used to examine the validity of various methods of measuring dietary intake or to determine if respondent are underreporting or over reporting what they eat

Show slide 3.35 and explain types of biochemical test

Slide 3.35 Types of biochemical tests

Types of biochemical tests There are two major types: -Static Tests Are based on measurement of a nutrient or its metabolite in the blood, urine or body tissue -Functional test Are based on the idea that the final outcome of a nutrient deficiency and its biological importance are not merely a measured level in a tissue or blood, but the failure of one or more physiologic processes that rely on that nutrient for optimal performance.

▪ Explain about functional and static test as the major types of biochemical assessment. Refer participants' manual 3.2.3 biochemical assessments in the participant's manual. Ask volunteers to read the information aloud. Give specific examples and applications of functional and static biochemical assessments.
▪ Explain to participants limitations of biochemical assessment
▪ Refer the participants' manual 3.2.3 on how to interpret Haemoglobin levels, glucose levels, vitamin A levels and urinary iodine levels.

3.2.4. Clinical Assessment of Nutrition Status

Brainstorm: Signs of malnutrition
- Ask participants on how can they tell if someone is malnourished?

- List all responses on a flipchart and compare them with the clinical features of malnutrition as indicated on the Slide 3.36a, 3.36b, 3.36c, 3.36d and 3.36e Clinical Symptoms and Signs of Malnutrition

Presentation: Clinical Symptoms and Signs of Malnutrition

Slide 3.36 Clinical Symptoms and Signs of Malnutrition

	Sign/symptom	Nutritional abnormality
Mouth		
	Glossitis	Riboflavin, niacin, folic acid, B12 , protein
	Bleeding & spongy gums	Vit. C,A, K, folic acid & niacin
	Angular stomatitis, cheilosis & fissured tongue	B 2,6,& niacin
	Leukoplakia	Vit.A,B12, B-complex, folic acid & niacin
	Sore mouth & tongue	Vit B12,6,c, niacin ,folic acid & iron
	Sign/symptom	**Nutritional abnormality**
Skin	Pale: palms, conjunctiva, tongue	Anaemia: may be due to the deficiency of iron, folic, vitamin B12, acid, copper, protein or vitamin B6
	Flaking dermatitis	PEM, Vit B2, Vitamin A, Zinc & Niacin
	Bruising	Vit K ,Vit C & folic acid
	Sign/symptom	**Nutritional abnormality**
Musculo-skeletal	Gets tired easily, shortness of breath	Anaemia: may be due to the deficiency of iron, folic, vitamin B12, acid, copper, protein or vitamin B6
	Muscles have 'wasted' appearance; particularly in buttocks and thigh. Baby's skull bones are thin and soft	Protein-Energy Malnutrition
	Bow-legs	Calcium and vitamin D deficiency

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	Sign/symptom	Nutritional abnormality
Eye	-Bitot's spots (whitish patchy triangular lesions on the side of the eye) -Night blindness, exophthalmia	Vitamin A deficiency
	Photophobia-blurring, conjunctival inflammation	Vit B2 & vit A deficiency
Hair	Spare & thin	Protein, zinc, biotin deficiency
	Easy to pull out	Protein deficiency
	Corkscrew Coiled hair	Vit C & Vit A deficiency

Nail	Spooning	Iron deficiency
	Transverse lines	Protein deficiency
Neck	Goitre (swelling on the front of the neck)	Iodine deficiency disorder

Then give an overview of clinical assessment of malnutrition
Show slide 3.37 clinical assessment of malnutrition

Slide 3.37 Clinical assessment of malnutrition

Clinical assessment of malnutrition
Clinical assessment is the physical examination of an individual for signs and symptoms suggestive of nutritional health and/or clinical pathology. Signs usually come late in the pathogenesis of a disease, unlike biochemical tests that can detect early malnutrition states.
Clinical examinations are conducted by the physician (or a trained/experienced clinical staff) on anatomic changes that can be seen or felt in the superficial, epithelial tissues like skin, eyes, hair, buccal mucosa or organ systems (e.g. thyroid, spleen and liver).

- Explain to participants how clinical assessment is done.
- Point out that this method uses medical history and physical examination to detect signs (i.e. observations made by a qualified examiner) and symptoms (i.e. manifestations reported by the patient) associated with malnutrition. It utilizes a number of physical signs, (specific & nonspecific), that are known to be associated with malnutrition and deficiency of vitamins & micronutrients.

- General clinical examination, with special attention to organs like hair, angles of the mouth, gums, nails, skin, eyes, tongue, muscles, bones, & thyroid gland.
- Explain that detection of relevant signs helps in establishing the nutritional diagnosis

Demonstration
- Show pictures of a child with, Severe visible wasting, oedema in both feet or legs, wasting, and hair colour change, and Goitre refer the pictures shown on the slides 3.38, 3.39, 3.40 and 3.41 below

Slide 3.38 Severe visible wasting
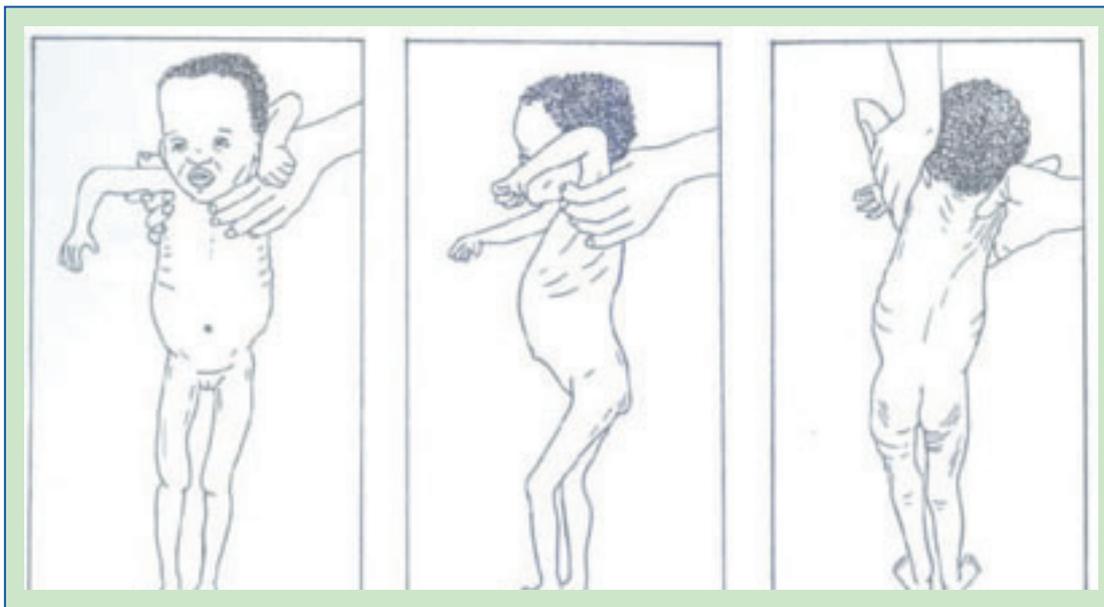
Source: Ethiopian Federal Ministry of Health, 2010, *Training course of the out patient treatment programme of severe acute malnutrition*

- Show Slide: 3.39a and 3.39b, Slide: 3.40 and Slide 3.41   and explain on each slide

Slide 3.39 Bilateral pitting oedema

Bilateral pitting oedema
Bilateral pitting oedema is a sign of SAM. It can be used to diagnose SAM regardless of a person's BMI or MUAC. Define 'oedema' as the abnormal accumulation of fluid in the interstitial spaces of tissues. Either too much fluid moves from the blood vessels into the tissues or not enough fluid moves from the tissues back into the blood vessels. This fluid imbalance can cause swelling in one or more parts of the body. Explain that bilateral pitting oedema is oedema in both feet and legs in which pressure on the skin leaves a depression in the tissues.

Picture of a child with bilateral pitting oedema

(Source: UNICEF/Dr Tewoldeberhan Daniel)

Slide 3.40   Hair colour change

Slide 3.41 A lady with of goiter

- Refer the group in the participant manual on session 3.24 for different clinical signs of malnutrition and associated problems
- Point out different signs /symptoms and its indication in nutrition problems
- Refer to clinical signs and symptoms of nutritional problems in the participant's manual

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NOTE:
➢ Remind participants that overweight and obesity are also signs of malnutrition, in this case they put people at risk of diabetes, hypertension, and heart problems
➢ Clinical signs and symptoms of malnutrition are often **non-specific** and only develop during the advanced stages of nutritional depletion. For this reason, diagnosis of a nutritional deficiency should not rely exclusively on clinical methods. Refer participants to their participants manual on the limitations of clinical assessment

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3.2.5. Vital Statistics, Socio-Economic And Ecological Variables

Presentation: Vital statistics, socio- economic and ecological variables.
- Start by introducing the indirect methods of nutrition assessment to the participants and give the general overview. Show slide 3.42 and give explanations

Slide 3.42 Vital statistics, socio- economic and ecological variables

> **Vital statistics, socio- economic and ecological variables**
> The etiology of acute, sub-clinical and chronic malnutrition is multifactorial, and thus it is the end results of multiple overlapping factors, in the community's physical, biological and, socio and cultural environments. Thus the amount of food and nutrients available to persons of different age group will depend on upon such factors, which are strongly related to malnutrition and can be used to identify individual at risk.

▪ Remind participants to refer module 1, on the conceptual framework of malnutrition

Exercise: Group discussion on vital statistics, Socio economic and Ecological variables.
  ▪ Ask participants, to divide themselves into three groups. Each group should choose one topic below and prepare 10 minutes Presentation. The topics are Vital statistics, Socio-economic and Ecological variables
  ▪ Tell the groups that Presentation should cover the associated variables for each topic and the link between malnutrition and those variables and how to collect those variables.
  ▪ Ask the groups to present their results one after another in the plenary session and ask other groups to add their comments and corrections as needed
  ▪ After groups Presentation make summary of each topic as follows;

Presentation: Vital Statistics

Show slide 3.43 and describe vital statistics

Slide 3.43 Vital statistics

> **Vital statistics**
> Vital statistics are the compiled information collected from vital event records. Vital records data are normally used for analysis of health trends, program planning, and policy development. The data can be collected via hospital records
> Malnutrition is the underlying cause of many diseases and death, and so vital health statistics can be used as indirect indicators of nutrition status of a community

▪ Please specify all/examples of vital statistics currently collected/ recorded and give a brief explanation on each. Example of vital records such as; hospital records on Leading causes of under-five death, Low birth weight babies, Proportion of mothers who are breastfeeding

Presentation: Socio-economic variables
Show slide 3.44 and explain on socio-economic variables

Slide 3.44: Socio-Economic Variables

Socio-Economic Variables

Socioeconomic factors, such as poverty and gender inequality, are important determinants of health outcomes in many low-income countries.

The connection between malnutrition and poverty describes a proven link, especially at the lowest income levels. Poverty is regarded as the root cause of malnutrition and malnutrition perpetuates the cycle of poverty.

Countries with the lowest economic indicators and highest illiterate levels report the highest rate of malnutrition, especially in children.

Low status of women in community and unequal distribution of food within families also contribute to gender inequalities and magnify the problem of malnutrition in a family and community

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▪ Point out the examples of socio-economic variables include Sex, Education level, Employment status, Sources of income, Household size , Ownership of assets, etc.

Presentation: Ecological Variables

Show slide 3.45 and Slide 3.46 provide explanation and examples of Ecological Variables

Slide 3.45: Ecological Variables

Examples of Ecological Variables

Malnutrition is always an ecological problem; environmental conditions such as climate, soil, storage of food, etc. might contribute indirectly to nutrition outcome of the community

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Slide 3.46 Examples of Ecological Variables

Examples of Ecological Variables

To collect ecological data, the following examples of variables are used;
   ▪ Soil fertility
   ▪ Environmental conditions
   ▪ Climate conditions
   ▪ Amount of food produced
   ▪ Household Food accessibility
   ▪ Amount of food stored

▪ Refer, the participants to the participant's manual session 3.25 on explanation of ecological variables

3.2.6. Management of Moderate And Severe Malnutrition

▪ Explain to participants that, the final step, after assessing nutrition status is to manage and establish Nutrition Care Plan for the malnourished patients

Presentation Slide 3.47 Nutrition Services in Health Care Facilities

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Nutrition Services in Health Care Facilities
➤ Nutrition assessment

➤ Nutrition counselling

➤ Nutrition education

➤ Demonstration of how to prepare nutritious food

➤ Demonstration of how to maintain good hygiene and sanitation

➤ Prescription of specialized food products to treat acute malnutrition

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Presentation
- Explain that, at facility level nutrition workers can help prevent and manage malnutrition through nutrition assessment, counselling and support (NACS). Every client who visits a health care facility should have a nutrition assessment to determine nutritional status. Nutrition workers should then counsel clients on how to improve their nutritional status and refer them for needed medical care, economic or social support. Nutrition support can also include prescribing specialized food products to clients with acute malnutrition

Show slide 3.48 Contact points for nutrition services

Slide 3.48 Contact points for nutrition services

Contact points for nutrition services

1. RCH/ANC/PMTCT
2. Maternity ward
3. Medical ward
4. Paediatric ward
5. Outpatient department (OPD)
6. Care and treatment clinic (CTC)
7. Village health worker/ community health personnel

Brainstorm: What kind of nutrition services can these contact points offer?
- List responses on flipchart and compare with the information on slide 3.49 below.

Slide3.49

Contact points for nutrition services	Nutrition services
RCH/ANC/PMTCT	Nutrition assessment and counselling, including infant feeding counselling
	Nutrition education
Maternity ward	Nutrition assessment and counselling, including infant feeding counselling
	Nutrition education
Medical ward	Nutrition assessment and counselling
Paediatric ward	Nutrition assessment and counselling
Outpatient department (OPD)	Nutrition assessment and counselling
	Nutrition assessment and counselling
	Nutrition education
Care and treatment clinic (CTC)	Specialized food products for clinically malnourished PLHIV
	Referral to livelihood support programmes

3.2.7. Nutrition care Plan for management of malnutrition

Show slide 3.50 and explain Criteria for classifying children and adults having SAM
Criteria for classifying children and adults having SAM

Slide 3.50 Criteria for SAM

Adults	Children

➤ MUAC < 18.5 cm
➤ **OR** BMI < 16.0
➤ **OR** weight loss > 10% since the last visit
 	
Pregnant/post-partum
➤ MUAC < 19.0 cm
	➤ Severe visible wasting
	➤ **OR** WFH < – 3 z-scores
	➤ **OR** MUAC
	  – 6–59 months: < 11.5 cm
	  – 5–9 years: < 13.5 cm
	  – 10–14 years: < 16.0 cm

- ▪ Refer the participant's to 3.2.5 of participant's manual with photos of severely malnourished children and adults. Ask participants whether they have seen such cases in their work.

Brainstorm: What nutrition care do individuals with SAM need?

Slide 3.51 **Nutrition Care for SAM Clients**

Nutrition Care for SAM Clients

➤ Routine SAM medicines (antibiotics, folic acid, iron supplements for severe anaemia, vitamin A, measles vaccination for children, anti-malarial deworming)

➤ Provide, F-75(as a starter), F-100(as a catch up)/Ready-to-use therapeutic food (RUTF) to provide 100% of energy needs

➤ HIV testing (especially for children)

➤ PCP prophylaxis if not on ART

➤ Counsel on the Critical Nutrition Action

➤ Daily monitoring if inpatient

➤ Weekly or bi-weekly monitoring if outpatient

➤ Appetite test, oedema assessment, weight monitoring and medical

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- Explain to participants that, nutrition this care plan has two parts: Nutrition Care Plan for *inpatient* treatment of children with SAM and medical complications (C1) and Nutrition Care Plan for *outpatient* treatment of children with SAM and no medical complications (C 2).

Show slide 3.52 on the criteria for inpatient treatment of SAM.

Slide 3.52 Criteria for Inpatient Treatment of SAM
- Point out that Nutrition Care Plan for inpatient treatment of children with SAM includes

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Criteria for Inpatient Treatment of SAM

➤ SAM measured by:
  – MUAC or WFH for children and pregnant/postpartum women
  – BMI for non-pregnant/post-partum adults

and any of the following:

➤ Poor appetite (failed an appetite test)

➤ Concurrent infections

➤ In outpatient care for 2 months not gaining weight or losing weight or having worsening oedema

➤ Caregiver unable to provide home care

➤ Unable to return in 1 week for follow-up

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separate information on care for infants < 6 months old and children 6 months to |14 years old.
- Point out that there are three phases in inpatient treatment of SAM: stabilization, transition and rehabilitation.

- Point out that inpatient care of SAM includes medical treatment and nutritional treatment with specialized food products. The specialized food products are F-75, F-100 and ready-to-use therapeutic food (RUTF). These are prescribed as medicine and should only be used for severely malnourished children, not shared with other people in the family.
- Show slide 3.53 on the criteria for outpatient treatment of SAM

Slide 3.53 The criteria for outpatient treatment of SAM

Criteria for Outpatient Treatment of SAM

All of the following:-

➤ SAM measured by:
  – MUAC or WFH for children and pregnant/postpartum women
  – BMI for non-pregnant /post-partum adults
➤ Appetite (passed an appetite test)
➤ No concurrent infections
➤ Caregiver willing and able to provide home care
➤ Able to return in 1 week for follow-up
➤ Enough RUTF supply in stock

- **Class Exercise**

1. What nutrition and health criteria qualify clients for Nutrition Care Plan?
   - Bilateral pitting oedema
   - Children: WFH < –3 SD OR MUAC
     - 6–59 months: < 11.5 cm
     - 5–9 years: < 13.5 cm
     - 10–14 years: < 16.0 cm
   - Adults: MUAC < 18.5 OR BMI < 16

2. What specialised food products are given to clients under Nutrition Care Plan?
   F-75, F-100, RUTF and FBF

3. What key messages should be given to adults with SAM?
   Do not share the specialised food products with others in the family. Get weighed every month. Increase the energy density of the home diet. Manage symptoms and drug-food interactions through diet. Maintain good sanitation and hygiene. Exercise to strengthen muscles and improve appetite.

5. What other interventions/services are given to clients with SAM?

   Routine SAM medicines

   Cotrimoxazole prophylaxis for HIV-positive clients

   Deworming according to national guidelines

   Ferrous sulphate tablets if clinical signs of anaemia

   200,000 IU of vitamin A if no oedema

6. How often should adults with SAM be followed up? Every 2 weeks

Nutrition Care Plan : Moderate Acute Malnutrition
Brainstorm: What criteria classify children and adults as having MAM?

▪ Write the responses on a flipchart and compare them to the information in slide 3.54 Criteria for Moderate Acute Malnutrition

Slide 3.54 Criteria for Moderate Acute Malnutrition

Criteria for MAM

Adults

➤ MUAC ≥ 18.5–< 22.0 cm
➤ **OR** BMI > 16.0–<18.5
➤ **OR** weight loss > 5% since the last visit

Pregnant/post-partum
➤ MUAC ≥ 19.0–< 23.0 cm

Children

➤ MUAC
  – 6–59 months: ≥ 11.5–< 12.5 cm
  – 5–9 years: ≥ 13.5–< 14.5 cm
  – 10–14 years: ≥ 16.0–< 18.5 cm
➤ **OR** WFH between – 3 and – 2 z-scores
➤ **AND** Confirmed weight loss since last visit

Brainstorm: What nutrition care do clients with MAM need?

Nutrition Care for MAM Clients

➤ Treatment of concurrent illness
➤ FBF to provide 40–60% of energy needs (slightly more for children coming from SAM treatment)
➤ HIV testing (especially children) and PCP-prophylaxis if not on ART
➤ Anaemia assessment (supplementation if necessary)
➤ Deworming
➤ Counseling on the CNA
➤ Monthly follow-up and monitoring

Practical session

In this session, course facilitator is required organize for hospital visit, the logistical arrangement should be done earlier, prior to this session so as to allow participants to observe and experience management of malnutrition cases in hospital settings.

Group discussion

▪ Ask participants in-group to discuss the following questions. Let them present their answers in plenary discussion, then clarify their answer by showing the following slide

1. What nutrition and health criteria qualify clients for Nutrition Care Plan C?

   ▪ Bilateral pitting oedema
   ▪ Children: WFH < –3 SD **OR** MUAC
      – 6–59 months: < 11.5 cm
      – 5–9 years: < 13.5 cm
      – 10–14 years: < 16.0 cm
   ▪ Adults: MUAC < 18.5 **OR** BMI < 16

2. What specialized food products are given to clients under Nutrition Care Plan C?
   F-75, F-100 and RUTF

3. What key messages should be given to adults with SAM?

   Do not share the specialized food products with others in the family. Get weighed every month. Increase the energy density of the home diet. Manage symptoms and drug-food interactions through diet. Maintain good sanitation and hygiene. Exercise to strengthen muscles and improve appetite.

5. What other interventions/services are given to clients with SAM?

   Routine SAM medicines

   Cotrimoxazole prophylaxis for HIV-positive clients

   Deworming according to national guidelines

   Ferrous sulphate tablets if clinical signs of anaemia

   200,000 IU of vitamin A if no oedema

6. How often should adults with SAM be followed up? Every 2 weeks

SESSION THREE

3.3. Designing and planning of nutrition activities

Duration: 4hrs and 10 min

Aim of the session

To enable the participants to acquire knowledge and skills for designing, planning and conducting various nutrition activities

Present the session learning objectives; show Slide 3.55 Session learning objectives

Slide 3.55 Learning objectives

Learning Objectives

At the end of training, participants will be able to:

i. Explain research methodologies in designing, planning and conducting nutrition activities for a specific purpose

ii. Describe ethical principles in the design, collection, use and dissemination of nutrition data and information

3.3.1. Study design, sampling and sample size (1 hr and 20 minutes)

Brainstorm: What major issues need to be considered when designing and planning of nutrition activities?

▪ List responses on flipchart and compare them with the information on slide 3.56

Slide 3.56 Designing and planning of nutrition activities

Designing and planning a nutrition activity

Issues to consider
• objectives (one-time or routine assessment, screening, cross-sectional survey or research, intervention, etc)
• design of study/survey/intervention
• study population
• sample size
• sampling procedure
• methodologies and techniques to be used
• frequency of observation/measurements
• expected duration
• location

- Explain that:
  - □ these issues are compiled together to make study plan/proposal/protocol
  - □ detailed planning is necessary to facilitate proposal review before approval, funding and support, allow estimation of required resources, and for addressing anticipated problems in advance
  - □ Formulated objectives must be specific, measurable, achievable, realistic, and time-bound (SMART). They should be linked to indicators to be measured (e.g. incidence of diarrhoea, prevalence of stunting)

Brainstorm: Name one nutrition-related objective that you can put into operation in your district. Let each participant respond.
- List responses on flipchart and then compare them with the information on slide 3.57

Slide 3.57 Common objectives for designing a nutrition activity

Common objectives for designing a nutrition activity

- Establish prevalence of nutrition and nutrition-related problems among children aged 6-59 months in District **XX**
- Evaluate efficacy or effectiveness of a nutrition programme/project or intervention
- Monitor frequency of consuming animal-source foods among pregnant women in District **YY**
- Determine coverage and utilisation of nutrition and health services
- Evaluate change in the quality of nutrition counselling in nine RCH clinics in District **ZZ** between 2011 and 2013

a) Study design
Presentation: Study designs
- Explain that study design is used to describe the combination of ways in which study groups are formed, and the timing of measurements of the variables. It is important that an appropriate design is selected in order to answer specified objectives
- Show Slide 3.58 and describe the 3 basic types of study designs

Slide 3.58 Basic study designs

Basic study designs

Descriptive
- Document experience, observations, unusual events
- Begin search for information/explanations for complex studies
- e.g. cross-sectional study, ecologic study, surveys, case reports

Observational
- Seek causes, predictors, risk factors without intervention
- e.g. case-control studies, cohort studies

Experimental
- Evaluate efficacy or effectiveness of intervention or therapy
- Random allocation to study groups; compare study groups before & after intervention (i.e. pre and post)
- e.g. randomised clinical trials, community interventions

Individual reading exercise 1: Issues in study designs
- Provide a copy of two published articles on study designs to each participant and ask each participant to read the articles at home.
- Each participant should relate types of study designs learnt in class and what is documented in literature using Handouts 1a and 1b
- Refer participants to the **Participants manual 3.3.1.1 Individual reading exercise 1**

Individual reading exercise 2: Published articles on study designs
- Provide a copy of four published articles on study designs to each participant and ask each participant to read the articles at home.
- Each participant should note down the following from Handouts 2a, 2b, 2c and 2d:
  - Identify whether it is a descriptive, observational or experimental study design
  - Specify the type of design
  - Identify objective (s) and assess whether it is SMART?
  - Identify study population, location, sampling procedure, frequency of measurements, indicators/variables to be measured and duration
- Refer participants to the **Participants manual 3.3.1.1 Individual reading exercise 2**

b) Sampling methods and techniques
- Explain that:
  - It is usually not possible to study an entire target population of subjects due to limited resources. A representative sample from the population is studied. Generalisation is then made from the sample to the population from which the sample was taken
  - Sampling is a highly technical activity, and it is critical that the sample design be carefully undertaken

☐ Occasions where you may need to sample the entire population include when the intended population is very small, extensive resources are available, and when you don't expect a very high response

▪ **Presentation**
▪ Slide 3.59 Sampling methods

Slide 3.59 Sampling methods

Sampling methods
Probability sampling
• uses random selection techniques
• clearly defined sample selection procedures e.g. list or **sampling frame**
• techniques: simple random, systematic, stratified, cluster, multi-stage sampling
Non probability sampling
• sample selected in a non-random manner (believe sample can provide information about the population)
• conclusions are less reliable or generalisable
• techniques: convenience, purposive, quota sampling
• Convenient, low cost; but outweigh un-representativeness

i) **Simple random sampling**

Presentation: Simple random sampling

▪ Show slide 3.60 and describe simple random sampling

Slide 3.60 Simple random sampling

Simple random sampling
• simplest design, easy to use when population is small
• **Steps:** develop list (sampling frame) of every member of population so all have equal chance of being selected; assign unique identification to each element; use random number tables or computer-generated random numbers to select sample from the list one at a time without replacement
• **Disadvantages:** high cost (considerable planning and expense), sample not representative if list is not evenly spread across all sections of population

ii) **Systematic sampling**

Presentation: Systematic sampling

▪ Show Slide 3.61 and describe systematic sampling

Slide 3.61 Systematic sampling

Systematic sampling

- uses similar steps as simple random sampling
- common in households arranged in a regular pattern (e.g. refugee camps, well-organised villages)
- **Steps:** develop sampling frame; determine sampling interval **K** (**K =** population size/ sample size); select every **K**th entry until you achieve desirable size; select first household randomly
- **Advantages:** easy to use; sample evenly spread across population
- **Disadvantage:** sample may bias information if list was not in random order e.g. males topping the list followed by females

iii) Stratified sampling

Presentation: Stratified sampling
- Show Slide 3.62a and describe stratified sampling

Slide 3.62a Stratified sampling

Stratified sampling

- population may contain subgroups differing on variable of interest e.g. dietary intake by socio-economic status (SES)
- stratification groups population members into homogeneous subgroups (e.g. rural vs urban, low SES vs high SES)
- each subgroup is a stratum, each member is assigned to only one stratum
- stratum is sampled as independent subgroup: list all members in each subgroup; use simple random sampling or systematic sampling to select a sample from each subgroup

Presentation: Stratified sampling
- Show Slide 3.62b and illustrate a stratum of men and sample selection by systematic sampling

Slide 3.62b Stratified sampling

Presentation: Stratified sampling
- Show slide 3.62c and describe advantages and disadvantages of stratified sampling

Slide 3.62c Stratified sampling

iv) **Cluster sampling**

Presentation: Cluster sampling
- Show Slide 3.63 and describe cluster sampling

Slide 3.63 Cluster sampling

Cluster sampling

- groups of individuals rather than individuals are selected
- villages and hamlets in towns/cities are the most common clusters used in sampling

Steps:
- o defining clusters, constructing sampling frame of all villages and their population size
- o sampling clusters for inclusion in the sample
  - ✓ cluster size known: systematic sampling (Probability-proportional-to-size (PPS)
  - ✓ cluster size unknown: simple random (Equal probability)
- o sampling households from selected clusters

Advantages: eliminates need for complete list of all units in the population; ensures selected population units will be closer together to reduce field work costs, simplify field work

v) **Multistage sampling**

Presentation: Multistage sampling
- Show Slide 3.64 and describe multistage sampling

Slide 3.64 Multistage sampling

Multistage sampling

- involves more than one stage of sampling; uses a combination of two or more sampling designs
- common in large and diverse population e.g. community-based studies (i.e. different villages from different Wards, Districts, etc.)
- at the first stage, large groups or clusters of population units are selected
- **Example:** select 3 Wards out of 6 in the District by simple random sampling; select 5 Villages in each Ward by systematic sampling (15 villages in total); select 10 households in each Village by simple random sampling or other technique

Individual exercise 3: **Selecting a random sample using simple random, systematic and stratified sampling techniques**
- Provide to each participant a list of 50 individuals and a table of random numbers containing 2 digits
- Ask each participant to select a sample of 10 individuals from the list using simple random sampling. The task should be repeated using systematic sampling and stratified sampling
- Ask them to compare results after performing each technique
- Refer participants to the **Participants manual 3.3.1(b) Individual exercise 3**

Individual exercise 4: Selecting a random sample using systematic sampling
- Write on flipchart and post on the wall the following question
- Question. A survey is to be undertaken in a village to assess food consumption pattern of children aged 2 to 5 years. A sample size of 120 children/households is needed for assessment. How would you use systematic sampling to sample them?
- Ask each participant to write the procedure on paper. Choose two participants (1 male, 1 female) to respond to the question. Ask other participants for any response different from those presented
- Give your response. Refer participants to Participants manual sub session 3.3.1(b) Individual exercise **4**

Individual exercise 5: Selecting a random sample using stratified sampling
- Write on flipchart and post on the wall the following question
- Question: You are required to determine the average yield of sorghum per household in three villages of Ward A in a certain district. Total population in the 3 villages is 1120 households (392 in village X; 320 in village Y; 408 in village Z). How would you sample 42 households using stratified sampling, taking the village as the stratification unit?
- Ask each participant to write the procedure on paper. Choose two participants (1 male, 1 female) to respond to the question. Ask other participants for any response different from those presented
- Give your response. Refer participants to Participants manual sub session 3.3.1b Individual exercise **5**

Individual exercise 6: Using cluster sampling with PPS and equal probability
- Provide to each participant a copy of worked example on how to use cluster sampling using PPS and equal probability
- Describe clearly the procedure for each technique, relating the clusters to villages within districts where participants work
- Refer participants to Participants manual 3.3.1(b) Individual exercise 6

Individual exercise 7: Selecting a random sample using multistage sampling
- Write on flipchart and post on the wall the following question

Question: How would you select students at university Q using multistage sampling to participate in a survey to investigate their opinion regarding their university? Hint: University Q is divided into Faculties and each Faculty is divided into Departments. Each Faculty offers different degree courses
- Ask each participant to write the sampling stages and procedure on paper. Choose two participants (1 male, 1 female) to respond to the question. Ask other participants for any response different from those presented
- Give your response. Refer participants to Participants manual sub session 3.3.1(b) Individual exercise **7**

Individual reading exercise 8. Sampling guide
- Each participant should relate sampling issues learnt in class with what is documented in literature in Handout 3
- Refer participants to the Participants manual sub session 3.3.1(b) Sampling guide

vi) Sampling unit and challenges of reaching selected households
Presentation: Sampling unit
- Explain that in addition to sampling methods and techniques, it is important to decide what the sampling unit will be
- Sometimes, more than one sampling unit is required, depending upon the information required from the study
- Show Slide 3.65 and explain what is a sampling unit and an example

Slide 3.65 Sampling unit

Sampling unit

- is a single unit of a population (e.g., a person, a household) from whom the investigator will sample and assessment/survey data will refer

  e.g. Determining prevalence of diarrhoea in children below 36 months

  — not every house has a child of this age category
  — need to develop sampling frame of children below 36 months or of households with children below 36 months or factor in the need to skip households to find one with a child below 36 months

vi) Challenges of reaching all selected households

Presentation: Challenges of reaching all selected households
- Show Slide 3.66 and describe challenges of reaching selected households

Slide 3.66 **Challenges of reaching all selected households**

Challenges of reaching selected households

• No individuals/households may be excluded or substituted for any reason
 	
WHAT IF?
  o Selected village cannot be reached due to heavy rains and you cannot cross the river???
  o Separate households are difficult to identify e.g. three families living in the same house and eating together???
  o Person needed to interview is not home???
  o Head of household refuses to be interviewed???

c) Sample size
b) **Presentation:** Sample size
- Explain that sample size is determined by measurement indicators (or outcome measures in case of interventions) e.g. prevalence/mean of stunting, mortality rate, etc
- In practice, sample size calculations are almost always a trade-off between the ideal and the feasible; a sample size too small gives results with limited precision, increasing sample size produces small improvements in precision yet may increase cost unnecessarily
- Show slide 3.67 and explain issues related to sample size requirements

Slide 3.67 Sample size requirements

Sample size requirements
Sample size calculations depend if one needs to: • measure a variable (mean, rate, proportion) in one group (descriptive study) • compare difference between two groups (cohort, case-control study) • demonstrate a difference between two intervention groups **Investigator needs to specify the following in calculations:** • baseline level of indicator; if value do not exist use similar studies in literature • magnitude of change or comparison group differences expected to be reliably measured • how likely the observed result can arise by chance (level of statistical significance) • probability of correctly identifying a difference between two groups when one genuinely exists (statistical power)

Individual reading exercise 9: Issues in sample size calculations
- Provide a copy of two published articles (Handouts 4a and 4b) on sample size calculations to each participant and ask each participant to read the articles at home.
- Each participant should relate types of study designs learnt in class with what is documented in literature
- Refer participants to the **Participants manual 3.3.1 Sample size**

3.3.2. Ethical considerations in conducting nutrition activities (20 minutes)

- Explain that broader ethical principles provide a basis on which specific rules on human research may be formulated, criticised and interpreted.

Brainstorm: What major ethical principles govern research on human subjects?
- List responses on flipchart.
- Compare them with the information on slide 3.68 ethical principles govern research on human subjects

Slide 3.68 Ethical principles on human subjects

Ethical principles on human subjects

1. **Respect for persons** requires researchers to take seriously choices of autonomous people, i.e. people can responsibly make own decisions (**informed consent**)
2. **Beneficence** obliges researchers not to harm needlessly, to promote the good (maximize benefits, minimize harms) of subjects
3. **Justice** is ethical obligation to distribute benefits and burdens of research fairly, not exploit the vulnerable, not exclude without good reason those who may benefit from study
4. **Respect for communities** obliges researchers to respect communal values and abide by communal authorities decisions

Other ethical issues
- Scientific merit of study/research/activity
- Confidentiality (individual level) of information collected

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- Explain that:
  - Respect for persons is the source of the moral rules of informed consent. In order for informed consent to be valid, the research subject must have adequate information, have cognitive capacity to make the choice, can choose freely and understand what is at stake in the decision.
  - Ethical review committees/boards of government, academic/research institutions evaluate (comment, guide, approve, monitor) proposed study/research/activity involving human subjects according to international standards

☐ Each institutional review board has own submission requirements. Essential requirements include application/covering letter, study proposal/protocol, informed consent forms (official & local language), clearance fee, curriculum vitae of investigators, and any other significant requirements

☐ In Tanzania, ethics approval is requested from National Institute for Medical Research (NIMR). It is supposed to ensure that proposed activity is responsive to the nutritional and health needs and priorities of the country, and meets the requisite ethical standards

Brainstorm: What common ethical mistakes are most likely to be committed by researchers? List responses on flipchart and then compare them with the information on Slide 3.69

Slide 3.69 Common ethical mistakes

Common ethical mistakes

- Deception in gaining the cooperation of participants
- Invasion of privacy
- Violation of confidentiality
- Coercion
- Empty promises made to respondents
- Injury or harm to participants (physical, economic, psychological)

Discussion: Informed consent and sample of informed consent certificate

▪ Facilitate discussion of informed consent issues, namely study/research information sheet and certificate of informed consent.

▪ Refer participants to Participants manual 3.3.2 Informed consent and sample of informed consent certificate. Ask 4 volunteers to take turns reading aloud sections of the informed consent.

3.3.3. Mobilisation of resources for survey and field work organisation (20min)

▪ Explain that nutrition activities involve a lot of resources (human and non-human), for considerable periods of time, working under difficult conditions, thus they should be well arranged, organised and coordinated

▪ **Presentation**

Slide 3.70 Mobilisation of resources

Mobilisation of resources

- Finances and petty cash
- Personnel (team leader, field supervisor, field assistants, data entry clerk, data analyst)
- Equipment (calibrated), supplies and other materials (purchased/hired, checked)
- Vehicles/bus/motorcycles, etc
- Daily subsistence allowance, accommodation, communication, etc
- Organisation plan & schedule of activities
- Logistics (location, respondents, etc)

▪ **Presentation**

Slide 3.71 Field assistants' considerations

Field assistants considerations

Training
- conducted prior to data collection
- assistants undergo same training regardless of former experience to ensure data quality and standardise the data collection process

Participation in pre-testing data collection tools
- after training, assistants pre-test the process & tools in similar community
- demonstrate assistants' performance
- allows correcting deficiencies in interview methods

▪ Explain that:
  ◻ When resources are being mobilised for field work, it is useful to draw up an organisational plan outlining the activities, functions of team members, and descriptions of procedures to be followed for each activity (e.g. how questionnaire should be completed, what should be done with the forms at the end of the day, etc)
  ◻ Planning must take account of climatic and seasonal factors. These affect access to the study area (e.g. flooding) and availability of respondents (e.g. seasonal migrations for work, working on farms during planting or harvesting seasons). It should also take into account market days, local holidays and festivals, and local reproductive and child health (RCH) activities

☐ Prior to commencement of the activity, one or several visits should be made to village/institution leaders and other representatives to discuss the activity, learn about the local situation, needs, challenges, opportunities, obtain communal permission to conduct the study, and agree on when to carry out the activity. This facilitates acceptability, ownership and smooth implementation of the activity

3.3.4. Data collection methods and sources (130 minutes)

Discussion: Issues to consider when planning how data will be collected

▪ Facilitate discussion on issues to consider when planning how data will be collected, namely:

☐ Required information and all relevant variables

☐ Sources of information

☐ Frequency of data collection: frequently (baseline, mid-term, final), twice (baseline, final), quarterly, monthly

☐ Cost-effective way of obtaining information.

▪ Refer participants to **Participants manual 3.3.4 Data collection methods and sources**. Ask 4 volunteers to take turns reading aloud first parts of the sections.

Brainstorm: What methods are used to collect data?

▪ List responses on flipchart

▪ Explain that:

☐ There are two main data collection methods, quantitative and qualitative

☐ Method selected will depend on type of study questions, funding, time available to collect information, and number of available assistants to assist with data collection. Field assistants will need training so that data is collected in a reliable and valid way

☐ Refer participants to Participants manual 3.3.4 Comparison of quantitative and qualitative **methodological approaches**

a) Quantitative methods

Presentation: Quantitative methods

▪ Show Slide 3.72 and describe the quantitative methods of data collection

Slide 3.72 quantitative methods of data collection

Quantitative methods

- seek to quantify variation, predict causal relationships, confirm hypotheses about phenomena
- question formats are closed-ended, requiring limited responses
- Techniques:
  - structured interviews using structured questionnaires
  - semi-structured interviews with open-ended questions
  - survey
- allows meaningful comparison of responses across respondents in different study sites

b) Qualitative methods

Presentation: Qualitative methods

▪ Show Slide 3.73 and describe the qualitative methods of data collection

Slide 3.73 Qualitative methods of data collection

Qualitative methods

- provides in-depth understanding of processes and relationships in the context of social and cultural situation; explores reasons for certain behaviours
- question formats are open-ended
- Techniques:
  - in-depth interviews
  - focus group discussions (FGD)
  - structured and participant observations
  - documents inspection (or content analysis)
  - photograph inspection
- Data is textual (field notes)

Discussion: Description of qualitative techniques
- Facilitate discussion of qualitative techniques, namely in-depth interviews, focus group discussions (FGD), structured observations, participant observations, documents inspection (or content analysis) and photograph inspection
- Refer participants to Participants manual 3.3.4.2 Qualitative methods. Ask 6 volunteers to take turns reading aloud each technique

Integrating quantitative and qualitative methods

Presentation: Integrating quantitative and qualitative methods
- ☐ Explain that to achieve greater reliability and validity, a mixture of qualitative and quantitative approaches should be used. This combination is commonly known as mixed methods or multi-method approach
- ☐ Show Slide 3.74 and describe the integration of quantitative and qualitative methods in data collection

Slide 3.74 Integrating quantitative and qualitative methods

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Integrating quantitative and qualitative methods

- mixed methods or multi-method approach
- aims to achieve greater reliability and validity
- Qualitative can be conducted as an essential preliminary to quantitative research
- Qualitative can supplement quantitative work
  - interpret and better understand the complex reality of a given situation and the implications of quantitative data
- part of validation process "**triangulation**"
  - three or more methods are used and results compared for convergence (e.g. large scale survey + focus groups + observation)

</div>

Individual reading exercise 10: Qualitative methods
- Provide to each participant a copy of two published articles (Handouts 5a, 5b, and 5c) on qualitative research methods. Ask each participant to read the documents at home.
- Each participant should relate qualitative research techniques learnt in class with what is documented in literature
- Refer participants to the Participants manual sub session 3.3.4(b) Individual reading exercise 10

  c) Use of secondary data collected by different sectors
- Explain that:

☐ Information that has already been collected for a purpose other than your current research project, but has some relevance and utility for your research.

☐ Examples of secondary data include Tanzania Demographic and Health Survey [TDHS]; reports of household income and food security situation from government/development partners; morbidity and mortality data from health facilities; other routinely collected information

☐ Refer participants to Participants manual sub session 3.3.4(c) Use of secondary data collected by different **sectors**. Ask four volunteers to take turns to read the section aloud

d) Development of data collection tools
▪ **Presentation**

Slide 3.75 Steps in designing structured questionnaires

Steps in designing structured questionnaires
1. Define topics, outline information, prepare variable list
2. Design first draft, organise questions (flow, short sentences, simple language, easy format, clear coding)
3. Revise questionnaire
4. Pre-test questionnaire
5. Modify/redraft questionnaire. Pre-test again (same respondents, same or different interviewers)
6. Prepare final draft
7. Administer questionnaire

Group exercise 11: Designing data collection tools
▪ Explain that after learning quantitative and qualitative techniques of data collection, participants will now practice the designing of the following tools: questionnaire, focus group discussion (FGD) guide, in-depth interview guide, and structured observation checklist.
▪ Ask participants to form groups of four individuals, by each participant counting 1, 2, 3, 4, then repeating the process again until each has a number.
▪ Assign each group a tool as follows:
  o Group 1 (in-depth interview guide); Group 2 (questionnaire); Group 3 (Focus Group Discussion guide); and Group 4 (structured observation checklist)
  o Any random way of assigning the tools can be used
▪ Ask participants to use Nutrition-specific and nutrition-sensitive issues to assist with identification of issues for inclusion in the tools. Refer participants to Participants manual sub session 3.3.4(d) Development of data collection tools (Table 5. Nutrition-

specific and nutrition-sensitive issues to consider when designing data collection tools)
- Allow 3 minutes of objective formulation. Let each group state own objective in plenary and assess the objectives to avoid repetitions/overlap. If objectives are different, let each group continue with tools development. If not, ask groups with similar objectives to revise
- Allow 22 minutes of tools development
- Thereafter, ask one volunteer from each group to present their tools in plenary. Facilitate discussion and fill in gaps where needed

e) Tools validation
Discussion: Validation of data collection tools
- Explain that tool validation is the overall expression for a sequence of activities taken in order to demonstrate and document that a specific designed tool is valid, reliable, precise, sensitive and specific enough for appropriate data collection

Presentation: Validation of data collection tools
- Show Slide 3.76 Validation of data collection tools and description of ways in which data collection tools can be validated

Slide 3.76 Validation of data collection tools

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Validation of data collection tools

- sequence of activities to demonstrate and document that a designed tool investigates what it was intended to investigate; reliable, precise, sensitive and specific

How?
- Training field assistants
- Pre-testing tools
- Supervising data collection process
- Checking and reviewing data before analysis

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- Refer participants to Participants manual sub session 3.3.4(e) Tools validation. Ask two volunteers to take turns reading aloud each technique

Role-play: Administering a questionnaire, conducting an in-depth interview and FGD
- Explain that participants will now practice the administration of some of the developed tools (questionnaire, FGD guide, key informant interview guide). This will be done by role-plays among the participants
- Select 2 questionnaires, 2 interview guides and 2 FGD guides for role-play

- Ask participants to form groups of three individuals, by each participant counting 1, 2, or 3. Participants who counted 1 will be Group 1 and will practice the administration of either of the two in-depth interview guides. Similarly, participants who counted 2 will be Group 2 and will practice administration of either of the two questionnaires; and Group 3 will practice the administration of either of the two FGD guides
- Distribute the selected tools to respective groups. Inform participants that all responses should be recorded in a tool/form or sheet of paper
- Ask participants to distribute roles among group members as follows:

Group	Tool to role-play	Task to role-play
1	In-depth interview guides	Interviewer, respondent
2	Questionnaires	Interviewer, respondent
3	FGD guides	Moderator, note taker, 6 FGD participants

- Give participants 3 minutes to prepare
- Give 7 minutes to Groups 1 and 2 to conduct each interview. Give 15 minutes to Group 3 to conduct each FGD
- Ask group members to switch roles so that each participant has a chance to practice multiple roles and/or tools
- Move around the groups to observe the role-plays and provide feedback as needed
- After 30 minutes, stop the exercise. Ask participants to give their opinion regarding the exercise

General discussion
- Summarise what was covered, namely:
  - Study design, sampling and sample size
  - Ethical considerations in conducting nutrition activities
  - Mobilisation of resources for survey and field work organisation
  - Data collection methods and sources
- Ask participants if they have any questions regarding the topics covered. Discuss any issues that need clarification
- Refer participants to Participants manual sub session 3.3.1 to 3.3.4 for further reading and learning

SESSION FOUR

3.4. Data Management, Interpretation and Dissemination

Duration: 6 hours 30 min

Aim of the session

To impart skills and knowledge to participants on data management and communication
- Introduce the subject by presenting the sessions aim and objectives.
- Tell the participants briefly that this session is all about data handling.

- Explain that after the formal data collection using questionnaires the data has to be coded in respective software for enabling data entry and further analysis.
- Show slide 3.77 session learning objectives.
- Appoint one participant to read out the slide 3.77 on behalf of other participants

Learning Objectives

At the end of this session the participants will be able to:-
i. Build skills in basic data entry, cleaning and analysis as part of data management cycle
ii. Run various software used in analyzing nutrition data such as Emergency Nutrition Assessment (ENA), Statistical Production and Service Solutions (SPSS), WHO Anthro and WHO AnthroPlus)
iii. Show skills in data interpretation
iv. Design dissemination of nutrition information

Presentation:

- Explain to the participants that various skills are required to handle data intended for various purposes and intended audience
- Point out the areas where the session is going to cover as mentioned in the following box

The areas covered in this session include:-
- The data management cycle
- Data Base and Information
- Data entry into the computer
- data cleaning and organization
- Data archiving
- Data analysis using relevant software
- Summarizing data
- Nutrition assessment software (SPSS, WHO Anthro, WHO AnthroPlus) and their use in data management and statistical analysis
- Data interpretation.
- Disseminating nutrition information

3.4.1. Data management cycle:

Introduce the Data Management cycle and tell the participants that data management cycle involves several stages and that the there are several stages. However, red circled area is the one considered during data entry to analysis stage.

Show slide 3.78 Data management cycle.

Slide 3.78 Data management cycle

Data Management cycle:

Data management cycle

Design questionnaire ⟶ **Enumerators collect data in the field**

Design survey

Conception

Manual checking, editing

Reporting of results

Data analysis

Data entered onto computer

Computer data cleaning and organization

3
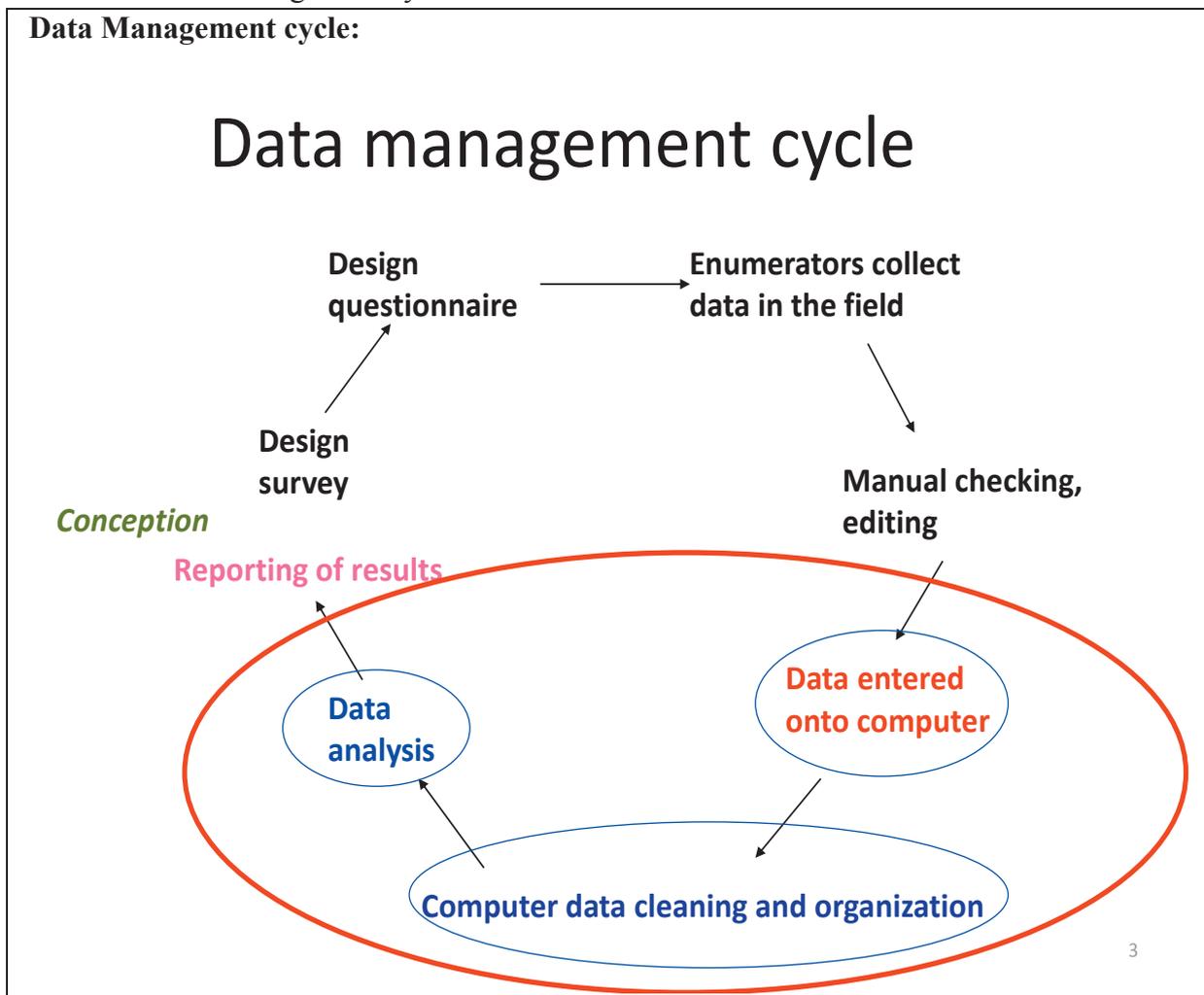
- ▪ Introduce the purpose of having data base. Data has to be kept for reporting and future reference. Have one participant read the slide on behalf of the participants

Brainstorm: What are some of the data bases in their working places? List the responses on a flip chart then describe the data processing.

Show slide 3.79 Processing, Data Base and Information and give description of each data process

Slide 3.79 Processing, Data Base and Information

Data Processing, Data Base and Information
Data processing involves:-
- ➢ Coding data
- ➢ Entering data
- ➢ Managing data
- ➢ Cleaning data
- ➢ Recoding data

61

> ➢ Handling missing data

Coding data: Coding scheme is a set of rules for creating usable data from questionnaire responses. This should be done as early as possible in design stage and should reflect how data will be used in analysis (For example creation of categorical variables: Sex 1= Male; 2 = Female).

Entering data: There are various methods of data entry, these are:- (i) Manual entering

(i) Computer assisted personal interviewing (CAPI) (iii) Computer-assisted telephone interviewing (CATI) (iv) Computer-assisted survey entry (e.g., Teleform).

Cleaning data: Once data are entered into the computer, they should be verified. The collected data is verified to determine whether it is correct as required

Managing data: Management of data is the process through which collected data is transformed into a form that computer can understand

Recoding data: It is often useful to recode original data into new variables. There are different types and uses for recoded variable. For instance Hemoglobin concentration data variable to anemia status.

Handling missing data: Missing data can occur because of nonresponse: no information is provided for several items or no information is provided for a whole unit.

Database

- Show slide 3.80 and clarify the meaning of database

Slide 3.80 The meaning of a database

What is a database?
A database is any organized collection of data
This may include:
- All research data done in a year
- Nutritional status of children under 5 years of age
- Data on prevalence of malnutrition in a District in 5 years
- Records of nutrition interventions done in a district
- Compilation of nutrition reports for a district;
- Longitudinal tracking of infant deaths, low birth weights; growth rates

Forms of database

Explain the different forms in which database can be kept in working places for reference such as maps and figures. Inform the participants that, these are references from previous collected data

Brainstorm: Ask the participants if they have similar forms of databases in their offices and let them write on a flip chart. Compare to what is presented on the slide 3.81

Individual Exercise: Think of any other five databases that exist apart from what you have mentioned (5 minutes)

Slide 3.81 Forms of database

Forms of data base
Data can be in form of organized tables: such as population of people who are Underweight, overweight and obese. Data in the form of spreadsheet describing different issues with/with no relation between rows and columns. Maps: Data can be illustrated in form of maps (i) Data can be illustrated in form of charts; It is a way to present the primary analysed data (ii) Data can be in form of photos: Such form of data may describe existing conditions
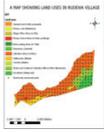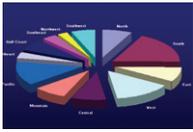
| (i) | (ii) | (iii) |

3.4.2. Data and Information

- Explain to the participants the difference between data and information that numerical data are just numbers, which if not changed to knowledge they will mean nothing to the reader or user

Brainstorm: What is data and what is information. Let one of the participant write on a flip chart. Later show the slide and compare on what has been presented on slide 3.82

Slide 3.82 Differences between Data & Information

Difference between Data & Information
• **Data is** : Facts taken as true as the starting point of a piece of reasoning • **Information is**: Knowledge about something • When **data** is transferred to knowledge, it becomes an **information** • Data is **useful** only if it **gives** information

Forms Information
- **Explain** to the participants that the various forms of data collected and entered in various software are analysed into quantitative and qualitative information.
- Inform that both forms of information are important depending on what is to be presented and explained

Brainstorming: Ask the participants to differentiate the two categories of information. Let one of the participant write on a flip chart. Later show the slide and compare on what has been presented on slide number 3.83 and 3.84

Individual Exercise: Write down on a piece of paper the forms and types of information existing in your office (Write 3 each)

Types of Information
There are two types of information
- Qualitative information
- Quantitative Information

Slide 3.83 Qualitative information

Qualitative information
- Information that cannot be described through numbers,
- Seeks to find qualities rather than quantities

Qualitative information can be assessed through grades (high/ low, – or good/ bad, or positive/ negative) according to the research objectives

Slide 3.84 Quantitative information

Quantitative information
- Information that can be described through numbers
- Seeks to determine amounts

One document can provide both:
- Quantitative information such as % of different uses
- Qualitative information such as the location and types of uses
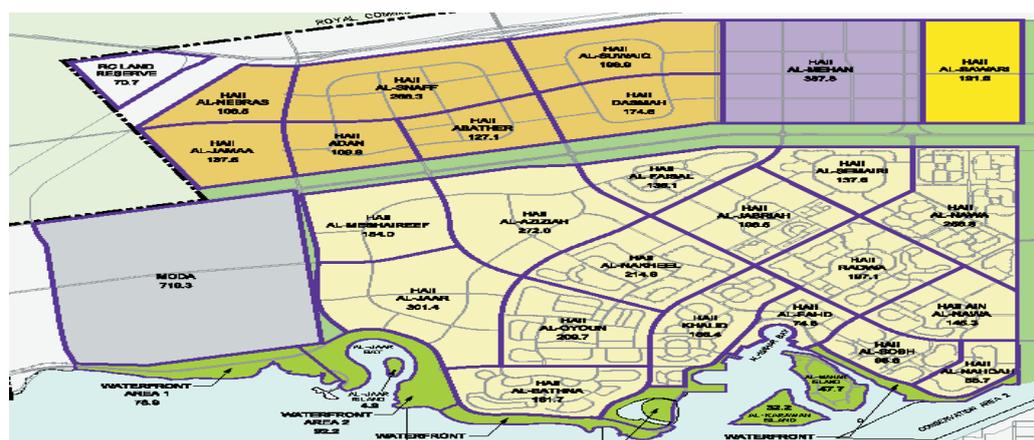
3.4.3. A computer as an equipment for data entry

Presentation: Data entry into a computer
- Explain to the participants that we are about to get into data entry part. The equipment (computer) used for data entry is the computer which has various parts and functions.
- Inform that a computer is an data/information processing equipment using an operating system and being run by a number of software

Brainstorm Ask the participants to mention the various parts of the computer. What closely if they understand what you mean. Then show slide number 3.85 Data entry into a computer

Slide 3.85 Data entry into a computer

Data entry into a computer
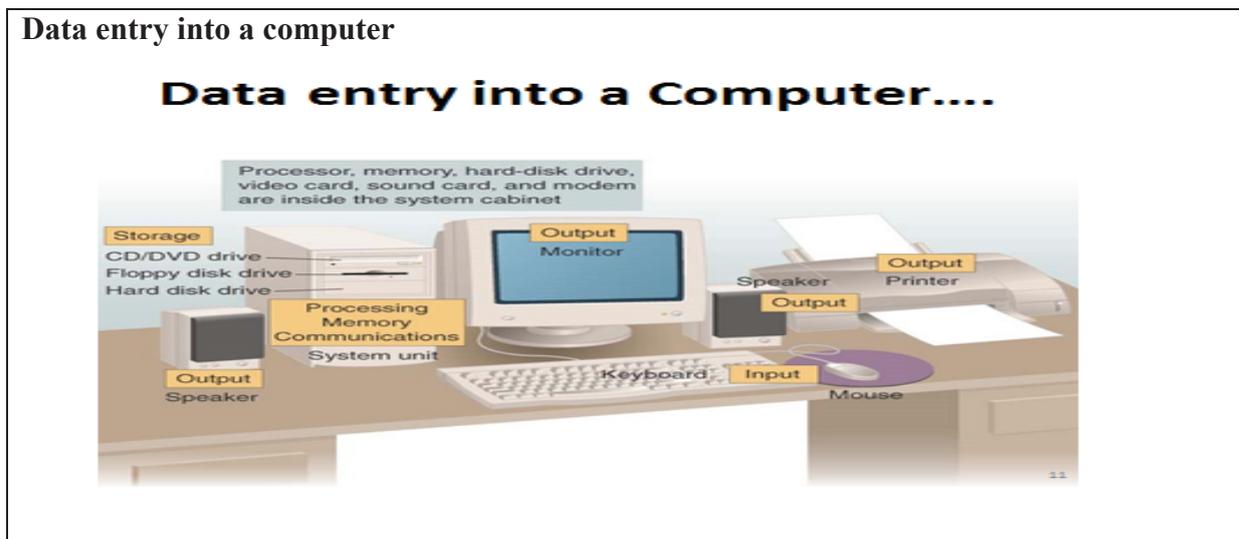
Explain: Data gathered from the questionnaire is required to be entered into the computer. Insist that there are several mechanisms**.** Inform the participant that several software are used for data entry depending on what is required. Inform the participants that Nutritional software like ENA, WHO Anthro, that are specific for children, the data is entered straight as the data capture template for variables of interest are inbuilt. Expose the participants on the software we are going to use in this session: Either Emergency Nutrition Assessment (ENA) or WHO Anthro and Statistical Package and Service Solutions (SPSS).

- ▪ Show the participants how one nutrition software like ENA data entry window looks like. Open the software for participants to see and try out

Slide 3.86 Data entry

Data entry
- ❖ Data gathered from the questionnaire are entered into the computer by different mechanisms depending on the requirements of the software of interest
- ❖ In Nutritional software like ENA, WHO Anthro, **that are specific for children,** the data is entered straight as the data capture template for variables of interest are inbuilt. Therefore questionnaire has to be structured in a way the software requires.
 For instance in the next slide for ENA software, information regarding each surveyed child should appear in the questionnaire i.e. Survey date, Cluster, Team ID, Household, Sex, Birth date, months, weight, Height, Edema and MUAC

- ▪ Tell the participants that in other questionnaires, that are general or are for various purposes, data entry is done in non- specific software such as SPSS

Slide 3.87 Other aspects to consider in data entry

: Data Entry…

➢ If the questions are coded, a template or data capture is created. An Example of a coded question is: What is the marital status of the respondent? (1) Married (2) Single (3) Divorced (4) Cohabit

➢ The template or data capture, is another way of writing the whole coded questionnaire in the software before the actual data entry

➢ Each coded question is entered in the template depending whether is a

➢ Numerical: Entered straight as numerical data is default

➢ Categorical: The categories have to be given values

➢ Date: Choose the preferred date format

➢ String: If a the variable is not numeric for example Name of the respondent

❖ An Example of a Un-coded question is: What do you consider as best practices for breastfeeding your baby?

❖ This question can have a variety of answers depending on how the respondent explains

❖ The variety of almost similar responses should be lumped together

❖ The groups obtained are given codes and can now be entered in the software as the coded questions

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▪ Insist to the participants that if the questionnaire is Not Coded, especially for open ended questionnaire, time has to be created to code the closely related responses and then prepare a data capture in SPSS

3.4.4. Data cleaning

Presentation: Data cleaning

▪ Inform the participants' that, after data entry there is a particular need to clean data. Data cleaning is extremely important when the data collection method allows inconsistencies. For instance when a number of people are involved in data collection. All data cleaning work must be carefully documented and available in a report.

Brainstorm: Ask the Participants why they think data should be cleaned apart from the reasons given above. Write responses on a flip chart compare with the ones on slide number 3.88 Data Cleaning

Slide 3.88 Data Cleaning

Data cleaning includes the following activities:-

– **Removal of outliers**: Invalid, impossible, or extreme values may be removed from the dataset. Outliers might also be marked for exclusion for the purpose of certain analyses. For instance: Length in cm of infants under one month old: 54, 56, 52, 55, 51, 75. Therefore an outlier here is a child with 75 cm

– **Labeling missing values**: It may be necessary to label each missing value with the reason it is considered missing in order to guarantee accurate bases for analysis.

3.4.5. Data archiving

- **Inform** the participants' that, after data entry and cleaning, there are various ways the data is archived for future use.
- Explain that the data is archived for future use by choosing the design or how the data should be organized, storage method and how secure the data is needed to be kept.
- Show the various equipment that can be used to store securely your data after every entry or for a long time storage

Brainstorm: Ask the Participants why data should be archived and write responses on a flip chart

Individual Exercise: How do you archive your data in your office? Write your responses on a piece of paper (5 minutes). The participants should exchange the papers with nearest neighbour and read the responses loudly.

Observe: the responses and tell them whether they are right or wrong and the reason behind

Slide 3.89 Data Archiving

Data Archiving
General term that covers a broad range of data applications, which refers to basic data management principles or to specific expertise on the following categories:-   (1) Data design   (2) Data storage,   (3) Data security.

3.4.6. Data design

- Inform the participants' that design archiving refers to the way data is organized

Brainstorming: Ask the Participants which design exist for data organization?

Write responses on a flip chart and then show slide 3.90 data design

- Tell the participants that data is archived for future use and the data can be stored in a design preferred, either in form of tables, spread sheets

Slide 3.90 Data design

Data design
Refers to the way data is organized.   • For instance one can organized the data in form of Tables or figures in word program   • For some applications, it may make sense to store data in a text format   • Other data has to be organized in a spread sheet format for instance Excel, SPSS (numerical)   • Regardless of what format the developer uses, the data must be organized within the file in a structure that can be recognized by the associated program

3.4.7. Data storage

- Inform the participants' that data storage refers to the way data is stored

  Brainstorm: Ask the Participants which storage methods exist and their advantages and disadvantages

Write responses on a flip chart and then clarify the points by the help of messages as shown in the slide 3.90

Show slide 3.91 data storage

- Tell the participants that data is archived for future use and the data can be stored in a design preferred, either in form of tables, spread sheets

Slide 3.91 Data storage

Data storage
- Refers to the various ways of storing data. This include hard drives, flash memory and hard copies
- When selecting an appropriate data storage medium, aspects such as data access and data integrity are important to consider.
  - For example, data that is accessed and modified on a regular basis should be stored on a hard drive or flash media
    - This is because these types of media provide quick access and allow the data to be moved or changed
    - Archived data, on the other hand, may be stored on optical media, such as CDs and DVDs, since the data does not need to be changed
    - Optical discs also maintain data integrity longer than hard drives, which makes them a good choice for archival purposes

Show slide 3.92

Slide 3.92 Various gadgets for storage

Show the slide to participants to appreciate the various gadgets for storage
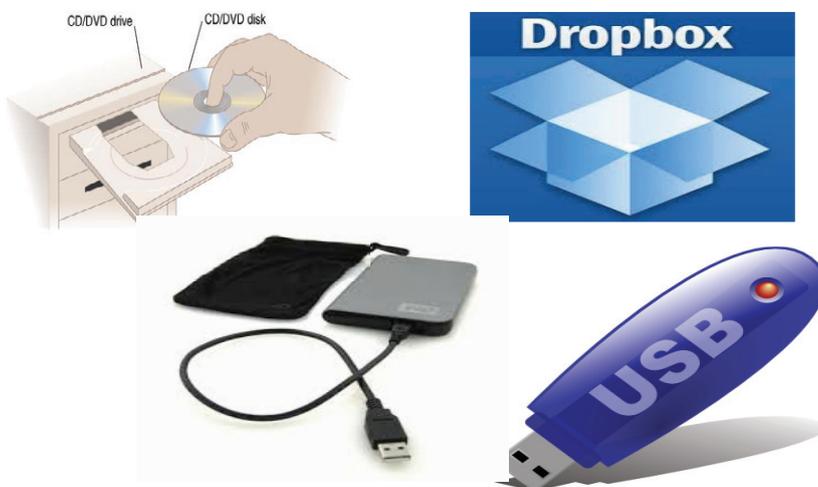
3.4.8. Data security

Inform the participants' that security involves protecting the data which one has collected
Brainstorm: Ask the Participants how data can be secured?
Write responses on a flip chart   and then show slide 3.93 data design

  ▪ Tell the participants that data is archived for future use and the data can be stored in a design preferred, either in form of tables, spread sheets

Show slide 3.93
Slide 3.93 Various ways to secure data

3.4.8 Data security
This involves protecting the data which one has collected. Many individuals and research stations store valuable data on computer systems.

  ♦ Imagine if your life was stored in your computer, you understand how important that data could be and to what extent you would protect it

      o **Therefore, it is wise to take steps to protect the privacy and integrity of your data**

  ♦ Some steps include putting passwords to prevent unauthorized access to your computer

  Why do you think data should be archived?

3.4.9. Data Analysis Overview

Show slide 3.94 and give explanations indicated below.

Slide 3.94 Data analysis

Data Analysis
  • Turning raw data into useful information
  • Purpose is to provide answers to research/project/program questions
  • Best quality and well collected data mean nothing if not **appropriately analyzed**—or if **not analyzed** at all
  • Analysis does not mean using computer software package
    – The analysis should intend to answer the question: "Is my research/project/program meeting the laid down objectives?"

  ▪ Inform the participants that, It is important to note that, while the terms data and information often are used interchangeably, there is a distinction. *Data* refers to raw, unprocessed numbers, measurements, or text. As discussed above, *Information* refers to data that are processed, organized, structured, or presented in a specific context. Make the participants aware that the process of transforming data into information is data analysis.

Brainstorm: How do they understand by the term data analysis in their own context?
  ▪ Tell one of the participants to write on a flip chart. Ask how they have been doing analysis in their work place

Show slide Slide 3.95 and explain to participants that, Data can be analysed using different software, including nutrition related software and non-nutrition related software

Slide 3.95 Different types of data analysis software

Nutrition software Include
1. ENA
2. EPI-INFO
3. WHO –Anthro
4. WHO Anthro Plus
5. ProPAN

Other software that works with Nutritional Software include
1. Excel
2. SPSS

Show the slides Slide 3.96 and give the overview of different software used for data analysis

Slide 3.96 ENA software

- The acronym 'ENA' stands for Emergency Nutrition Assessment. The original name of the software associated to the SMART initiative was 'Nutrisurvey' but the name was subsequently changed to ENA to differentiate it better from the general nutrition software called NutriSurvey.

- The purpose of ENA for SMART is to make nutrition assessments and mortality rate calculations in emergency situations as easy and reliable as possible. To achieve this it focuses on the most important indicators (anthropometric and mortality data)

Slide 3.97 EpiInfo software

Epi-Info is a public domain statistical software for epidemiology which has been developed by Centers for Disease Control and Prevention.

It allows for electronic survey creation, data entry, and analysis. Within the analysis module, analytic routines include t-tests, ANOVA, nonparametric statistics, cross tabulations and stratification with estimates of odds ratios, risk ratios, and risk differences, logistic regression (conditional and unconditional), survival analysis and analysis of complex survey data.
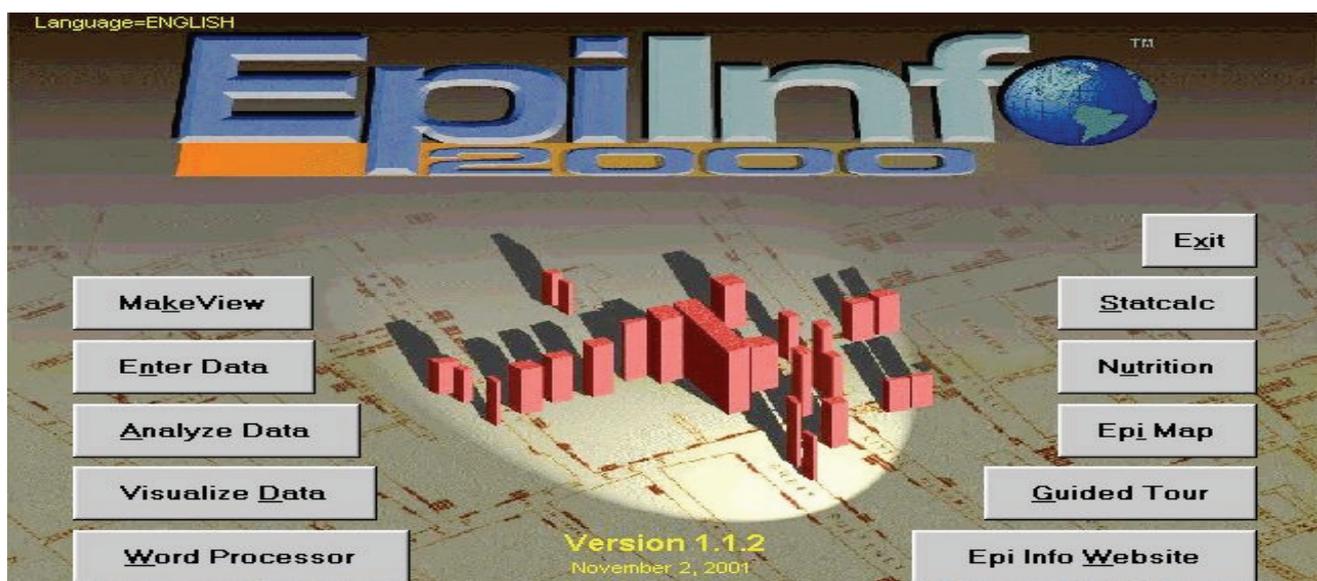
Slide 3.98 WHO Anthro software

Software for assessing growth and development of the world's children(0-5)yrs.

The software consists of three modules:

- Anthropometric calculator

- Individual assessment

- Nutritional survey
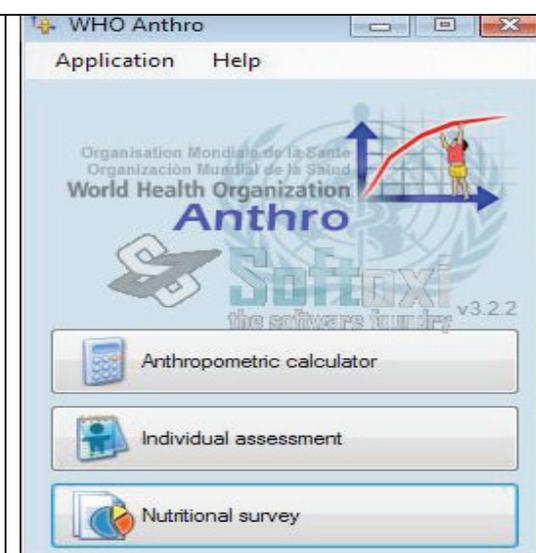
Slide 3.99 WHO-Anthro plus software

WHO AnthroPlus is the same as WHO anthro except in the age categories.

WHO AnthroPlus is a software for the global application of the WHO Reference 2007 for 5-19 years to monitor the growth of school-age children and adolescents. It consists of the following modules:

-Anthropometric calculator
-Individual assessment
- Nutritional survey
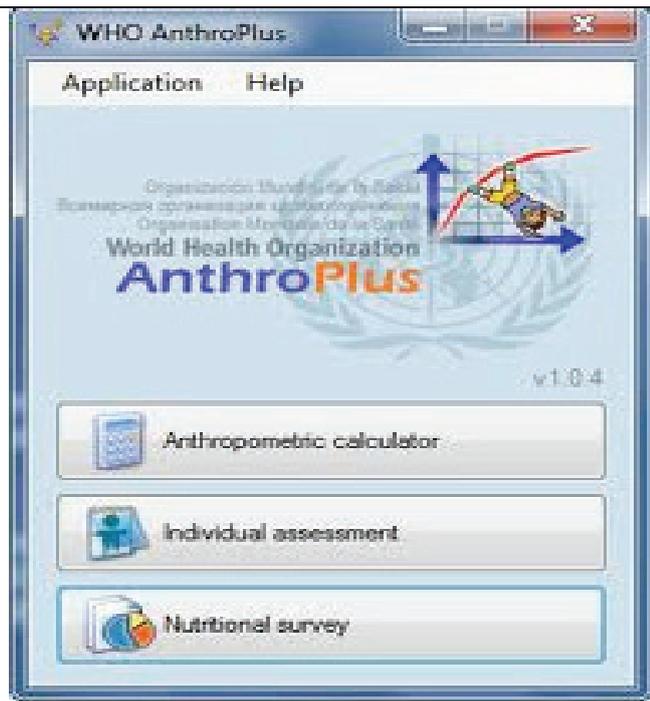
Slide 3.100 WHO-ProPAN software

ProPAN is a set of research tools designed for improving infant and young child feeding practices to prevent early childhood malnutrition
A step by step process:

  Identify nutritional and dietary problems

  Why problems occur

  Design an intervention to address the problems identified

  Evaluate that intervention

Slide 3.101 SPSS software
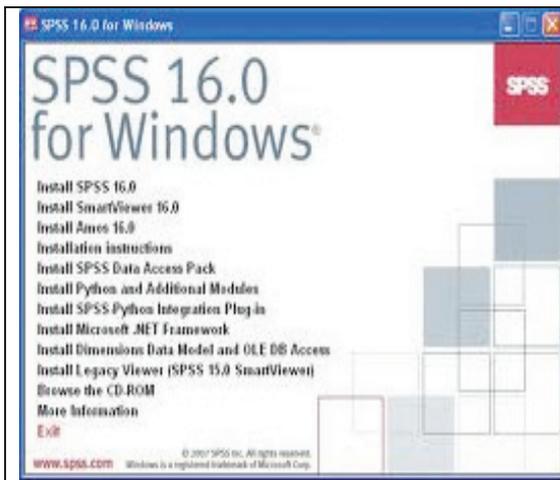
|	Is a software package used for statistical analysis. Originally, it was known Statistical Package for the Social Sciences, later modified to read Statistical Product and Service Solutions One of the most popular statistical packages which can perform highly complex data manipulation and analysis with simple instructions

Slide 3.102 Excel software

	Excel is a spreadsheet program, ☐ Excel is an electronic spreadsheet program that can be used for storing, organizing and manipulating data. ☐ It organizes information (text and numbers) by rows and columns:

3.4.10. Basic analysis:

Explain: That the slide lists the basic statistical terms used in data analysis that we will cover in this session. Show the slide to participants and read out the basic analysis terms.
Brainstorm: Ask the participants if they knew about those terms and what do they mean. Tell them that these are the terms they will be using for reporting in their day to day nutrition activities/reports.

Slide 3.103 Basic analyses

Descriptive analysis
These forms the most common data analysis terms that will be used frequently by nutrition officers in day to day reporting
The most common statistical terms include
Ratio, Proportion, Percentage, Rate,   Mean, Median and **Mode**

Slide number 3.104: Descriptive analysis
Explain to the participants how Ratio, Proportion, Percentage, Rate, Mean, Median and Mode are calculated. Inform the participants that most commonly investigated characteristic of a collection of data (or dataset) is its centre, or the point around which the observations

73

tend to cluster. That the purpose working out the basic analysis is to provide answers to research/project/program questions.

Handout No. 1: Has many worked out examples of measures of central tendency

Brainstorm: Ask participants whether they have ever come across these terminologies. Where are they used most?. Have they ever used them in their respective research works? Write the responses on a flip chart and Try to do some examples with the participants

Slide 3.104 Calculating Ratios

Ratios
Means comparison of two numbers expressed as:
 – a to b, a per b, a:b
- Used to express such comparisons as Nutrition Rehabilitation centers to Malnourished children Calculation a/b
- Example – In district Y, there are 1200 pregnant women and 400 clinics. What is the ratio of pregnant women to clinics?   1200 / 400
- = 3 Pregnant women per clinic, a ratio of 3:1

Calculating ratio
- In Kibaha district, there are 150 pregnant women and 50 clinics
- What is the pregnant woman - to-clinic ratio?
  150
  50
  3:1 or 3 pregnant women to 1 clinic

Slide 3.105 Calculating Proportions

Calculating Proportions
Proportions
- A ratio in which all individuals in the numerator are also in the denominator.
- Used to compare part of the whole, such as proportion of all boys who are less than 10 years old.
- Example: If 40 of 100 Lactating mothers who are on iron supplementation are less than 18 years of age, what is the proportion of young Lactating mothers in the community are on supplementation?
       40/100 = 2/5

Calculating proportions
- Example: If a Community has 12 malnourished Women and 8 malnourished Men, then the proportion of Men who are malnourished is 8/20, or 2/5
- 12+8 = 20
- 8/20
- The multiple can further be reduced to 2/5 = Men

Slide 3.106 Calculating Percentages

Calculating percentages
Percentage
- A way to express a proportion (proportion multiplied by 100)
- Expresses a number in relation to the whole
- Example: Infant males comprise 2/5 of all the infants born last month, or 40% of the infants are male (0.40 x 100)
- Allows us to express a quantity relative to another quantity. Can compare different groups, facilities, countries that may have different denominators

Slide 3.107 Calculating Rate

Calculating Rate
Rate
- Measured with respect to another measured quantity during the same time period
- Used to express the frequency of specific events in a certain time period (fertility rate, mortality rate)
    - Numerator and denominator must be from same time period
    - Often expressed as a ratio (per 1,000)

Calculation of infant mortality rate
    - Number of deaths ÷ population at risk in same time period x 1,000
    - Example – 75 infants (less than one year) died out of 4,000 infants born that year
    - 75/4,000 = .0187 x 1,000 = 18.7
    - *19 infants died per 1,000 live births*

Slide 3.108 Calculating Mortality Rate

Calculating Mortality Rate
In 2012, Mvomero RCH had 50,000 anaemic children. During that same time period, 1,256 children died.
1,256   .025 x 1,000 = 25
50,000
25 children died (mortality rate) per 1,000 anaemic children

Slide 3.109 Calculating Rate of Increase

Calculation rate of increase
- Total number of increase ÷ time of increase
- Used to calculate monthly, quarterly, yearly increases in nutrition service delivery. Example: increase in Number of new complementary foods in the market
- Example: Complementary foods in the market in January, 2013 were 10. In December, 2013 there were 33 new complementary foods. What is the rate of increase of complementary foods per month
- Total number of complementary foods =10 +33 = 43;
- 43 - 10 = 33/11 = 3 (3 complementary foods per month)
- So the rate of increase in complementary foods for the last 11 months was 3 complementary foods per month.

Slide 3.110 Calculating measures of central tendency: Mean

Measures of central tendency: This slide shows how to calculate Mean

Measures of Central Tendency
Measures of the location of the middle or the center of a distribution of data
- Mean
- Median

Mean
- The average of your dataset
- The value obtained by dividing the sum of a set of quantities (For Instance, Households in each village hamlet) by the number of quantities in the set
- Example:(62+44+56+67+89+56) = 374 ÷ 6 = 62.3
- *The mean is sensitive to extreme values*

Number of infants born
  – January: 60, February: 65, March: 52, April: 56, May: 67, June: 47
          (60+65+52+56+67+47) = 337÷ 6 = 55.7

Slide 3.111 Calculating measures of central tendency: Median

Measures of central tendency: This slide shows how to calculate Median

<div align="center">Median</div>

- The middle of a distribution (when numbers are in order: half of the numbers are above the median and half are below the median)
- The median is <u>not</u> as sensitive to extreme values as the mean
- Odd number of numbers, median = the middle number
    – Median of 6, 9, 11 = 9
    – Even number of numbers, median = mean of the two middle numbers
    – Median of 3, 6, 9, 15 = (6+9) /2 = 7.5
- Calculating the median(Counting the number of Ascaris from children's' stomachs)
- Child 1 = 33, Child 2 = 82, Child 3 = 76, Child 4 = 45, Child 5 = 23, Child 6 = 67

- = 76+45 = 121/2 = 60.5

Example (ii) Median for an odd number of values. Question: What is the median of (10, 14, 86, 2, 68, 99,1)?

- – Answer: Sort the values. The values in the data set, arranged from the smallest to the largest, are (1, 2, 10, 14, 68, 86, 99)
- – Find the number in the middle: There are 7 values in the data set. Since there are an odd number of values, the median will be equal to the value in the middle, namely, in the 4th position.
- – Therefore the median of the data set is 14.
- Example (iii): Median for an even number of values. Question: What is the median of (11, 10, 14, 86, 68, 91, 1)
  - – Answer: Sort the values. The values in the data set, arranged from the smallest to the largest, are (1, 2, 10, 11, 14, 68, 86, 91)
- Example (iv) Find the number in the middle: There are 8 values in the data set. Since there are an even number of values, the median will be halfway between the two values in the middle, namely, between the 4th and 5th positions. The value in the 4th position is 11 and the value in the 5th position is 14. The median lies halfway between these two values and is therefore
  - – Median of 3, 6, 9, 15 = (11+14) /2 = 12.5

Slide 3.112 Calculating measures of central tendency: Mode

Measures of central tendency: This slide shows how to calculate Mode

Mode

The is the most commonly occurring value in a distribution. Consider this dataset showing the length of 11 infants, in whole numbers: 54, 54, 54, 55, 56, 57, 57, 58, 58, 60, 60

Simple Frequency distribution of infants lengths

Length (cm)	Frequency
54	3
55	1
56	1
57	2
58	2
60	2

Slide 3.113 Key concepts in data analysis

Key concepts in data analysis

That the purpose working out the basic analysis is to provide answers to research/project/program questions

Descriptive analyses describe the sample/target population and do not define causality – that is, they tell you what, not why

Practical session on data Entry and analysis on ENA, SPSS software

Guide students in data analysis by using ENA and SPSS software; let students practice data entry and data analysis. Use the appended slides for this practical session

3.4.11. Basic guidance when summarizing data

Inform the participants that after any analysis there are ways of summarizing the data in a way other people could understand. For instance: Every table or graph should have a title or heading. The x- and y-axes of a graph should be labeled – include value labels, such as a percentage sign; include a legend. Always cite the source of your data and put the date of data collection or publication. Provide the sample size or the number of people to which the graph is referring (n). Include a footnote if the graphic isn't self-explanatory. These points will pre-empt questions and explain the data. In the next several slides, we'll see examples of these points.

Brainstorm: Each participant should think a hypothetical/real table and graph and put the required labels

Slide 3.114 Basic guidance when summarizing data

Basic guidance when summarizing data
- Ensure graphic has a title
- Label the components of your graphic
- Indicate source of data with date

Basic guidance when summarizing data
- **Explain** that the two main ways of summarizing data are by using tables and charts or graphs. A table is the simplest way of summarizing a set of observations. A table has rows and columns containing data, which can be in the form of absolute numbers or percentages, or both. Discuss the tables and graphs with the participants. Let's start with tables. Most tables show a frequency distribution, which is a set of categories with numerical counts. Here, you see the year as the category and the number of births as the numerical count.
- **Inform the participants that** charts and graphs are visual representations of numerical data and, if well designed, will convey the general patterns of the data. In this bar chart, it shows the Importance of Infant and Young Child Feeding i.e. Breast Feeding & Complementary Foods in child survival **slide number 3.105** Inform the participants data can be summarized to explain a certain trend such as the importance of breastfeeding and complementary food on growth and development of children as presented in **slide number 3.105 and 3.106**
- **Explain** to the participants using pie chart is another visual representations of numerical data. Like in this pie chart it shows how large the prevalence of stunting is in children as depicted in **slide number 3.107.** Read aloud the key messages on this slide on what was presented in the previous slides as indicated in **slide number 3.108.**

Brainstorm: Each participant mention how he/she has been summarizing data in the respective working place

Individual Exercise: Provide hypothetical data on the ages in months of 10 infants (10, 13, 7, 9, 1, 8, 7, 8, 4&5). Let the participants present the information in various forms.

Slide 3. 115 Basic guidance when summarizing data

Basic guidance when summarizing data.

In the relative frequency table, you see the proportion of the total number of births between 2008 and 2009 (181) by 1-year intervals.

The calculation for the first relative frequency is: 65/118 = 0.3591 x 100 = 35.9 (approx 36%).

To interpret this table, we should look at the relative frequencies. What do they tell us?

We can see data across the three decades and what percentage of births occurred in each one. The largest percentage of children were born between 2008 and 2009, compared to the other two years.

Summarizing data

- Tables
  — Simplest way to summarize data
  — Data are presented as absolute numbers or percentages

Tables: Relative frequency

$$\frac{\text{Number of values within an interval}}{\text{Total number of values in the table}} \times 100$$

Percentage of births annualy between 2008 and 2013

Year	Number of births (n)	Relative frequency (%)
2008—2009	65	36
2010—2011	56	31
2012—2013	60	33
Total	181	100

In the relative frequency table, you see the proportion of the total number of births between 2008 and 2009 (181) by 1-year intervals.

Tables: Frequency distribution

| Year	Number of births
2010	75
2011	79
2012	66

Set of categories with numerical counts

The calculation for the first relative frequency is: 65/118 = 0.3591 x 100 = 35.9 (approx 36%).
To interpret this table, we should look at the relative frequencies. What do they tell us?
We can see data across the three decades and what percentage of births occurred in each one. The largest percentage of children were born between 2008 and 2009, compared to the other two years.

Slide 3.116 Charts and Graphs:

Charts and Graphs:

Charts and graphs are visual representations of numerical data and, if well designed, will convey the general patterns of the data. In this bar chart, it shows the Importance of Infant and Young Child Feeding i.e. Breast Feeding & Complementary Fods in child survival.

Importance of IYCF (BF & CF) in child survival

Category	Percentage
Exlusive Breastfeeding for six months and contnuied BF for 12 months	13%
Insecticide treated materials	7%
Complementary feeding (with continued BF)	6%
Zinc	5%
HIB Vaccine	4%
Clean delivery	4%
Water sanitation and hygiene	3%
Antenatal steroids	3%
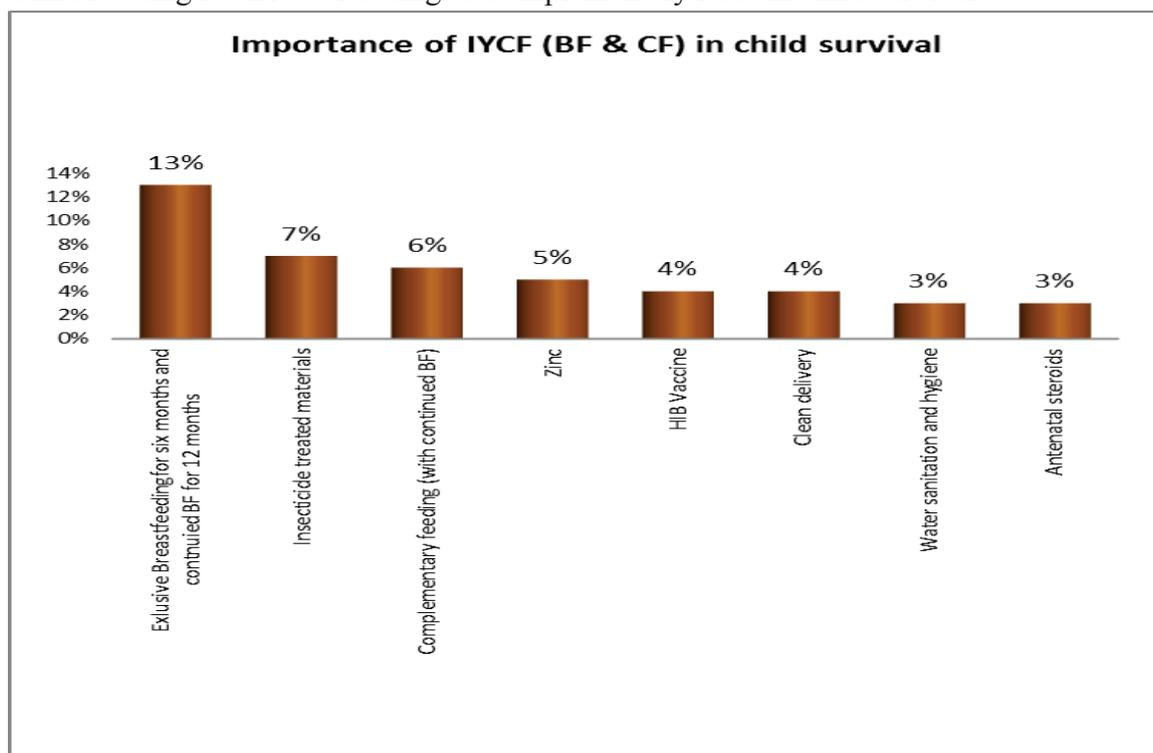
Inform the participants data can be summarized to explain a certain trend such as the importance of breastfeeding and complementary food on growth and development of children

Slide 3.117 **Graphical representation of child feeding**

Importance of BF and CF in stunting reduction

Mean anthropometric *z*-scores by age for **54 studies**, based on WHO standards
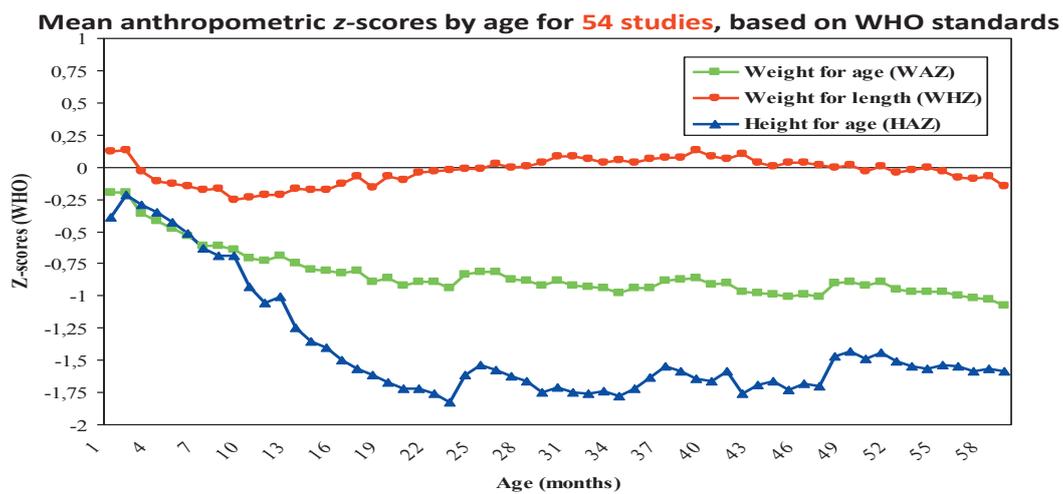
Source: Victora et al. Pediatrics, 2010 Mar;125(3)

Inform the participants graphical technics can be added to explain cetain areas of the graph along the trend such as the window of opportunity from pregnancy to 2 years

Slide 3.118 **Graphical representation of windows of opportunity**

Window of opportunity: pregnancy to 2 years

Mean anthropometric *z*-scores by age for **54 studies**, based on WHO standards

BF+CF

Exclusive BF
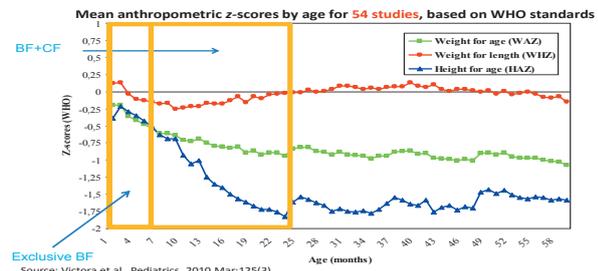
Source: Victora et al. Pediatrics, 2010 Mar;125(3)

Inform the participants that using pie chart is another visual representation of numerical data. Like in this pie chart it shows how large the prevalence of stunting is in children

Slide3.119 Pie chart on representation of nutrition status of children below 5 years
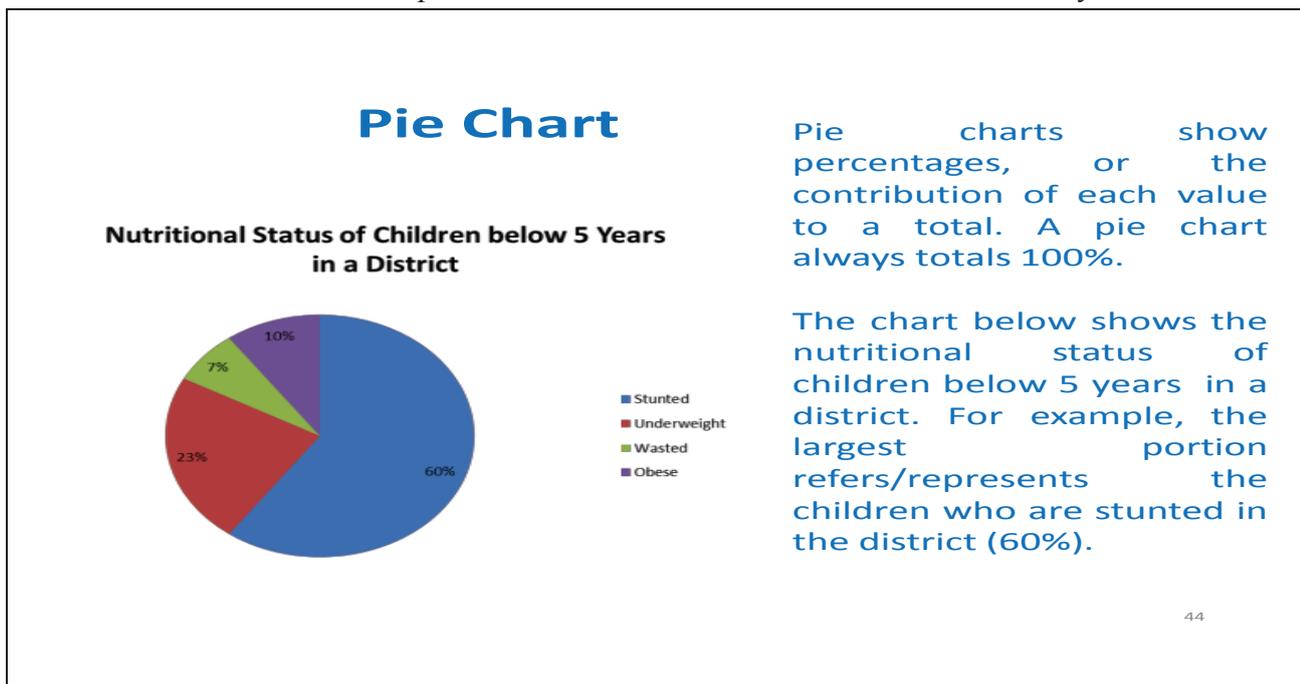
Tell one of the participants to read out the key messages on this slide on what was presented in the previous slides

Slide3.120 Key messages on summarizing data

Key Messages
• Use the right graph for the right data
• Tables – can display a large amount of data
• Graphs/charts – visual, easier to detect patterns
• Label the components of your graphic

3.4.12. Interpretation of the results

Explain to the participants the importance of interpretation of the results after doing an analysis. When looking potential reasons for the findings, we often need additional information that will put our findings into the context of the project. Supplementing the findings with expert opinion is a good way to do this. For example, talk to others with knowledge of the project, or those who are involved in the project, who have in-depth knowledge about the subject matter, and get their opinions about possible causes. For example, if your data show that you have not met your targets, you may want to know if: the community is aware of the service? To answer this, you could talk to community leaders or other providers to get their opinions. Sometimes ad hoc conversations with experts are insufficient. To get a more accurate explanation of your findings, you often will have to consider other data resources. Other interpretations have been done in the Presentations after doing the worked examples.

Brainstorm: If for instance a project to alleviate malnutrition has been operating in four villages, three villages have seen great improvement and the other one have deteriorated, what could be the reasons?

Slide 3.121 Interpretation of results

Interpretation of the results
- Adding meaning to information obtained by making explanations, comparisons and exploring causes and consequences
- Do the indicators meet the objectives?
- How does your results compare to other studies for instance Demographic and Health surveys
- Are there any data gaps to warrant conducting further research?

3.4.13. Disseminating nutrition information

Explain that there are various means for disseminating nutrition findings in a nutritional project or district's nutrition activities.

Brainstorm: Participants should mention a number of dissemination pathways used in their respective working stations. List the responses in a flip chart and then show slide 3.114

Slide 3.122 Disseminating nutrition information

Means of dissemination
Research reports
Oral feedback to local authorities
Flyers, pamphlets, posters
Newspapers, radio & television
Journal articles and Conference Presentation

Timeliness — use the fastest means before the findings loses meaning

SESSION FIVE

3.5. Monitoring and Evaluation of nutrition program and projects

Duration: 4 hours 20 min

Aim of the session

To instil hands-on knowledge and skills to participants to monitor and evaluate nutrition program/project

- ▪ Present the session learning objectives, show slide 3.123 Session learning objectives

Session learning objectives

Slide 3.123 session learning objectives

At the end of this session participants will be able to:
I.   Describe rationale and uses of M&E
II.   Explain different indicators used in M&E
III.   Describe steps in conducting M&E
IV.   Describe Outcome/impact evaluation designs

3.5.1.   Introduction to Monitoring and evaluation

Brainstorm: Ask participants on the following questions.

- • What is monitoring?
- • What is evaluation?
- • Why do we need Monitoring and Evaluation in programs?
- • Uses of M & E

- ▪ Write responses on flip charts and compare with the answers shown in the **slides numbers 3.116, 3.117 and 3.118.** Elaborate each point

Slide3.124 Definition of monitoring

Monitoring
Definition: Is the systematic and continual collection, analysis, interpretation and use of data on key aspects of an intervention and/or its expected results.

Slide 3.125 Definition of Evaluation

Evaluation
Evaluation; Is a systematic process of data collection and analysis, about activities and/or effects of a program, looking to answer an evaluation question.

Slide 3.126 Importance of Monitoring and evaluation

Importance of Monitoring and evaluation
- Provides information on program implementation and achievement of expected results detect
- Improves program management by informing the decision-making process
- Allows for accounting to stakeholders
- Provides Information for planning future resource needs
- Provides useful information for elaborating policies
- Improves effectiveness of advocacy

3.5.2. Indicators for assessing nutrition activities

Brainstorm: "What is indicator?" what are the characteristics of good indicators?
- Let participants discuss and list responses in flip charts and compare them to the information in slide 3.127 and slide 3.128

Presentation:
- Present slide slide 3.127 and slide 3.128 Explain to participants meaning of indicator and characteristics of good indicator.

Slide 3.127 Indicators

An indicator is a variable that measures one aspect of a program or project

- It measures the value of the change in meaningful units for program management

- It focuses on a single aspect of a program or project. Defined in a way that captures specified aspect as precisely as possible.

A complete set of indicators for a given program in a given objectives will include at least one indicator for each significant aspect of program activities

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Slide 3.128 Characteristics of good indicator

Valid: when it dictates an accurate measurement the activity, output or outcome of the program.

Reliable: consistently measurable in the same way by different observers

Precise: operationally defined in clear terms

Measurable: quantifiable using available tools and methods

Timely: provides a measurement at time intervals relevant and appropriate in terms of program goals and activities

Programmatically important: linked to a public health impact or to achieving the objectives.

Class activity: Analysing good indicator

Is the maternal mortality ratio a valid indicator of the impact of a family planning program on women's health? Why or why not? What might be a more valid indicator?

Answer:

Although family planning programs often intend to reduce maternal mortality, the maternal mortality ratio is not a valid measure of the impact of a family planning program on women's health. While family planning programs contribute to reducing maternal mortality, numerous other factors, such as prenatal care, a referral system, access to hospital care, and transportation also influence the ratio. What might be a more valid indicator? In this case, the result itself needs narrowing to focus on a particular effect of family planning programs on women's health, before a valid indicator to capture & measure that effect can be determined.)

- ▪ Present slide no. 3.129 Categories of nutrition indicators and start explaining each indicator by presenting slide 3.130 to slide 3.131

Slide 3.129 Categories of nutrition indicators

Categories of nutrition indicators
Nutrition indicators could be categorized into:
• Nutritional status
• Breastfeeding practices
• Complementary feeding practices
• Micronutrient supplements/fortified foods
• Household food security; vulnerability to food and nutrition insecurity

Slide 3.130 Categories of nutrition indicators

Nutritional status

- ☐ Weight-for-age and/or height-for-age

- ☐ Body Mass Index in women

- ☐ Anemia prevalence e.t.c.

Infant and young child feeding practices

- ☐ Timely initiation of breastfeeding

- ☐ Exclusive breastfeeding rate

- ☐ Complementary feeding rate

- ☐ Responsive feeding

Slide 3.131 Categories of nutrition indicators

Micronutrient Interventions

☐ Vitamin A supplementation

☐ Iron supplementation

☐ Coverage with iodized salt, other fortified foods

Household Food Security/Vulnerability

☐ Daily meal frequency of family/individuals

☐ Perceived inadequacy of food reserves in the home/community

3.5.3. Guidelines and steps in conducting monitoring and evaluation activities

Presentation:
▪ Explain to participants guidelines and steps in conducting monitoring and evaluation activities
▪ Show slide 3.132 Steps in cconducting M & E

Slide 3.132 Steps in conducting M & E

Step 1: engage stakeholders;

Step 2: describe the program;

Step 3: focus the M&E design;

Step 4: collect credible data;

Step 5: justify the conclusions; and

Step 6: ensure that the lessons learned are shared and used

3.5.4. Plan for M&E

▪ Explain to the participants that:
• Monitoring and evaluation should be part of planning process.
• It is very difficult to go back and set up monitoring and evaluation systems once things have begun to happen. You need to begin gathering information about performance and in relation to targets. The first information gathering should, in fact, take place when doing needs assessment.
•

Presentation:
Present slide3.133 and slide 3.134 Explain to participants on M&E plan and its function
Slide 3.133: M&E Plan

M&E plan: describes the system that links strategic information obtained from various data collection sources to decision that will result in program improvement.

Slide 3.134 Functions of M+E Plan

Functions of M+E Plan
States how program will measure achievement (accountability)
Documents consensus of stakeholders (transparency and responsibilities)
Guide M & E implementation (standardization and coordination)
Preserve institution memory (it is a living document that needs to be adjusted when the program is modified).

Explain to participants that M&E plan involves formulation of goal, objectives and framework, and then present slides 3.135, 3.136and 3.137

Slide 3.135

M & E plan involves formulation of Goal, objectives and frameworks for a particular activities in program or project
Goal: a broad statement of a desired, long-term outcome of the program
Objectives: statements of desired, specific, realistic and measurable program results

Slide 3.136
M&E plan formulation of SMART objectives

The objective formulated should be SMART
Specific: identifies concrete events or actions that will take place
Measurable: quantifies the amount of resources, activity, or change to be expended and achieved
Appropriate: logically relates to the overall problem statement and desired effects of the program
Realistic: Provides a realistic dimension that can be achieved with the available resources and plans for implementation
Time-based: specifies a time within which the objective will be achieved

Slide 3.137 Frameworks in M&E

Frameworks in M&E
Frameworks are best understood as useful tools for understanding and analysing a program. Helps to clearly define the relationships among factors key to the implementation and success of a project
These factors may be internal or external to the program context.
The framework design process is crucial for developing sound implementation and M&E plans and serves as the foundation for selecting appropriate and useful M&E indicators

Presentation

Explain to participants different types of M&E frameworks show slide 3.138 and then present slides 3.139, 3.140 and 3.141 which describes each types of M&E framework

Slide 3.138Types of Frameworks used in M&E

1. Conceptual frameworks

2. Results frameworks

3. Logical frameworks

4. Logic models

Slide 3.139 Conceptual framework

Is a useful tool for identifying and illustrating a wide variety of factors and relationships that may affect program success

It is also called "research" or "theoretical" frameworks.

It clarify the relationship of its activities and its main goals to the context in which it operates.

It identify factors (systems, organizations, government or institutional policies, infrastructure, that may help or hinder the program's success.

Slide 3.140 Conceptual framework purposes

Purpose:

☐ To show where program fits into wider context

☐ To clarify assumptions about causal relationships

☐ To show how program components will operate to influence outcomes

☐ To guide identification of indicators

☐ To guide impact analysis (causal pathways)

Slide 3.141 Conceptual framework (diagram)

Conceptual Framework . . .
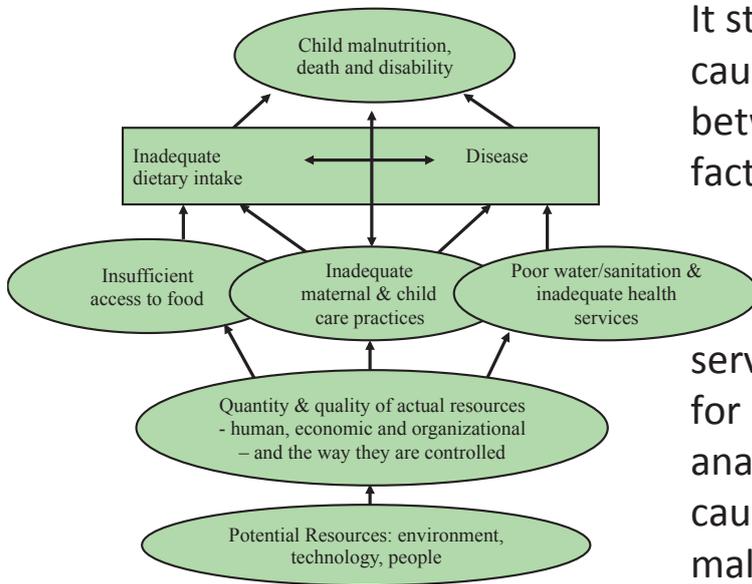
It stipulates the causal links between all the factors listed.

serves as a guide for assessing and analyzing the causes of child malnutrition

Group exercise on developing conceptual framework

Slide 3.142 Results frameworks

Results frameworks
Diagrams that identify steps or levels of results and illustrate the causal relationships linking all levels of a program's objectives.

It is also called Strategic frameworks

Purposes:

☐ Provides a clarified focus on the causal relationships that connect incremental achievement of results to the comprehensive program impact

☐ Clarifies project/program mechanics and factors' relationships that suggest ways and means of objectively measuring the achievement of desired ends

Slide 3.143 Results framework (example)

Results Frameworks For anaemia control program
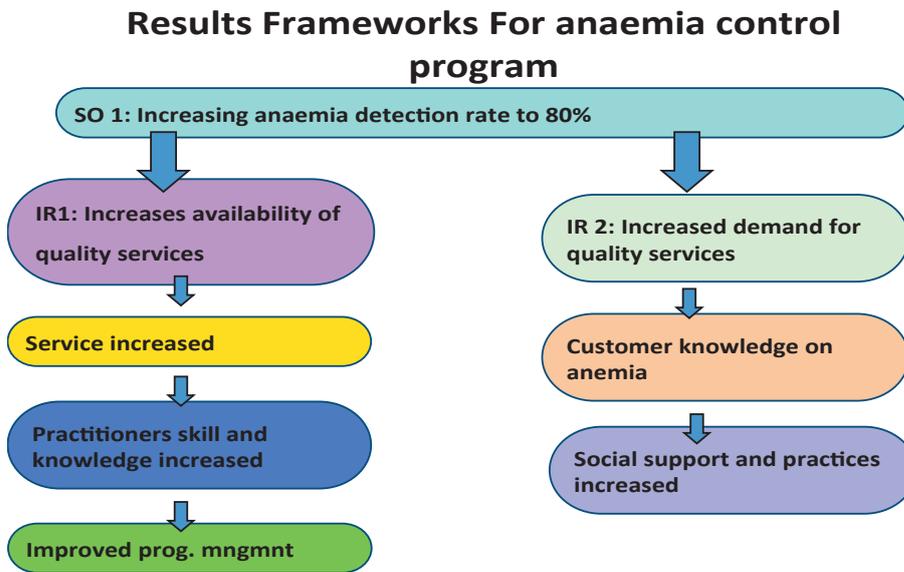
Slide 3.144 Logical Frameworks

Present a standardized summary of the project and its logic. It is also known as Logframe matrix

A Logframe Matrix is a standardized table that summarizes the important aspects of a project.

Purposes:

 □ Summarizes what the project intends to do and how

 □ Summarizes key assumptions

 □ Summarizes outputs and outcomes that will be monitored and evaluated

Slide 3.145 Logical Frameworks (example)

Logical Framework

PURPOSE	PERFORMANCE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Implementing cost-effective measures for the prevention and control of anaemia	1. Coverage of anaemia prevention programmes 2. Proportion of patients treated. 3. Proportion of previously treated cases among all cases.	1. Annual reports 2. Annual reports 3. National / local annual notification reports (surveillance)	- Stable political situation, sustained political commitment and financing - Sufficient numbers of competent health care personnel in the government sector

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Slide 3.146 Logic Models

Diagrams that identify and illustrate the linear relationships flowing from program inputs, processes, outputs, and outcomes. Inputs or resources affect Processes or activities which produce immediate results or Outputs, ultimately leading to longer term or broader results, or Outcomes.

**Purposes:**

☐ Provides a streamlined interpretation of planned use of resources and desired ends

☐ Clarifies project/program assumptions about linear relationships between key factors relevant to desired ends

Slide 3.147 Logic Models (example)

Logic Model

INPUT→**PROCESS**→**OUTPUT**→**OUTCOME** →**IMPACT**

| Develop in-service training curriculum for NO's | Conduct training events | Practitioners trained in new nutrition techniques | Increase in clients served by (newly) trained providers | Improving nutrition status and declining morbidity levels in target population |
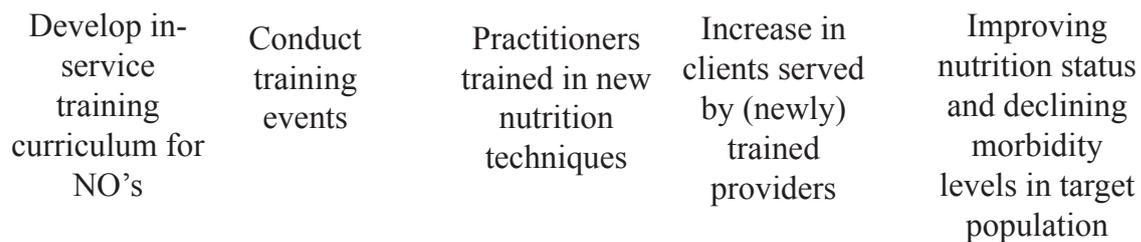
A case study

A case study on how to identify inputs, processes, outputs, and outcomes in a given program by using logic model

Step 3: Case study
- Refer participants to participants' manual session 3.5. Indicators for assessing nutrition activities and read the case study and develop indicators to measure output, outcomes and impact.
- Ask participants to group into 3-4 groups or use already formulated groups,
- .(Group work 15 minutes and 5 minutes' Presentation for each group)
- Discuss clearly with participants after each group Presentation and provide clarifications.

A Case study

UNICEF has just launched its programme of enhancing child survival and development in Tanzania. Two regions have been selected for programme implementation. Among the many activities, one is to improve exclusive breastfeeding rate by 85%. You were highly recommended as a nutritionist to provide scientific input to members of the programme team on developing indicators for monitoring and evaluating the program. Explain how will you address this by using logic model framework.

Then, summarise the framework used in M&E by showing slide 3.148

Slide 3.148 Summaries of Frameworks

Type of Framework	Brief Description	Program Management	Basis for Monitoring and Evaluation
Conceptual	Interaction of various factors	Determine which factors the program will influence	No. Can help to explain results
Results	Logically linked program objectives	Shows the causal relationship between program objectives	Yes – at the objective level
Logical	Logically linked program objectives, outputs, and activities	Shows the causal relationship between activities and objectives	Yes – at the output and objective level
Logic model	Logically links inputs, processes, outputs, and outcomes,	Shows the causal relationship between inputs and the objectives	Yes – at all stages of the program from inputs to process to outputs to outcomes/ objectives

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3.5.5. Evaluation designs

Process and Outcome/impact evaluation designs

Brainstorm: Ask participants to describe types of evaluation. List their responses in flip chart and compare with the slide no 3.149 evaluation designs.

Show Slide 3.149 evaluation designs

Process evaluation design
Outcome evaluation design

Presentation
- Discuss briefly on types of evaluation
- Explain to participants that evaluation can be either formative (aiming at improving the program) or summative (aiming at concluding the program). Also can be process or outcome evaluation.
- Briefly discuss about process evaluation design, explain clearly on case study design refer slide number 3.150
-

Slide number 3.150 Process evaluation

Process evaluation
Assessment of the efficiency and effectiveness of individual pre-determined stages of project implementation, beginning with the problem identification (also known as formative evaluation)
It helps to identify external factors that impact the project outputs

Slide number 3.151 Outcome evaluation

Outcome evaluation

It gauges the extent to which the intervention has caused change in the desired direction at a given time

It helps to know the extent to which the intervention has achieved its set objectives.

Challenges of M&E
Show slide 3.152 and Slide number 3.153 and present the challenges in monitoring and evaluation of nutrition programmes

Slide 3.152: Challenges of M&E

Multi-sectoral programs

Introduced from *several sectors*, as one package for example, agric, educ and livelihoods, it is difficult to establish if observed changes in nutrition outcomes are attributable to a particular intervention
May need large samples (Challenge in clinical measurements)

Exophthalmia is relatively rare, with a prevalence of about 1% in preschool children. Small sample size does not mean condition is not serious.

Slide 3.153: Challenges of M&E cont . . . .

Lack of specificity

E.g Anaemia is commonly used as an indicator of iron deficiency but people can be anaemic for reasons not due to iron deficiency, such as malaria and intestinal parasites
Selection bias

Eg institution based sample
Seasonality

Seasonal variation can affect intake of certain foods

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2. *Tanzania National Nutrition Surveillance system: Conceptual Models, Information Handling and a means to a Sustainable Future.* United Nations One fund under WFP 2011/12 UNDAP Annual Work plan. By Philip McKinney, July 2012

3. Tanzania Food Security and Nutrition Analysis System - *A Framework.* Food and Agriculture Organization, United Nations Tanzania Joint Program By Nicholas Haan and Vedasto Rutachokozibwa, September 2009

4. CDC and World Food Programme (WFP) (2005). A Manual: Measuring and Interpreting Malnutrition and Mortality.

5. Action Contre La Faim/Prudhon, Claudine (2002). Assessment and Treatment of Malnutrition in Emergency Situations. Manual of Therapeutic Care and Planning for a Nutritional Programme. Paris: ACF.
   A step-by-step manual describing the assessment and treatment of severe and moderate
   Contact: www.actionagainsthunger.org

6. **MSF (2006 draft). Nutrition Guidelines.**
   A manual on how to assess and treat acute malnutrition at the individual and population level.
   Availability: soft copy available on website
   Contact:http://medmissio.de/proxy/alfrescosystem/api/node/content/workspace/SpacesStore/87c2cbe3-8663-4afb-a56d-33a07d9c0557/test

7. **Save the Children (2004). Emergency Nutrition Assessment: Guidelines for field workers.**
   The Save the Children publication provides guidance on how to assess the causes of malnutrition, the prevalence of malnutrition, mortality rate and interpreting the findings.
   Availability: soft copy free of charge from website, hard copy available for a fee
   Contact: http://www.savethechildren.org.uk/en/54_2320.htm

8. **SMART Guidelines (2006).** The SMART methodology is an improved survey method based on the two most vital, basic public health indicators to assess the severity of a humanitarian crisis: nutritional status of children under-five and mortality rate of the population
   Availability: software and manual available free of charge from website
   Contact: http://www.smartmethodology.org

9. **The Sphere Project (2011). Humanitarian Charter and Minimum Standards in Humanitarian Response. Geneva: The Sphere Project**
   Availability: Free soft copy available in pdf version from website, print version can be mailed for a fee. Available in English, French, Spanish, Russian and Arabic.
   Contact: www.sphereproject.org

10. **WFP/UNHCR (2009). Guidelines for Selective Feeding in Emergencies.** Revised guidelines for selective feeding programmes in emergencies.
    Availability: Free soft copy available through website
    Contact: http://www.ennonline.net/pool/files/ife/wfp-unhcr-sfp-guidelines.pdf

11. **WFP (2005)** *Food and Nutrition Handbook.* **Rome: WFP.**
    Manual designed to enable staff to assess and analyse the nutrition situation in their country or region.
    Availability: Cannot be downloaded. Printed version available in English from WFP.
    Contact: www.wfp.org

12. **WHO, UNHCR, IFRC, WFP (2000).** *The management of nutrition in major emergencies.* **Geneva: United Nations.**
    This manual aims to assist those involved in the management of major emergencies with a nutritional component. A practical guide to measures needed to ensure that the food and nutrition needs of disaster stricken populations are adequately met.
    Availability: Printed version
    Contact: www.who.int

Training courses

1. **FAO (2007)** *FAO Food Security Information for Action Distance Learning Material - Food Security Information Systems and Networks; Reporting Food Security Information; Nutritional Status Assessment and Analysis* **Rome: FAO.**
   Distance learning materials designed for self-paced e-learning, developed by international experts to support capacity building and on-the-job Training and Workshops at national and local food security information systems and networks. Free of charge registration provides access to the materials. As of 31 July 2007, three separate courses are available.
   Availability: CD-Rom in English
   Contact: www.fao.org

2. **Institute of Child Health (ICH), London (2011).** *Regional Training Project for Nutrition in Emergencies -Lebanon, Uganda, Thailand.* A new series of innovative short courses in Nutrition in Emergencies have been developed by UCL Centre for International Health and Development. The courses have been designed to help practitioners develop practical expertise in emergency nutrition response and post-emergency recovery. Each course includes modules on the causes and types of malnutrition as well as the main approaches employed to prevent and treat malnutrition. The course content is based on the Harmonised Training Package, developed on behalf of the Global Nutrition Cluster, with a particular emphasis on practical application.
   Availability: Can not be downloaded
   Contact: Course coordinator (coordinator@nietraining.net) for more information.

Additional articles, resources and web links to nutrition information
The following resources, links and websites can provide you with further information on current events, debates and discussions around nutrition in emergencies.

Articles
1. **The Lancet Nutrition Series (2008). Maternal and Child Undernutrition. Lancet**
   Series of five technical papers on maternal and child undernutrition globally. Some of the papers deal specifically with nutrition in emergencies.
   Availability: Downloadable pdf file in English
   Contact: www.thelancet.com

2. **Young, H. et al. (2004)** *Public nutrition in complex emergencies.* **Lancet 364: 1899-909.**
   Technical paper providing a descriptive account of the different facets of emergency nutrition from assessment approaches to different types of food and non-food interventions. Good background document for generalists.
   Availability: Downloadable pdf file in English
   Contact: www.thelancet.com

3. **Young & Jaspars (2006). The Meaning and Measurement of Malnutrition in Acute Emergencies. Network Paper Number 56. London: ODI.**
   Technical paper aimed at non-technical humanitarian actors, especially decision-makers, understand, interpret and use nutritional data by looking at how it is collected, analysed and used. It also looks at how technical issues are linked to pragmatic institutional constraints. Of particular relevance: Chapter 1. Introduction, Chapter 2. Basic concepts, Chapter 4. Estimating malnutrition in emergency-affected populations, Chapter 5. Interpretation and decision-making. Availability: Downloadable pdf file in English
   Contact: www.odi.org.uk

Additional resources and web-links

1. **FANTA-2:** FANTA-2 works to improve nutrition and food security policies, strategies, and programs through technical support to the United States Agency for International Development (USAID) and its partners, including host country governments, international organizations, and nongovernmental organization implementing partners.
   Contact: www.fantaproject.org

2. **Global Nutrition Cluster (GNC).** The GNC is comprised of over 30 organisational members. The GNC focuses in six strategic areas including coordination, advocacy and resource mobilisation; policy, standards and guidelines; capacity development; preparedness; assessment, information and monitoring; and best practices and lessons learned. There are 2 long-standing working groups within the GNC on Assessment and Capacity Development. Several tools have been developed with cluster funding to facilitate coordination and humanitarian response in nutrition. Resources available on the website include the inter-agency rapid assessment tool, Selective Feeding Guidelines, IASC Gender Guidelines among others.
   Contact:http://oneresponse.info/globalclusters/nutrition/Pages/default.aspx

3. **Health and Nutrition Tracking Service (HNTS):** The Health and Nutrition Tracking Service (HNTS) is a collaboration of non-governmental organizations (NGOs), United Nations (UN) agencies, and donors for the review, analysis and validation of critical health and nutrition data gathering methodologies and information in selected humanitarian emergencies. The website provides information on country nutrition situation analysis and methodology and tools for assessment of nutrition and mortality in emergencies.

   Contact: http://www.thehnts.org/

4. **Integrated Food Security Classification system (IPC).** The Integrated Food Security Phase Classification (IPC) is a standardized tool that aims at providing a "common

currency" for classifying food security. The IPC website provides links to IPC maps and food security classifications for many countries; information about training workshops; publications; news articles, and updates to the IPC technical manual.
Availability: Manual available in soft copy free of charge.
Contact: http://www.ipcinfo.org/

5. **NutVal**: A resource for the planning, calculation and monitoring of general food aid rations. It is being updated in 2011
    Availability: software and guidance available free of charge on website

    Contact: http://www.nutval.net/

6. **ProNut (ProNutrition):** ProNUTRITION is an information resource that supports health care providers, community health workers, policy makers, and program managers with current, relevant, and practical knowledge and tools for decision-making. A wide range of information, such as discussion groups on timely topics, newsletters, documents on-line, links to useful Web sites, guidelines, and assessment tools, are offered on the site to assist individuals in the provision of better care based on knowledge.

    Contact: http://www.pronutrition.org/

7. **ProNut-HIV:** ProNut-HIV is a list-serve that aims to share up-to-date information, knowledge and experiences on nutrition and HIV/AIDS. The topic of the discussion group is nutrition care and support of people living with HIV/AIDS (PLWHA), and the goal is to enhance positive living through proper nutrition care and support by promoting a constructive dialogue between PLWHA, front line workers, researchers, HIV/AIDS specialists and policy makers.

    Contact: http://list.healthnet.org/mailman/listinfo/pronut-hiv

8. **SMART.** The SMART methodology is an improved survey method based on the two most vital, basic public health indicators to assess the severity of a humanitarian crisis: nutritional status of children under-five and mortality rate of the population
    Availability: software and manual available free of charge from website
    Contact: http://www.smartmethodology.org

9. **United Nations Standing Committee on Nutrition.**

    a. Nutrition Information in Crisis Situations (formerly RNIS). **UNSCN.**
    The UN Standing Committee on Nutrition (SCN) is part of the United Nations. SCN publishes NICS every three months. The publication summarizes the nutrition situation in countries facing crises and summarises nutrition survey data.
    Availability: Paper copies and downloadable pdf files in English

Contact: www.unscn.org

    b. *SCN News.* **UNSCN.**

The Standing Committee on Nutrition (SCN) is part of the United Nations. SCN news is published twice a year and is a periodic review of developments in international nutrition. It covers both development and emergency nutrition.

Availability: Paper copies and downloadable pdf files in English

Contact: www.unsystem.org

    c. Harmonised Training Package. Hosted by UNSCN.

The Harmonised Training Package: Resource Material for Training on Nutrition in Emergencies (the HTP) is a comprehensive documentation of the latest technical aspects of Nutrition in Emergencies. It is organised as a set of modules by subject, each containing clearly written technical information, training exercises and a resource list for use in training course development. The HTP is organised into four sections containing a total of 21 modules covering Introduction and Concepts about nutrition and the humanitarian sector, Nutrition Needs Assessment and Analysis, Interventions to Prevent and Treat Malnutrition, and Monitoring and Evaluation. (This document is part of Module 1: Introduction to Emergencies of the HTP.)

Availability: A soft copy of the entire HTP is available (in Word and pdf versions) free of charge **Contact**: http://www.unscn.org/en/gnc_htp/ or www.ennonline.net .

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