Nutrition Technical Update
for Nursing and Midwifery Tutors in Ghana

Tutors’ Teaching Aids

September 2013
This update is made possible by the generous support of the American people through the support of the Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, U.S. Agency for International Development (USAID), and USAID/Ghana under terms of Cooperative Agreement No. AID-OAA-A-12-00005, through the Food and Nutrition Technical Assistance III Project (FANTA), managed by FHI 360.

The contents are the responsibility of FHI 360 and do not necessarily reflect the views of USAID or the United States Government.

Recommended Citation

Contact Information
Director
Human Resource for Health Development (HRHD)
Ministry of Health
P.O. Box M 44
Ministries
Accra, Ghana
Email: info@moh.gov.gh
Telephone: +233 302 663810
Fax: +233 302 665651

Deputy Director – Nutrition
Nutrition Department
Ghana Health Service
P.O. Box M78
Accra, Ghana
Email: nutrition@ghsmail.org
Telephone: +233 (0) 302 604278,
+233 (0) 302 665001
Fax: +233 (0)302 -662 778

Food and Nutrition Technical Assistance III Project (FANTA)
FHI 360
1825 Connecticut Avenue, NW
Washington, DC 20009-5721
T 202-884-8000
F 202-884-8432
 fantamail@fhi360.org
www.fantaproject.org
## Contents

**Abbreviations and Acronyms**

Nutrition Technical Update Overview—Tutor Notes

**Nutrition and Dietetics**

- Session 1: Nutrition and Health ................................................................. 10
- Session 2: Nutrients, Food Sources, and Functions ....................................... 14
- Session 3: Nutrition Needs Throughout the Lifecycle .................................... 20
- Session 4: Nutritional Status Assessment of Individuals and Communities .......... 26
- Session 5: Types of Malnutrition, Causes, and Consequences .......................... 35
- Session 6: Undernutrition—Signs, Symptoms, Causes, Management, and Prevention 39
- Session 7: Management of Overnutrition ..................................................... 42
- Session 8: Factors that Influence Food Consumption and Habits ....................... 49
- Session 9: Nutrition Interventions and Policies in Ghana .................................. 58
- Session 10: Essential Nutrition Actions and Other Approaches ........................ 64
- Session 11: The Role of the Dietician and/or Nutritionist in the Health Team ........... 68
- Session 12: Role of the Nurse in Nutrition Education and Counselling .............. 72

**Child Health/Paediatric Nursing**

- Session 1: Normal Growth and Development ............................................ 76
- Session 2: Growth Monitoring ..................................................................... 81
- Session 3: Infant and Young Child Feeding .................................................. 88
- Session 4: Integrated Management of Neonatal and Childhood Illness ............... 105
- Session 5: Community-Based Management of Acute Malnutrition .................. 106
- Session 6: Inpatient Management of Severe Acute Malnutrition ....................... 118
- Session 7: Nutrition Disorders—Rarer Micronutrient Deficiencies .................... 126

**Counselling on Infant and Young Child Feeding**

Counselling on Infant and Young Child Feeding ........................................... 130

**Medical Nursing I/Principles of Disease Management and Control II**

- Session 1: Use of Zinc in the Management of Diarrhoea ............................... 140
- Session 2: Nutrition Care and Support in the Context of HIV and/or Tuberculosis 141

**Obstetric Nursing/Physiology and Management of Normal Puerperium and Neonate**

- Session 1: Antenatal Care ......................................................................... 158
- Session 2: Postnatal Care .......................................................................... 161
- Session 3: Neonatal Care .......................................................................... 163

**Pharmacology and Therapeutics**

Pharmacology and Therapeutics ..................................................................... 167
### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Artemisinin-based combination therapy</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral therapy</td>
</tr>
<tr>
<td>ARV</td>
<td>Antiretroviral (drug)</td>
</tr>
<tr>
<td>BMI</td>
<td>Body mass index</td>
</tr>
<tr>
<td>BMR</td>
<td>Basal metabolic rate</td>
</tr>
<tr>
<td>CH</td>
<td>Child Health/Paediatric Nursing</td>
</tr>
<tr>
<td>CHN</td>
<td>Community Health Nurses</td>
</tr>
<tr>
<td>cm</td>
<td>Centimetre(s)</td>
</tr>
<tr>
<td>CMV</td>
<td>Combined mineral and vitamin mix</td>
</tr>
<tr>
<td>CNA</td>
<td>Critical Nutrition Actions</td>
</tr>
<tr>
<td>CVD</td>
<td>Cardiovascular disease</td>
</tr>
<tr>
<td>DMC</td>
<td>Principles of Disease Management and Control/Medical Nursing I/II</td>
</tr>
<tr>
<td>ENAs</td>
<td>Essential Nutrition Actions</td>
</tr>
<tr>
<td>EPI</td>
<td>Expanded programme of immunisation</td>
</tr>
<tr>
<td>FBF</td>
<td>Fortified-blended food</td>
</tr>
<tr>
<td>g/dL</td>
<td>Gram(s) per decilitre</td>
</tr>
<tr>
<td>GT</td>
<td>Traditional Medicine and Gerontology</td>
</tr>
<tr>
<td>HFA</td>
<td>Height-for-age</td>
</tr>
<tr>
<td>HO</td>
<td>Handout</td>
</tr>
<tr>
<td>HP</td>
<td>Health Promotion</td>
</tr>
<tr>
<td>IFA</td>
<td>Iron and folic acid</td>
</tr>
<tr>
<td>IMCI</td>
<td>Integrated Management of Childhood Illness</td>
</tr>
<tr>
<td>IMNCl</td>
<td>Integrated Management of Neonatal and Childhood Illness</td>
</tr>
<tr>
<td>IU</td>
<td>International units</td>
</tr>
<tr>
<td>IYCF</td>
<td>Infant and Young Child Feeding</td>
</tr>
<tr>
<td>kcal</td>
<td>Kilocalorie(s)</td>
</tr>
<tr>
<td>kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>kg/m²</td>
<td>Kilogram(s) per square metre</td>
</tr>
<tr>
<td>L</td>
<td>Litre</td>
</tr>
<tr>
<td>MAM</td>
<td>Moderate Acute Malnutrition</td>
</tr>
<tr>
<td>MDW</td>
<td>Midwives</td>
</tr>
<tr>
<td>mg</td>
<td>Milligram(s)</td>
</tr>
<tr>
<td>mL</td>
<td>Millilitre(s)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>mm</td>
<td>Milimetre(s)</td>
</tr>
<tr>
<td>MUAC</td>
<td>Mid-Upper Arm Circumference</td>
</tr>
<tr>
<td>NAPN</td>
<td>Obstetric Nursing/Physiology and Management of Normal Puerperium and Neonate</td>
</tr>
<tr>
<td>ND</td>
<td>Nutrition and Dietetics</td>
</tr>
<tr>
<td>ORS</td>
<td>Oral rehydration solution</td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Introduction to Pharmacology and Therapeutics</td>
</tr>
<tr>
<td>PAL</td>
<td>Physical Activity Level</td>
</tr>
<tr>
<td>PC</td>
<td>Primary Eye Care and Oral Health</td>
</tr>
<tr>
<td>PEH</td>
<td>Personal and Environmental Health</td>
</tr>
<tr>
<td>PMTCT</td>
<td>Prevention of mother-to-child transmission of HIV</td>
</tr>
<tr>
<td>RCN</td>
<td>Registered Community Nurses</td>
</tr>
<tr>
<td>RE</td>
<td>Retinol Equivalent</td>
</tr>
<tr>
<td>ReSoMal</td>
<td>Rehydration Solution for Malnutrition</td>
</tr>
<tr>
<td>RGN</td>
<td>Registered General Nurses</td>
</tr>
<tr>
<td>RS</td>
<td>Resource</td>
</tr>
<tr>
<td>RUTF</td>
<td>Ready-to-Use Therapeutic Food</td>
</tr>
<tr>
<td>SAM</td>
<td>Severe Acute Malnutrition</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>μg</td>
<td>Microgram(s)</td>
</tr>
<tr>
<td>WFA</td>
<td>Weight-for-age</td>
</tr>
<tr>
<td>WFH</td>
<td>Weight-for-height</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
Introduction

Undernutrition in Ghana is a major public health problem with high rates of stunting, underweight, wasting, and micronutrient deficiencies throughout the country with some regional variations. Ghana is among the 36 countries with the highest burden of childhood chronic undernutrition globally.\(^1\) Ghana is also facing the burden of overweight and obesity, which are resulting in increasing rates of noncommunicable diseases such as hypertension, diabetes, and cardiovascular diseases.

To scale up its efforts in tackling malnutrition, the Ministry of Health/Ghana Health Service has developed a National Nutrition Policy that provides a comprehensive nutrition programming framework including relevant multi-sector linkages.

Nurses and midwives play a vital role as frontline health care providers and are often responsible for delivering nutrition services at the facility and community level. It is essential that all nurses and midwives have adequate knowledge, skills, and attitudes to deliver quality nutrition services and are abreast of the most recent policies, strategies, guidelines, and protocols on nutrition in Ghana.

These teaching aids have been compiled in response to the need to strengthen nursing and midwifery pre-service training on nutrition. This is part of the Ministry of Health/Ghana Health Service plan to build institutional and human capacity in nutrition service delivery as laid out in the National Nutrition Policy. This package incorporates nutrition into the updated curricula for nurses and midwives as provided by the Nursing and Midwifery Council of Ghana.

Objectives

This package has been developed to ensure that nursing and midwifery students are:

1. Informed of the most up-to-date nutrition related recommendations, policies, and practices used in Ghana
2. Gain appropriate nutrition-related competencies prior to starting work in Ghana

Purpose of Teaching Aids

The teaching aids were developed to assist teachers/tutors teaching nutrition in nursing and midwifery training schools in Ghana. The teaching aids are intended to be used as a guide that can be adapted to meet the specific needs of different groups of students, for example, midwives (MDW), registered general nurses (RGN), registered community nurses (RCN), and community health nurses (CHN). It is also expected that students will develop nutrition-related competencies through their vacation practicum.

To get the most out of this technical package, the following information will help orient users to the materials.

**Intended Learners**

Nursing and midwifery pre-service students attending nursing and midwifery training in Ghana

**Content Overview**

The teaching aids in this package include:

1. Session plans that can be used as a guide for tutors
2. Handouts consisting of worksheets or reading materials used in the sessions
3. Resources for the tutor to reference during the session or for further reading, or used as e-learning resources for tutors and/or students

**Course Planning**

It is recommended that the tutor reads the introductory section for each session plan well in advance of the session, at least before the previous session is conducted, as some activities will require advance preparation by tutors and/or students. Tutors should also give themselves enough time to adapt any activities where necessary.

**Required Resources**

It is assumed that tutors will have access to the following resources:

1. A computer for accessing session files
2. The internet for accessing online resources
3. PowerPoint for showing presentations included in some sessions
4. A projector/large computer screen in the classroom for displaying presentations and video clips
5. A blackboard/whiteboard in the classroom (referred to as a 'board' in lesson notes) or a flipchart

The following textbooks are recommended for students, especially for Nutrition and Dietetics (RGN 033/MDW 040/RCN 033/CHN 028) and Child Health/Paediatric Nursing (RGN 064/RCN 060/CHN 026). They are available from the Teaching Aids at Low Cost website.


It is also recommended that the following resources are ordered free from TALC well in advance:

Understanding the Computer Files andFolders

Session plans and related resources are grouped in folders which refer to a certain course (or several courses) with similar content for different student groups, e.g., child health and paediatric nurses. Session plans have only been devised for elements of courses in the nursing and midwifery curricula (RGN, MDW, RCN and CHN) relating to nutrition. Therefore they do not cover the whole course, with the exception of the Nutrition and Dietetics course.

For each session folder a code has been given. These are either an abbreviation of the course name or the topics they relate to (listed below).

- **CH**: Child Health/Paediatric Nursing
- **DMC**: Principles of Disease Management and Control/Medical Nursing I/II
- **HP**: Health Promotion
- **NAPN**: Obstetric Nursing/Physiology and Management of Normal Puerperium and Neonate
- **ND**: Nutrition and Dietetics
- **P&T**: Introduction to Pharmacology and Therapeutics

The code is followed by a number relating to its order within the course and the topic which is covered, e.g., for ND there are 11 session plans, the first of these is labelled ‘ND1_Nutrition and Health’.

For several courses where a minor nutrition element is in the curriculum, session plans have not been devised but useful resources have been grouped in a folder. These include the following courses and related abbreviations:

- **GT**: Traditional Medicine and Gerontology
- **PC**: Primary Eye Care and Oral Health
- **PEH**: Personal and Environmental Health

Within any given folder, the following abbreviations are used followed by a number that corresponds with an activity in the session plan (e.g. activity 1a):

- **HO**: Handout
- **RS**: Resource

**Example**: The following documents are found in 'ND5_types of malnutrition, causes and consequences'.

- ND5_Session Plan Types of malnutrition, causes and consequences
- ND5_HO1a Conceptual framework of malnutrition
- ND5_HO2b Ghana nutrition situation worksheet
- ND5_RS1 Ghana nutrition profile
- ND5_RS2 MICS 2011 nutrition section
- ND5_RS3 Ghana DHS 2008 maternal nutrition

A separate folder labelled 'training courses' contains full courses from which elements have been used in different sessions. Tutors may wish to look at the full course if they do not think the session plans go into sufficient depth for some sessions.
Training/Learning Methods

A variety of methods are used to assist learning, encourage participation, and facilitate the development of the required competencies. These methods include presentations, group projects, e-learning, simulation, case studies, and field work.

Teaching Methods and How to Use Them

<table>
<thead>
<tr>
<th>Method</th>
<th>How to Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group discussion:</strong> A group of no more than seven participants discuss and summarise a given subject or theme. The group selects a chairperson, a recorder and/or someone to report to the full group.</td>
<td>Outline the purpose of the discussion and write questions and tasks clearly to provide focus and structure. Allow enough time for all groups to finish the task and give feedback.</td>
</tr>
<tr>
<td><strong>Mindmap:</strong> A spontaneous process through which group members’ ideas and opinions on a subject are voiced and written for selection, discussion, and agreement. All opinions and ideas are valid.</td>
<td>Clearly state that there is no wrong or bad idea. Ask a volunteer to record ideas.</td>
</tr>
<tr>
<td><strong>Whole class discussion:</strong> The entire group comes together to share ideas.</td>
<td>Appoint a timekeeper. Pose a few questions for group discussion.</td>
</tr>
<tr>
<td><strong>Role-play:</strong> Participants act out a specific situation based on details about the “person” they are asked to play.</td>
<td>Structure the role-play well, keeping it brief and clear in focus. Give clear and concise instructions to participants.</td>
</tr>
<tr>
<td><strong>Case study:</strong> Pairs or small groups are told or read a specific situation, event, or incident and asked to analyse and solve it.</td>
<td>Make the situation, event, or incident real and focused on the topic.</td>
</tr>
<tr>
<td><strong>Demonstration:</strong> A resource person performs a specific task, showing others how to do it. The participants then practice the same task.</td>
<td>Demonstrate the appropriate and inappropriate ways to perform a task and discuss the differences. Have participants perform the task and give them feedback.</td>
</tr>
<tr>
<td><strong>Talk/presentation:</strong> A speaker shares information, sometimes using audio or visual aids.</td>
<td>Start with a story or visual that captures the audience’s attention. Present an initial case problem around which the talk/presentation will be structured. Ask participants test questions even if they have little prior knowledge to motivate them to listen to the talk/presentation for the answer. Set a time limit. Allow time for feedback, comments, and questions. Pose a question for participants to solve based on the talk/presentation.</td>
</tr>
</tbody>
</table>

# Nutrition Technical Updates Provided for the Various Training Programs

## 1. Nutrition Technical Updates in the RGN Training Program

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Course Code</th>
<th>Nutrition Technical Update</th>
</tr>
</thead>
</table>
| Health Promotion          | H RGN 024   | Under counselling technique in interpersonal communication and counselling:  
  - Using the 3 A’s (assessment, analysis, and action) approach  
  - Listening and learning skills, and confidence building and supporting giving skills |
| Basic Nutrition           | H RGN 033   | The Basic Nutrition course provides the most recent nutrition technical updates, refer to ND01_H02c for the course outline                                                                                             |
| Basic Obstetric Nursing   | H NUR 051   |  
  - Antenatal care: iron/folate supplementation, and dietary intake and diversity  
  - Postnatal: vitamin A, iron/folic acid supplementation, and diet intake and diversity  
  - Neonatal care: early initiation of breastfeeding and exclusive breastfeeding  
  - New iron and folic acid regime and counselling                                                                                       |
| Advanced Nursing          | H RGN 031   |  
  - Nursing care for children living with severe acute malnutrition with medical complications                                                                                                                        |
| Pharmacology & Therapeutics | H RGN 037  | Therapeutic feeds and preparation:  
  - Ready-to-Use Therapeutic Food (RUTF)  
  - F-100  
  - F-75  
  - ReSoMal  
  - Combined mineral and vitamin mix (CMV)                                                                                                  |
| Medical Nursing I         | H RGN 040   |  
  - Replace malnutrition to read as undernutrition: severe acute malnutrition (SAM), vitamin and mineral deficiencies  
  - Nutrition care for people living with HIV and TB patients using the Nutrition Assessment, Counselling, and Support (NACS) approach                                                                                   |
| Medical Nursing II        | H RGN 060   |  
  - Management of obesity and diet related noncommunicable diseases                                                                                                                                       |
| Paediatric Nursing        | H RGN 064   |  
  - Assessment of growth using new WHO standards and assessment of developmental rates  
  - Infant and young child feeding  
  - Managing SAM in infants and children (0–59 months) with medical complications in inpatient care                                                                                |
| Public Health Nursing     | H RGN 068   | Nutrition promotion for the family and community                                                                                                                                          |
| Vacation Practicum III    | III         | Practice preparing and administering therapeutic foods: F-75, ReSoMal, and RUTF  
  - Assess nutritional status of people living with HIV/TB clients                                                                                                                               |
| Vacation Practicum IV     | IV          | Plan diets and physical activity regimen for people with diet-related diseases                                                                                                                                         |
### 2. Nutrition Technical Updates in the MDW Training Program

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Course Code</th>
<th>Areas for Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Promotion</td>
<td>H MDW 037</td>
<td>Under counselling technique in interpersonal communication and counselling:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Using the 3 A’s (assessment, analysis, and action) approach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Listening and learning skills, and confidence building and support giving skills</td>
</tr>
<tr>
<td>Basic Nutrition</td>
<td>H MDW 040</td>
<td>The Basic Nutrition course provides the most recent nutrition technical updates, refer to ND01_H02c for the course outline</td>
</tr>
<tr>
<td>Physiology &amp; Management of Normal Pregnancy</td>
<td>H MDW 042</td>
<td>New prevention of mother-to-child transmission (PMTCT) breastfeeding recommendations for HIV-positive women</td>
</tr>
<tr>
<td>Pharmacology &amp; Therapeutics</td>
<td>H MDW 039</td>
<td>Therapeutic feeds and preparation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ready-to-Use Therapeutic Food (RUTF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- F-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- F-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- ReSoMal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Combined mineral and vitamin mix (CMV)</td>
</tr>
<tr>
<td>Medical Nursing I</td>
<td>H MDW 031</td>
<td>• Replace malnutrition to read as undernutrition: Severe Acute Malnutrition (SAM), and vitamin and mineral deficiencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Include the nutrition management of diet-related noncommunicable diseases: hypertension and diabetes</td>
</tr>
<tr>
<td>Public Health Nursing</td>
<td>H MDW 084</td>
<td>• Nutrition promotion for the family and community</td>
</tr>
<tr>
<td>Vacation Practicum II</td>
<td>II</td>
<td>• Conducting nutrition assessment and counselling of a pregnant woman on appropriate dietary intake</td>
</tr>
<tr>
<td>Vacation Practicum III</td>
<td>III</td>
<td>• Prepare and administer therapeutic foods: F-75, ReSoMal, and RUTF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Plan diet and physical activity regimen for people with diet-related diseases</td>
</tr>
<tr>
<td>Vacation Practicum IV</td>
<td>IV</td>
<td>• Counselling mothers on breastfeeding management (attachment and position) using the 3 A’s (assess, analyse, and act) approach</td>
</tr>
<tr>
<td>Vacation Practicum V</td>
<td>V</td>
<td>• Managing breast conditions: breast engorgement, cracked nipples, mastitis, and abscess</td>
</tr>
</tbody>
</table>
### 3. Nutrition Technical Updates in the RCN Training Program

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Course Code</th>
<th>Areas for Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Health Nursing I</td>
<td>H RCN 070</td>
<td>• Include active case finding, referral, and follow-up of children with SAM</td>
</tr>
<tr>
<td>Health Promotion</td>
<td>H RCN 024</td>
<td>Under counselling technique in interpersonal communication and counselling:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Using the 3 A’s (assessment, analysis, and action) approach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Listening and learning skills, and confidence building and support giving skills</td>
</tr>
<tr>
<td>Principles &amp; Practice of Community Nursing &amp; Administration II</td>
<td>H RCN 060</td>
<td>• Growth monitoring and promotion: use of the new WHO growth monitoring standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Management of SAM without medical complications (outpatient care)</td>
</tr>
<tr>
<td>Basic Nutrition</td>
<td>H CHN 028</td>
<td>The Basic Nutrition course provides the most recent nutrition technical updates, refer to ND01_H02c for the course outline</td>
</tr>
<tr>
<td>Basic Obstetric Nursing</td>
<td>H RCN 062</td>
<td>• Antenatal care: iron/folic acid supplementation, and dietary intake and diversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Postnatal care: vitamin A, iron/folic acid supplementation, and diet intake and diversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Neonatal care: early initiation of breastfeeding and exclusive breastfeeding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New iron and folic acid regime and counselling</td>
</tr>
<tr>
<td>Principles of Disease Management &amp; Control I</td>
<td>H RCN 040</td>
<td>• Use of zinc for diarrhoea management</td>
</tr>
<tr>
<td>Principles of Disease Management &amp; Control II</td>
<td>H RCN 050</td>
<td>• Nutrition care and support in the context of HIV and/or TB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New breastfeeding recommendations for HIV-positive mothers</td>
</tr>
<tr>
<td>Pharmacology &amp; Therapeutics</td>
<td>H RCN 062</td>
<td>Therapeutic feeds and preparation:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ready-to-Use Therapeutic Food (RUTF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• F-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• F-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ReSoMal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Combined mineral and vitamin mix (CMV)</td>
</tr>
<tr>
<td>Vacation Practicum I</td>
<td>I</td>
<td>• Assist with growth monitoring and promotion, weighing, counselling mothers on growth of their children, and taking the mid-upper arm circumference (MUAC) of children 6–59 months</td>
</tr>
<tr>
<td>Vacation Practicum II</td>
<td>II</td>
<td>• Manage children with SAM in outpatient care: assessing, admission, follow-up, using the action protocol, and discharging children</td>
</tr>
<tr>
<td>Vacation Practicum III</td>
<td>III</td>
<td>• Conduct nutrition counselling and support on infant and young child feeding (breastfeeding and complementary feeding) using the 3 A’s approach (ask, analyse, and act)</td>
</tr>
</tbody>
</table>
### 4. Nutrition Technical Updates in the CHN Training Program

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Course Code</th>
<th>Areas for Update</th>
</tr>
</thead>
</table>
| Community Health Nursing I       | H CHN 010   | Under home visiting:  
• Identification, referral, and follow-up of children with Severe Acute Malnutrition (SAM)  
• Community Infant and Young Child Feeding (C-IYCF)                                                                                                       |
| Health Promotion                 | H CHN 022   | Under counselling technique in interpersonal communication and counselling:  
• Using the 3 A’s (assessment, analysis, and action) approach  
• Listening and learning skills, and confidence building and support giving skills                                                                                   |
| Child Health                     | H CHN 026   | • Growth monitoring and promotion: use of the new WHO growth monitoring standards  
• Management of SAM without medical complications (outpatient care)                                                                                               |
| Basic Nutrition                  | H CHN 028   | The Basic Nutrition course provides the most recent nutrition technical updates, refer to ND01_H02c for the course outline                                                                                       |
| Basic Obstetric Nursing          | H CHN 031   | • Antenatal care: iron/folic acid supplementation, and dietary intake and diversity  
• Postnatal care: vitamin A, iron/folic acid supplementation, and diet intake and diversity  
• Neonatal care: early initiation of breastfeeding and exclusive breastfeeding  
• New iron and folic acid regime and counselling                                                                                                               |
| Principles of Disease Management & Control I | H CHN 050 | • Use of zinc for diarrhoea management                                                                                                               |
| Principles of Disease Management & Control II | H CHN 080 | • Nutrition care and support in the context of HIV and/or TB  
• New breastfeeding recommendations for HIV-positive mothers                                                                                                   |
| Vacation Practicum I             | I           | • Assist with growth monitoring and promotion, weighing, plotting weight, counselling mothers on growth of their children, and taking the mid-upper arm circumference (MUAC) of children 6–59 months |
| Vacation Practicum II            | II          | • Manage children with SAM in outpatient care: assessing, admission, follow-up, using the action protocol, and discharging children                                                                                 |
| Vacation Practicum III           | III         | • Conduct nutrition counselling and support on infant and young child feeding (breastfeeding and complementary feeding) using the 3 A’s approach (ask, analyse, and act)                                           |
Nutrition and Dietetics
Session 1: Nutrition and Health

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028.

Duration: 1 hour

Introduction

This session will help students think about why nutrition is important to human health and how this relates to their future roles as nurses and midwives.

Competency Area

Be able to state why nutrition is important for health.

Learning Outcomes

By the end of this session, students will be able to:

1. Describe the importance of nutrition in health and disease.
2. Demonstrate motivation to learn about nutrition and show commitment to promote nutrition as a nurse or midwife.

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. Describe the importance of nutrition in health and disease. | a) Two reasons why nutrition is important for health  
b) Group work to mindmap how malnutrition affects the individual, family, and community  
c) Types of malnutrition  
d) Problems associated with overnutrition | Paper (2 pieces per student)  
Large paper for mindmap (enough for 1 per 4-6 students) | 45 minutes |
| 2. Demonstrate motivation to learn about nutrition and show commitment to promote nutrition as a nurse or midwife. | a) Discussion: what is a nurses role in improving nutrition  
b) Course expectations  
c) Outline of course content, learning objectives, and competencies | ND1_HO2c Course Outline | 15 minutes |

Materials Required

1. ND1_HO2c Course Outline (for courses: RGN 033, MDW 040, RCN 033, CHN 028)  
2. Paper (2 pieces per student)  
3. Sticky tape to stick paper to board (optional)  
4. Large paper for mindmap (enough for 1 per 4-6 students)  
5. ND1_RS1 Creating a Mindmap. (Source: The Balance Consortium. ‘Learn How to Mind Map’. Available at http://www.howtomindmap.co.uk/.)

Preparation Suggestions

1. Read through session outline  
2. Prepare paper for group work
3. Read through ND1_RS1 Creating a Mindmap to prepare for activity 1b

Further Reading

1. ND1_RS2 Key Facts. (Source: UNICEF Community Nutrition CD, 2006, St Albans: TALC)

Session Details

Learning Outcome 1: Describe the importance of nutrition in health and disease

Activity 1a
Ask each student to write two reasons why nutrition is important for health on a piece of paper. Collect all of the papers and read out the reasons given of why nutrition is important for health.

Activity 1b
Say: ‘We can see that there are many reasons why nutrition is important for health, now let’s look at it from a slightly different angle. Let’s think about a 3 year old girl who does not have a good diet; does not get enough energy from her food; and her diet is low in important nutrients such as protein, iron, and vitamin A. How does poor nutrition or malnutrition affect her, her family, and the community, now and in the future? ’

Group work: In groups (4-6) create a mindmap showing the effects of poor nutrition on the child, her family, and the community, now and in the future. Think about different possible scenarios.

Feedback: Each group presents their mindmap to the class.

Activity 1c
Ask: ‘What does the term malnutrition mean to you? What types of malnutrition can you think of?’ Write students responses on the board and fill in any gaps from the list below.

- Undernutrition—stunting (chronic), underweight (chronic and/or acute), wasting (acute), and micronutrient deficiencies
- Overnutrition—overweight and obesity

Undernutrition and overnutrition will be discussed further in session 6 and session 7 of the Nutrition and Dietetics course.

Activity 1d
Ask: ‘Often we focus on undernutrition but overnutrition is increasingly becoming a problem in Ghana. This is known as the double burden of malnutrition—where both under and overnutrition coexist. What are the health problems associated with under and overnutrition?’ Make sure that the items in the following table in bold are mentioned.

---

2 This CD can be ordered free from Teaching Aids at Low Cost at https://www.talcuk.org/work-with-talc/community-nutrition-cd.htm.
Undernutrition Health Problems

Increased risk of:
- Infection
- Mortality

Overnutrition Health Problems

Metabolic:
- Insulin resistance, impaired glucose tolerance, and type 2 diabetes
- Dyslipidaemia
- Fatty liver/non-alcoholic steatohepatitis (NASH)
- Gallstones
- Polycystic ovarian syndrome/infertility in women

Poor/delayed cognitive development in children

Cardiovascular:
- Hypertension
- Coronary heart disease
- Stroke
- Varicose veins
- Peripheral oedema

Poor growth

Cancers (colon, pancreas, kidney, breast, endometrial, prostatic)

Poor pregnancy outcomes

Sleep apnoea

Lower worker productivity

Joint problems and osteoarthritis

Ask: ‘Why is this of national importance?’ Discussion points include:

- Economic burden of children not reaching their maximum learning capacity, which could affect their livelihoods later in life
- Children who are slower to learn may take up more of a teacher’s time, which could disadvantage other pupils
- Children who are frequently sick may miss school, which may affect their education
- Cost to the education system for children who have to repeat classes or years
- Loss of income when parents take time off to care for children who are frequently sick
- Children who do not grow well are unlikely to meet their maximum growth potential. This may affect their muscle strength and ability to work to their maximum potential, which may mean they do not earn as much as others who are well nourished
- Cost to both families and the health system for children and adults who are frequently sick
- People who die young are an economic and emotional loss to families.

Learning Outcome 2: Demonstrate motivation to learn about nutrition and commitment to promoting nutrition

Activity 2a

Class discussion: ‘What is a nurse's role in improving the nutrition of patients in a health care setting?’

Activity 2b

Individual work: Ask students to write down their answers to the following:
I think nutrition is important because...

In this nutrition and dietetics module I hope to learn about ... and gain skills in ...

Feedback: If the class is less than 12 students, ask them to read their statements in front of class. If the class has more than 12 students, give groups (of 4 or 5) 10 to 15 minutes to share and discuss their reasons before reporting back to the class. Discuss the commonalities and differences.

Group discussion ends with students creating a list of what they regard as the nurses role in treating and preventing malnutrition.

**Activity 2c**

Outline the course content (using the file ND1_HO2c Course Outline), highlight the learning outcomes, and explain that competency as well as knowledge will be assessed.
Session 2: Nutrients, Food Sources, and Functions

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028.

Duration: 2 hours, 45 minutes

Introduction

This session will give students an understanding of the main food groups, sources of major nutrients in Ghana, and the concept of a balanced diet. This knowledge will help them promote a healthy diet to individuals that they meet in a health care setting.

Competency Area

Be able to explain the concept of a ‘balanced diet’ and how it can be achieved in Ghana.

Learning Outcome

By the end of the session students will be able to:

1. List food groups, giving examples for each
2. State foods rich in each of the following: energy as carbohydrate, energy as fat, and energy as protein and iron
3. Explain the concept of dietary promoters and inhibitors with examples
4. Explain what is meant by the term ‘balanced diet’ using examples for specific regions of Ghana.

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. List food groups giving examples for each | a) Individual work to define food components’ roles in the body  
b) Matching foods and three food groups  
c) Small groups: How helpful are the three food groups?  
d) Common foods for the north, south, urban and rural | Small pieces of paper (2 per student)  
Food group name signs ND2_RS2 Ghana 3  
Food Groups Poster | 1 hour, 30 minutes |
| 2. State foods rich in each of the following: energy as carbohydrate, energy as fat, and energy as protein, vitamin A, iron, and iodine | a) Ask students which foods groups Ghanaians often do not have sufficient intake of  
b) Looking at foods listed under food groups, name foods especially rich in certain nutrients | | 15 minutes |
| 3. Explain the concept of dietary promoters and inhibitors with examples | a) Explanation of the concept of dietary promoters and inhibitors  
b) Tips to increase iron absorption | | 15 minutes |
4. Explain what is meant by a balanced diet using examples for specific regions of Ghana

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Group discussion on why a balanced diet is important</td>
</tr>
<tr>
<td>b)</td>
<td>Individual work: Is my typical daily diet balanced?</td>
</tr>
<tr>
<td>c)</td>
<td>Pair work and presentation on an example of a balanced diet</td>
</tr>
<tr>
<td>d)</td>
<td>Discussion on which parts of the population have diets similar to the diets presented?</td>
</tr>
</tbody>
</table>

Materials Required

1. Paper cut into small strips (enough to give each student 2 small strips)
2. Four A4-sized pieces of paper with a main food group written on each one

Preparation Suggestions

1. Read through the lesson plan
2. Cut up the paper required for activity 1b
3. Write the food groups on paper for activity 1b

Further Reading and Resources

3. ND2_RS1 Nutrient Functions. (Source: UNICEF. 2006. ‘Community Nutrition’ CD. St Albans: TALC.)
4. ND2_RS2 Ghana 3 Food Groups Poster.
5. ND2_RS3 Role of Nutrients and Sources. (Source: CARE USA. ‘The Role of Some Vitamins and Minerals in the Body and Sources of Nutrients, HIV and Nutrition’ CD.)
6. Micronutrient e-learning course (http://www.sightandlife.org/index.php?id=72&no_cache=1). You are required to register before being able to access the course. To register, click 'log-in' at the top left hand corner of the page, then click 'not a member, click here to register'. You will be sent an email which will then direct you to the e-learning course. The course gives an overview of all the micronutrients but individual modules can be selected.

Session Details

Learning Outcome 1: List food groups, giving examples for each

Activity 1a

Individual work: Write the list on the left on the board and ask students to write down its use in the body.
<table>
<thead>
<tr>
<th>Food Group</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrates</td>
<td>Fuel for energy for body heat and work</td>
</tr>
<tr>
<td>Fats</td>
<td>Fuel for energy and for essential fatty acids</td>
</tr>
<tr>
<td>Protein</td>
<td>Growth and repair</td>
</tr>
<tr>
<td>Vitamins</td>
<td>Metabolic processes and protection or immunity</td>
</tr>
<tr>
<td>Minerals</td>
<td>Developing body tissues and metabolic processes and protection or immunity</td>
</tr>
<tr>
<td>Water</td>
<td>Body fluid and regulation of body temperature</td>
</tr>
<tr>
<td>Fibre</td>
<td>Forms a vehicle for other nutrients, adds bulk to the diet, provides a habitat for bacterial flora, and assists proper elimination of refuse</td>
</tr>
</tbody>
</table>

Feedback: Read out correct answers.

Point out: There are divisions within the major groups. For example, carbohydrates can be complex or simple sugars. Fats can be saturated or mono- or poly-unsaturated. Vitamins can be water soluble (vitamins C and B) or fat soluble (vitamins A, D, E, and K).

Ask: ‘Why does it matter that vitamins are water or fat soluble?’ The answer should include that water-soluble vitamins are readily excreted in urine without appreciable storage, so frequent consumption is necessary. Water-soluble vitamins are easily lost with overcooking. Fat soluble vitamins dissolve in fat, hence the name. They are absorbed with dietary fat, which is why people with malabsorption (e.g., ulcerative colitis or Crohn’s disease) have poor absorption of these vitamins. They are primarily stored in the liver and body fat. Except for vitamin K, they are excreted more slowly than water-soluble vitamins, which is why vitamin A can be toxic if too much is taken.

**Activity 1b**

Show students the poster of the three food groups: protective foods, energy giving foods, and body building foods (ND2_RS2 Ghana 3 Food Groups Poster).

Ask each student to write the name of two food items that are not maize, cassava, or plantains, e.g., yam or okra, on two separate pieces of paper (so two different foods are on two pieces of paper). Collect the pieces of paper and put them in a pile at the front of the room.

Place 3 pieces of paper labelled protective foods, energy giving foods, and body building foods on separate desks.

Ask each student to take two pieces of paper from the pile at the front and place each in the food group that they belong to.

Feedback: Ask a student to read out all the foods for each food group and then ask if they think any of them should be moved to another group. Ask them which groups maize, cassava, and plantains belong to. Where there is debate about which food group an item should be in, explain that most foods can fit in more than one group but can be categorized by their main contribution to the diet. Write the following examples on the board.
Energy giving foods (carbohydrates, fats, and oil) | Body building foods (animal and plant protein) | Protective foods (vitamins and minerals)
---|---|---
- Grains: rice, maize, millet, and sorghum
- Starchy roots: cassava, yam, and potato
- Sugar
- Plantain | - Pulses: lentils and beans
- Seeds and nuts
- Animal sources: eggs, meat, offal, and fish | - Green leafy vegetables
- Fruits

**Activity 1c**
Small group discussion: ‘Do you think dividing food into these three food groups is helpful? Think of at least two reasons why it is helpful and three reasons why it is not helpful.’

Feedback: Each group gives at least one reason why it is helpful and one why it is not helpful.

**Activity 1d**
Ask: ‘Which foods are common in different regions of Ghana?’ Write North, South, Rural, and Urban on the board and write common foods found in these areas that students mention. For example:

- North: millet, sorghum, yam, and groundnuts
- South: cassava, maize, plantains, cocoyam, and palm oil
- Urban: rice, wheat, and poultry meat
- Rural: beans and pulses

**Learning Outcome 2: State foods rich in each of the following: energy as carbohydrate, energy as fat, and energy as protein, vitamin A, iron, and iodine**

**Activity 2a**
Ask: ‘What food groups do you think people in Ghana often lack? Are there specific vitamins and minerals that people in Ghana are often deficient in?’

Feedback: Some people do not get sufficient energy to meet their needs from carbohydrate and fat. This means that the protein eaten is converted to energy. If people get enough energy from fat and carbohydrate, they should get enough protein to meet their needs. The exception is where the staple is very low in protein and high in bulk, such as plantains, yams, and cassava. Known vitamin and mineral deficiencies in Ghana are vitamin A, iron, and iodine. It is also likely that zinc intake is low because the rich sources of zinc are similar to that for iron, although we have no data on this.

**Activity 2b**
Instruct students to look at the list of food for each food group and write down three foods that they think are particularly rich in protein, fat, carbohydrate, iron, vitamin A, and iodine.

Feedback: Ask for examples from each food group to ensure that the list below is covered.

- Protein: meat and dairy products, fish, and pulses
- Fat: vegetable oil; meat and dairy products, especially visible fat on meat and butter/margarine; nuts and seeds; and oily fish
- Carbohydrates: grains, starchy root vegetables, and plantains
- Iron: meat, especially red meat and liver; and fish
- Vitamin A: dairy products; liver; red/orange fruits and vegetables, e.g., orange-fleshed sweet potatoes, carrots, pumpkins, mangos, and papayas; and dark green leafy vegetables
- Iodine: iodised salt, and sea fish

Learning Outcome 3: Explain the concept of dietary promoters and inhibitors

Activity 3a
Board work: Explain that absorption of iron is helped and hindered by different things:

<table>
<thead>
<tr>
<th>Promoted or Enhanced</th>
<th>Inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin C (ascorbic acid): found in fresh fruits, juices, potatoes and some other tubers, and other vegetables such as those with green leaves, cauliflower, and cabbage</td>
<td>Phytates: present in cereal bran, cereal grains, highly milled flour, legumes, nuts, and seeds</td>
</tr>
<tr>
<td>Meat and fish</td>
<td>Polyphenols: found in many vegetables, some grains (e.g., sorghum), tea (tannins), coffee, cocoa, herbal infusions in general, and some vegetables</td>
</tr>
</tbody>
</table>

Note that iron deficiency and iron deficiency anaemia can also be due to blood loss from hookworms and bilharzia or schistosomiasis. Malaria can cause anaemia because of the destruction of red blood cells, although the iron can be recirculated.

Activity 3b
Small groups: Instruct small groups to write three tips to tell people to help them increase their iron absorption.

Feedback: Ask each group to share a different tip. For example, drink tea after 1–2 hours of eating as most of the food will have left the stomach so the tea will not inhibit iron absorption; eat citrus fruit or another source of vitamin C such as tubers, cabbage, carrots, or cauliflower at meals to enhance iron absorption from cereals and pulses. Eat foods containing inhibitors at meals that are low in iron content, e.g., a cereal-based porridge with milk as this will provide calcium without affecting iron nutrition.

Learning Outcome 4: Explain what is meant by a balanced diet

Activity 4a
Class discussion: Ask students ‘Why is it important to have a balanced diet?’ If students are struggling to discuss this, ask why it is important to have protein, carbohydrate, fat, vitamins, etc. in our diet. Answers could include: to ensure the body gets all the nutrients that it needs, or if one nutrient is missed, the body may suffer from deficiency diseases.

Activity 4b
Individual work: Ask students to write down their typical daily diet, including all snacks, and to identify which food groups each food item belongs to.

Feedback: In pairs, ask students to discuss whether their diets include food from all of the food groups and whether there are some groups which they need to eat more or less of.
Activity 4c

In pairs, ask students to write an example of a daily diet that includes a good variety of food.

Feedback: Split the class into groups of 8–10 people. Have each pair present their daily diet to the group and ask the group to decide which pair has the best example of a balanced diet. The chosen pair from each group then presents their diet to the whole class.

Activity 4d

Class discussion: ‘Which areas of Ghana do these (student) diets represent? Do we have an example of a diet from the North and the South? What about for a rural farming family and a wealthy urban family?’ If not, ask students to give an example of a balanced meal for individuals living in different regions of Ghana.
Session 3: Nutrition Needs Throughout the Lifecycle

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028, and can be linked to Anatomy and Physiology II (RGN 020/MDW 020/RCN 020).

Duration: 3 hours

Introduction

This session will help students gain an understanding of nutritional requirements throughout the life course and different factors affecting requirements. They will acquire an understanding of whole body metabolism and the contribution of different factors to energy expenditure.

Competency Area

Be able to explain why good nutrition is essential throughout life.

Learning Outcomes

By the end of this session students will be able to:

1. Describe nutritional requirements for different stages in the lifecycle and different lifestyles (pregnancy, lactation, infancy, childhood, adolescence, adulthood, and old age)
2. Outline key concepts of whole body metabolism
3. Outline physiological reasons why a person’s lifecycle stage and lifestyle each affect nutritional status

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. Outline key concepts of whole body metabolism | a. Small groups define energy intake, expenditure, balance, and requirements  
   b. Discuss what factors affect energy expenditure  
   c. Explain the components of energy expenditure  
   d. Pair work to calculate physical activity level (PAL)  
   e. Pair work to discuss energy expenditure differences  
   f. Energy expenditure and disease and trauma | ND3_HO1a Energy Definitions  
ND3_HO1c Components of Energy Expenditure  
ND3_HO1d Calculating Energy Needs  
ND3_RS4 Energy Expenditure Values | 1 hour, 30 minutes |
| 2. Describe nutritional requirements for the different lifecycle stages and different lifestyles | a. Small groups discuss energy and nutrient demands at different life stages  
   b. Pair work on foods to improve nutrient intake during pregnancy | ND3_HO2a Life Stages and Nutritional Requirements  
ND3_HO2b Pregnancy Requirements | 1 hour |
| 3. Outline physiological reasons why lifecycle stage and lifestyle each affect nutritional status | Individual work: What are the early origins of disease hypothesis? How is this relevant in Ghana in terms of the dual burden of malnutrition? | | 30 minutes |
Materials Required

1. ND3_HO1a Energy Definitions
2. ND3_HO1c Components of Energy Expenditure
3. ND3_HO1d Calculating Energy Needs
4. ND3_HO2a Life Stages and Nutritional Requirements
5. ND3_HO2b Pregnancy Requirements
6. ND3_RS4 Energy Expenditure Values (1 copy per 2–4 students)

Preparation Suggestions

1. Read through session plan
2. Familiarise yourself with components of energy expenditure information in preparation for presenting information
3. Ensure sufficient handouts are printed

Further Reading and Resources

3. ND3_RS1 Malnutrition Through the Lifecycle. (Source: UNICEF. 2006. ‘Community Nutrition’ CD. St Albans: TALC.)
5. ND3_RS3 Energy Needs. (Source: UNICEF. 2006. ‘Community Nutrition’ CD. St Albans: TALC.)
9. ‘Public Health Overview: A Foundation for a Lifetime’ (http://www.thebarkerfoundation.org/pho/)
Session Details

Learning Outcome 1: Outline key concepts of whole body metabolism

Activity 1a
In small groups have students write short definitions of the following: energy intake, energy expenditure, energy balance, and energy requirement.

Feedback: Share definitions and give students ND3_HO1a Energy Definitions.

Activity 1b
Explain: ‘We have looked at energy intake, energy expenditure, energy balance, and energy requirement. Now we will focus on factors that affect how our body uses the energy from our food.’

Ask: ‘What other factors may affect energy expenditure?’

Write ideas mentioned on the board, e.g., weight, fat free mass (muscle and organ tissue), daily activities, and disease.

Activity 1c
Explain the components of energy expenditure using information sheet ND3_HO 1c Components of Energy Expenditure for reference. Ask students to write definitions for the following key terms related to energy expenditure: basal metabolic rate, thermic effect of feeding, and physical activity.

Activity 1d
Explain: Energy expenditure can be expressed as a multiple of basal metabolic rate (BMR) termed physical activity level (PAL). This takes into account how active an individual is.

Pair work: Work out the PAL and energy requirements using ND3_HO1d Calculating Energy Needs. Provide ND3_RS4 Energy Expenditure Values (one copy per 2-4 students) for reference. Explain that Tom is a 40 year old farmer weighing 62.4 kg. On this day, he cycled to a farmer’s meeting, met with friends, and then came home to harvest cassava and sold some to a buyer. He also spread some manure on his maize plot. In the evening he went to visit some friends and they listened to the radio. After dinner he sat around and chatted with the family before going to bed.

Feedback: Provide students with the correct answers. Discuss which of Tom’s activities have the highest energy costs (e.g., loading sacks of cassava and cycling—column B) and which activities used the most energy because more time was spent doing them (e.g., digging up cassava—column D).

Tom’s weight: 62.4 kg

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount of time (hours)</td>
<td>Average PAL</td>
<td>Rate Tom uses energy per hour (Tom's weight x B)</td>
<td>Tom's energy needs (C x A)</td>
</tr>
<tr>
<td>Sleeping</td>
<td>7.00</td>
<td>1.0</td>
<td>62.40</td>
<td>437</td>
</tr>
<tr>
<td>Washing self</td>
<td>0.30</td>
<td>2.3</td>
<td>143.52</td>
<td>43</td>
</tr>
<tr>
<td>Dressing</td>
<td>0.10</td>
<td>2.4</td>
<td>149.76</td>
<td>15</td>
</tr>
<tr>
<td>Activity</td>
<td>Time (h)</td>
<td>PAL</td>
<td>Energy Use (kcal/h)</td>
<td>Energy Need (kcal/d)</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------</td>
<td>-----</td>
<td>---------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Eating breakfast</td>
<td>0.30</td>
<td>1.4</td>
<td>87.36</td>
<td>26</td>
</tr>
<tr>
<td>Cycling to and from village to attend meeting</td>
<td>1.00</td>
<td>7.0</td>
<td>436.80</td>
<td>437</td>
</tr>
<tr>
<td>Sitting at farmers meeting</td>
<td>1.50</td>
<td>1.2</td>
<td>74.88</td>
<td>112</td>
</tr>
<tr>
<td>Standing and talking to friends</td>
<td>1.00</td>
<td>1.4</td>
<td>87.36</td>
<td>87</td>
</tr>
<tr>
<td>Digging up cassava</td>
<td>5.00</td>
<td>5.6</td>
<td>349.44</td>
<td>1,747</td>
</tr>
<tr>
<td>Eating lunch</td>
<td>0.50</td>
<td>1.4</td>
<td>87.36</td>
<td>44</td>
</tr>
<tr>
<td>Fertilizing maize field with manure</td>
<td>2.00</td>
<td>5.2</td>
<td>324.48</td>
<td>649</td>
</tr>
<tr>
<td>Loading large sacks of cassava on truck</td>
<td>0.50</td>
<td>9.7</td>
<td>605.28</td>
<td>303</td>
</tr>
<tr>
<td>Walking uphill to see friends</td>
<td>0.50</td>
<td>7.1</td>
<td>443.04</td>
<td>222</td>
</tr>
<tr>
<td>Listening to the radio with friends</td>
<td>2.00</td>
<td>1.2</td>
<td>74.88</td>
<td>150</td>
</tr>
<tr>
<td>Walking downhill home</td>
<td>0.30</td>
<td>3.5</td>
<td>218.40</td>
<td>66</td>
</tr>
<tr>
<td>Eating dinner</td>
<td>0.50</td>
<td>1.4</td>
<td>87.36</td>
<td>44</td>
</tr>
<tr>
<td>Sitting at home with family</td>
<td>1.50</td>
<td>1.2</td>
<td>74.88</td>
<td>112</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>4,494</strong></td>
<td></td>
</tr>
</tbody>
</table>

Explain that Mary is 27 years old and works as a maid/nanny in the city. She takes the bus to work, which takes an hour each way. She buys some food to cook on her way to work. After cleaning the house and yard, she washes clothes by hand and irons them. For a lot of the time, Mary is carrying 9 month old Anna on her back. When the older children are back from school she plaits their hair before preparing the evening meal and bathing the children. Once this is done she gets the bus back home where she eats dinner prepared by her mother.

Mary's weight: 48.7 kg

<table>
<thead>
<tr>
<th>Activity</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amount of time (hours)</strong></td>
<td><strong>Average PAL</strong></td>
<td><strong>Rate Mary uses energy per hour (Mary's weight x B)</strong></td>
<td><strong>Mary's energy needs (C x A)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sleeping</strong></td>
<td>6</td>
<td>1</td>
<td>48.7</td>
<td>292</td>
</tr>
<tr>
<td><strong>Dressing self</strong></td>
<td>0.2</td>
<td>3.3</td>
<td>160.71</td>
<td>32</td>
</tr>
<tr>
<td><strong>Eating (all meals)</strong></td>
<td>1</td>
<td>1.6</td>
<td>77.92</td>
<td>78</td>
</tr>
<tr>
<td><strong>Walking to and from bus stop</strong></td>
<td>0.5</td>
<td>2.5</td>
<td>121.75</td>
<td>61</td>
</tr>
<tr>
<td><strong>Sitting on bus to and from work</strong></td>
<td>2</td>
<td>1.2</td>
<td>58.44</td>
<td>117</td>
</tr>
<tr>
<td><strong>Shopping</strong></td>
<td>0.5</td>
<td>4.6</td>
<td>224.02</td>
<td>112</td>
</tr>
<tr>
<td><strong>Housework</strong></td>
<td>4</td>
<td>2.8</td>
<td>136.36</td>
<td>545</td>
</tr>
<tr>
<td><strong>Sweeping the yard</strong></td>
<td>0.5</td>
<td>3.6</td>
<td>175.32</td>
<td>88</td>
</tr>
<tr>
<td><strong>Washing clothes</strong></td>
<td>1.5</td>
<td>2.8</td>
<td>136.36</td>
<td>205</td>
</tr>
<tr>
<td><strong>Hanging wash out to dry</strong></td>
<td>0.15</td>
<td>4.4</td>
<td>214.28</td>
<td>32</td>
</tr>
<tr>
<td><strong>Ironing</strong></td>
<td>0.75</td>
<td>1.7</td>
<td>82.79</td>
<td>62</td>
</tr>
<tr>
<td><strong>Plating children's hair</strong></td>
<td>1</td>
<td>1.8</td>
<td>87.66</td>
<td>88</td>
</tr>
</tbody>
</table>
### Activity 1e

Pair work: Discuss how energy expenditure will differ between the individuals listed in the following table. What advice could you give to each of the people in the table (or their caregiver) to improve their nutritional status?

<table>
<thead>
<tr>
<th>Individual</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 month old baby</td>
<td>Frequently breastfeed. The infant does not need anything else, including water.</td>
</tr>
<tr>
<td>Very thin 14 year old girl who walks to and from school (1 hour) every day</td>
<td>Make sure she eats breakfast before she leaves for school. Take a packed lunch if food is not provided at school. Eat a snack when she gets in from school and then a proper evening meal.</td>
</tr>
<tr>
<td>An obese male working in an office</td>
<td>Do more physical activity, e.g., walk for at least 30 minutes a day. Play football with children. Reduce portion size.</td>
</tr>
<tr>
<td>Pregnant woman who works in the field all day</td>
<td>Rest periodically. Ask family to help with some of the work.</td>
</tr>
</tbody>
</table>

### Activity 1f

In small groups: Hypothesise how disease and trauma will affect energy and nutrient intake and energy expenditure.

Feedback: Share ideas and ensure the following are mentioned:

- Disease may result in impaired absorption of micronutrients
- Reduction in dietary intake due to loss of appetite or eating difficulties
- Increase in resting metabolic rate in burn injury patients
- Physical activity is often impaired or reduced
- Reduced physical activity over time reduces muscle mass, affecting resting metabolic rate

### Learning Outcome 2: Describe nutritional requirements for the different lifecycle stages and different lifestyles

#### Activity 2a

Small groups: Have groups discuss in which stages of life they think energy demands are highest. Ask questions such as: ‘What affects energy demands in each stage?’ and ‘Which specific nutrients may especially be needed during these stages?’

- 0–2 years
- 2–10 years
- Puberty
- Adulthood
- Pregnancy
- Lactation
- Old age

Feedback: Have each group present one stage. Discuss which stage may have the highest energy demands. Point out that many factors effect energy requirements. Hand out ND3_HO2a Life Stages and Nutritional Requirements and point out nutrient demands at each stage.

Activity 2b

Pair work: Think of food items that could be recommended for pregnant women to increase their micronutrient intake. Hand out ND3_HO2b Pregnancy Requirements.

Feedback: Discuss foods for each nutrient mentioned on the handout. Refer back to Session 2.

Learning Outcome 3: Outline physiological reasons why lifecycle stage and lifestyle each affect nutritional status

Activity 3

Discussion: What are the early origins of disease hypothesis? How is this relevant in Ghana in terms of the dual burden of malnutrition?
Session 4: Nutritional Status Assessment of Individuals and Communities

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028. This session can be linked to teaching on growth monitoring in Paediatric Nursing (RGN 064), Child Health (CHN 026), and Principles and Practice of Community Nursing and Administration II (RCN 060).

Duration: 2 hours, 40 minutes

Introduction

This session provides students with an understanding of the four nutrition assessment methods and their uses.

Competency Area

1. Assess nutritional status using anthropometric measurements
2. List the different methods that can be used to assess dietary intake
3. List the indicators for iron, vitamin A, and iodine status and the prevalence (%) rates that define when they are problems of public health significance

Learning Outcomes

By the end of this session students will be able to:

1. Name the four nutrition assessment methods and their uses (anthropometry, clinical, dietary, and biochemical)
2. List the common anthropometric measures and indices used with an explanation of when they would be used: weight-for-height (WFH), weight-for-age (WFA), height-for-age (HFA), mid-upper arm circumference (MUAC), body mass index (BMI), and waist circumference
3. List the clinical signs of the following: kwashiorkor, marasmus, vitamin A deficiency, and iodine deficiency
4. List the uses of biochemical markers and the specific markers for iron deficiency anaemia, vitamin A deficiency, and iodine deficiency
5. List three different methods of dietary assessment and an advantage and disadvantage of each: food diary, food frequency questionnaire, and 24-hour recall

Session Plan

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name the four nutrition assessment methods and their uses (anthropometry, clinical, dietary, and biochemical).</td>
<td>a. Whole class discussion: Why do we assess the nutritional status of individuals and communities? b. Individual work on methods to assess nutritional status</td>
<td>ND4_HO1b Nutritional Status Assessment Methods</td>
<td>45 minutes</td>
</tr>
<tr>
<td>2. List the common anthropometric measures and indices used with an explanation of when they would be used.</td>
<td>• Pairs list anthropometric measures and indices for assessing nutritional status • Pairs discuss use of HFA, WFH, WFA, MUAC, and BMI</td>
<td>ND4_HO1b Nutritional Status Assessment Methods</td>
<td>20 minutes</td>
</tr>
</tbody>
</table>
3. List the clinical signs of the following: kwashiorkor, marasmus, vitamin A deficiency, and iodine deficiency.
   - Advantages and disadvantages of clinical signs
   - Group work to describe signs of acute malnutrition using photos
   - Signs of kwashiorkor
   - Signs of marasmus
   - Pair work: eye signs of vitamin A deficiency
   - Signs of iodine deficiency
   - Signs of severe anemia
   - ND4_HO3b WHO Photobook
   - ND4_HO3f Iodine Deficiency Photos
   - 45 minutes

4. List the uses of biochemical markers and the specific markers for iron deficiency anaemia, vitamin A deficiency, and iodine deficiency.
   - Pair work to discuss factors that may influence the decision to use biochemical markers
   - Group work: When might we use a biochemical test for iron deficiency?
   - ND4_RS1 Accuracy and Precision
   - ND4_RS2 Accuracy and Precision Answers
   - ND4_HO4b Public Health Cut-offs for VAD, IDD and IDA
   - 30 minutes

5. List three different methods of dietary assessment and an advantage and disadvantage of each: food diary, food frequency questionnaire, and 24-hour recall.
   - Explanation of methods and discussion of the advantages and disadvantages of each method
   - 20 minutes

**Materials Required**

1. ND4_HO1b Nutritional Status Assessment Methods
3. ND4_HO3f Iodine Deficiency Photos. (Source: see handout for references.)
4. ND4_RS1 Accuracy and Precision (1 copy for demonstration)
5. ND4_RS2 Accuracy and Precision Answers (1 copy for demonstration)

**Preparation Suggestions**

1. Print handouts
2. Review further reading and resources
3. Review Programming for Nutritional Outcomes e-learning course ‘Session 3: Methods of Nutritional Assessment’ (London School of Hygiene & Tropical Medicine)
Further Reading and Resources


Session Details

Learning Outcome 1: Name the four nutrition assessment methods and their uses

Activity 1a

Ask: ‘Why do we assess the nutritional status of individuals and communities?’ Write student responses on the board and ensure the following points are covered.

<table>
<thead>
<tr>
<th>Individuals</th>
<th>Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To screen and identify children who are malnourished and need additional care</td>
<td>• To conduct a needs assessment to identify the need for nutrition interventions in a population and/or subgroups of the population</td>
</tr>
<tr>
<td>• To diagnose nutrition deficiency diseases</td>
<td>• To monitor and evaluate an existing intervention</td>
</tr>
<tr>
<td>• To monitor progress of children in inpatient care or in community management of malnutrition programmes</td>
<td>• To assess the effect of an emergency on the nutritional status of a population</td>
</tr>
<tr>
<td>• To monitor nutritional status of hospital inpatients</td>
<td></td>
</tr>
<tr>
<td>• To monitor that a child is growing well</td>
<td></td>
</tr>
<tr>
<td>• To ensure adults are a healthy weight and not at increased risk of chronic diseases</td>
<td></td>
</tr>
</tbody>
</table>

Activity 1b

Ask: ‘How do we assess nutritional status?’ Write the four categories of assessment (anthropometric, clinical, dietary, and biochemical) on the board and ask students for an example of when you would use each.

Hand out ND4_HO1b Nutritional Status Assessment Methods. Students can work individually or in pairs to complete the handout.

Feedback: Read out the answers from the following table. For each row, also discuss the specific measure that might be used.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Appropriate Assessment Method</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>To monitor child growth in a health clinic</td>
<td>Anthropometric</td>
<td>Weight-for-age</td>
</tr>
<tr>
<td>To identify cases of iodine deficiency in a rural community</td>
<td>Clinical</td>
<td>Goitre</td>
</tr>
<tr>
<td></td>
<td>Biochemical</td>
<td>Urinary iodine</td>
</tr>
<tr>
<td>To assess whether a child requires inpatient care for severe acute malnutrition (SAM)</td>
<td>Anthropometric</td>
<td>Weight-for-height, MUAC</td>
</tr>
<tr>
<td></td>
<td>Clinical</td>
<td>Bilateral pitting oedema</td>
</tr>
</tbody>
</table>
To identify cases of vitamin A deficiency in school children
Clinical Biochemical
Bitot spots, corneal ulceration, xerophthalmia, night blindness, serum retinol

To assess whether pregnant women in a rural community are iron deficient
Biochemical
Haemoglobin concentration

To assess whether an obese individual is making improvements to their diet and losing weight
Anthropometric Dietary
BMI, waist circumference Food diary

To evaluate the effectiveness of a national salt iodisation programme
Biochemical
Urinary iodine

To assess whether the dietary intake of a population matches requirements
Dietary
Food frequency questionnaire

To assess whether a child can be discharged from a community-based management of acute malnutrition programme
Anthropometric Clinical
Weight gain Bilateral pitting oedema

Learning Outcome 2: List the common anthropometric measures and indices used with an explanation of when they would be used

Activity 2a
Ask: ‘What are the advantages and disadvantages of using anthropometric measurements?’

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not intrusive</td>
<td>• Do not identify specific deficiencies</td>
</tr>
<tr>
<td>• Inexpensive</td>
<td>• Do not identify underlying causes of malnutrition</td>
</tr>
<tr>
<td>• Quick</td>
<td>• May not be appropriate for certain individuals. For example, BMI is affected</td>
</tr>
<tr>
<td>• Worldwide Standards to compare measures against (WHO Growth Reference)</td>
<td>by muscle mass, so it is not always an appropriate measure of obesity. An</td>
</tr>
<tr>
<td></td>
<td>athlete or sports person can have a large muscle mass which may result in</td>
</tr>
<tr>
<td></td>
<td>them being classified as overweight when they are not. Conversely, older</td>
</tr>
<tr>
<td></td>
<td>people may lose muscle mass as they become less mobile and they will be</td>
</tr>
<tr>
<td></td>
<td>classified as underweight when they may be healthy.</td>
</tr>
</tbody>
</table>

In pairs: Have students write as many specific anthropometric measures and indices for assessing nutritional status that they know.

Feedback: Write student ideas on the board.

The responses should include:

• Weight-for-height (WFH)
• Weight-for-age (WFA)
• Height-for-age (HFA)
• Mid-upper arm circumference (MUAC)
• Body mass index (BMI)
• Waist circumference
**Activity 2b**

In pairs, have the students discuss in what situations they would use the following indices: height-for-age (HFA), weight-for-height (WFH), weight-for-age (WFA), mid-upper arm circumference (MUAC), and body mass index (BMI).

Feedback: Ask for examples of situations where each of the measures would be used and discuss whether it is appropriate, and if not, which measure would be more appropriate.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>When Used?</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFA</td>
<td>To measure stunting to see if chronic undernutrition is falling</td>
</tr>
<tr>
<td>WFH</td>
<td>Screening for admission for inpatient/outpatient management of malnutrition</td>
</tr>
<tr>
<td>WFA</td>
<td>Growth monitoring</td>
</tr>
<tr>
<td>MUAC</td>
<td>Screening for admission for inpatient/outpatient management of malnutrition</td>
</tr>
<tr>
<td>BMI</td>
<td>Screening for obesity</td>
</tr>
</tbody>
</table>

**Learning Outcome 3: List the clinical signs of the following: kwashiorkor, marasmus, vitamin A deficiency, iron deficiency anaemia, and iodine deficiency**

**Activity 3a**

Discuss in pairs: ‘What are the advantages and disadvantages of assessing nutritional status using clinical signs?’

Feedback: Write student ideas on the board.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick to conduct assessment</td>
<td>Some signs may not be specific or sensitive, e.g., pale pallor of eyelids may be a sign of anaemia but may be missing in anaemic children with conjunctivitis</td>
</tr>
<tr>
<td>Low cost</td>
<td>Subjective—different people may classify a case differently</td>
</tr>
<tr>
<td>Useful for initial screening to identify cases for further investigation</td>
<td></td>
</tr>
</tbody>
</table>

**Activity 3b**

Group work: Divide the class into small groups. Give each group a different photo to look at from ND4_HO3b WHO Photobook. Ask them to write a list of features of the child. Each group should share their findings.

**Activity 3c**

Focus attention on photos 13 and 14. Ask students if they can name the condition (kwashiorkor). Ask students for the signs and symptoms of kwashiorkor and write them on the board. Add any that are missing using the following list:

- Swelling (oedema) of feet, lower legs, and arms or generalised swelling of upper limbs and puffy face (severe cases)
• Skin lesions (dermatosis)—may have patches of skin that are abnormally light or dark in colour, shedding of skin in scales or sheets, and ulceration of the skin of the perineum, groin, limbs, behind the ears, and in the armpits. There may be weeping lesions. There may be a severe rash in the nappy area.
• Hair changes—reddish, brittle, and easy to pluck
• Apathetic/lethargic, miserable
• Lack of appetite

**Activity 3d**

Focus attention on photos 3 and 4. Ask students to name the condition (marasmus or severe wasting). Check the list of features already on the board against the following list and add any features that are missing, using pictures to demonstrate.

- Easy to see bones
- 'Old man' look—loss of fat on the face
- Baggy pants—loose skin around the buttocks
- Loss of fat and muscle around ribs
- Loss of fat around the shoulders, upper arms, and thighs
- Alert and irritable

Point out that some children will have symptoms of both marasmus and kwashiorkor (e.g., photo 15)

**Activity 3e**

Ask: ‘What are the signs and symptoms of vitamin A deficiency?’ Use pictures to demonstrate.

<table>
<thead>
<tr>
<th>Signs</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night blindness</td>
<td>Bitot’s spots—superficial foamy white spots on the conjunctivia</td>
</tr>
<tr>
<td></td>
<td>Corneal clouding—opaque appearance of the cornea</td>
</tr>
<tr>
<td></td>
<td>Corneal ulceration—a break in the surface of the cornea</td>
</tr>
</tbody>
</table>

Pair work: Look at pictures 8-12. Describe signs of vitamin A deficiency.

- Photo 8: Pus, a sign of eye infection
- Photo 9: Corneal clouding, a sign of vitamin A deficiency
- Photo 10: Bitot’s spot, a sign of vitamin A deficiency, and inflammation (redness), a sign of infection
- Photo 11: Corneal clouding, a sign of vitamin A deficiency. The irregularity in the surface suggests that this eye almost has an ulcer
- Photo 12: Corneal ulcer (indicated by arrow), emergency sign of vitamin A deficiency. If not treated immediately with vitamin A and atropine, the lens of the eye may push out and cause blindness. This photo also shows inflammation, a sign of infection.

**Activity 3f**

Ask: ‘What are the signs of iodine deficiency?’ Show ND4_HO3f Iodine Deficiency Photos to demonstrate.
• Goitre—swelling of the thyroid glands. A sign of past iodine deficiency.
• Cretinism—rare, severe form of in utero iodine deficiency resulting in mental retardation and physical disabilities. Less severe brain damage is more common and includes low IQ and various degrees of deafness.

**Activity 3g**

Ask: ‘What are the signs of severe anaemia?’

Response: Significant pallor of the eyelids, tongue, nail beds, and palms.

Note: This is not a sensitive marker, so a large number of those screened by clinical examination will not have severe anaemia. It can be useful where biochemical tests are not available to identify individuals requiring urgent further testing.

**Learning Outcome 4:** List the uses of biochemical markers and the specific markers for iron deficiency anaemia, vitamin A deficiency, and iodine deficiency

**Activity 4a**

In pairs: Have students discuss factors that may influence the decision to use biochemical markers. Ask students to share their ideas.

<table>
<thead>
<tr>
<th>Influencers</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of marker</td>
<td>Extent to which the measurement is close to the true value</td>
</tr>
<tr>
<td>Validity of marker</td>
<td>Whether the index measured reflects the nutrient of interest, e.g., Hb does not measure iron deficiency, but it is a proxy</td>
</tr>
<tr>
<td>Precision of marker</td>
<td>Degree to which repeated measures give the same value</td>
</tr>
<tr>
<td>Sensitivity of marker</td>
<td>Extent to which changes in the index reflects changes in nutritional status</td>
</tr>
<tr>
<td>Specificity of marker</td>
<td>Ability of index to identify those individuals who are genuinely well or undernourished</td>
</tr>
<tr>
<td>Cost of test</td>
<td></td>
</tr>
<tr>
<td>Testing time</td>
<td></td>
</tr>
<tr>
<td>Intrusiveness of measure</td>
<td>Taking blood is more invasive than looking at pallor. Some people do not like giving stool samples.</td>
</tr>
</tbody>
</table>

If students need help understanding accuracy and precision, show ND4_RS1 Accuracy and Precision and ask them whether each example is accurate or inaccurate, precise or imprecise. Show answers using ND4_RS2 Accuracy and Precision Answers. Alternatively draw the examples from ND4_RS1 on the board.

**Activity 4b**

Hand out ND4_HO4b Public Health Cut-offs for VAD, IDD and IDA.

Discuss in groups: ‘When might you use a biochemical test for iron deficiency?’ Answers include:

- If an individual has symptoms of iron deficiency anaemia, e.g., fatigue and breathlessness
- During pregnancy
To measure high risk groups (pregnant women and children 6 months to 5 years) in a community to assess if anaemia is a public health problem

Ask: ‘What are the problems with using anaemia as a measure of iron deficiency?’

- Anaemia can be caused by other micronutrient deficiencies (e.g., folate, vitamin B12, and vitamin A)
- Individuals may be iron deplete but not suffering from iron deficiency anaemia
- The anaemia can be due to malaria that destroys red blood cells
- The anaemia can be due to hookworms that cause intestinal bleeding

Ask: ‘When might you use a biochemical test for iodine deficiency?’

Answer: You usually don’t. Instead, generally use an ultrasound check to see if schoolchildren have any goitres and, if they do, how big they are.

Ask: ‘When might you use a biochemical test for vitamin A deficiency?’ Answers include:

- To assess whether vitamin A deficiency is a significant problem in preschool children
- Note that because serum retinol on its own is not a reliable indicator for vitamin A deficiency, a marker of infection such as C-reactive protein (CRP) is often included
- Note that clinical signs of vitamin A deficiency are very rare, so this is not often used.

**Learning Outcome 5: List three different methods of dietary assessment and an advantage and disadvantage of each**

**Activity 5**

Explain the four main methods of estimating individual food intake.

1. Diet history: ‘What do you eat on a typical day and how does your food intake vary?’ This is carried out by a skilled and patient interviewer using food models, cups, plates, and spoons to help estimate portion sizes.
2. 24-hour recall: ‘tell me everything you had to eat and drink in the last 24 hours?’ May also use food models to assist.
3. Food diary: ‘Write down everything you eat and drink (and estimated amount) in the next 3 (or 4–7) days.’ Individuals should weigh and record amount of food.
4. Food frequency questionnaire: ‘Do you eat meat/fish/milk etc. on average more than once a day, once a day, two or three times a week, etc.’

In small groups: Have the students discuss the advantages and disadvantages of each method.

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet history</td>
<td>• Interviewer can ask detailed questions regarding portion size, ingredients, and recipes</td>
<td>• Time consuming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requires skilled interviewer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Misreporting: individual may not report honestly</td>
</tr>
<tr>
<td>Method</td>
<td>Advantage</td>
<td>Disadvantage</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>24-hour recall</td>
<td>• Portion size accounted for (although may not be accurate)</td>
<td>• Misreporting: individual may forget or not report honestly</td>
</tr>
<tr>
<td></td>
<td>• Less time consuming for individual than a diary</td>
<td>• The day recorded may not be a typical day</td>
</tr>
<tr>
<td>Food diary</td>
<td>• Portion size accounted for</td>
<td>• Time consuming for individual</td>
</tr>
<tr>
<td></td>
<td>• Less reliance on memory</td>
<td>• Misreporting: individual may not record honestly</td>
</tr>
<tr>
<td></td>
<td>• Recorded over several days so should be more typical</td>
<td></td>
</tr>
<tr>
<td>Food frequency questionnaire</td>
<td>• Easy to administer (no need to interview)</td>
<td>• Portion size not accounted for</td>
</tr>
<tr>
<td></td>
<td>• Less time consuming for individual than diary</td>
<td>• Prescribed food items</td>
</tr>
<tr>
<td></td>
<td>• Easy to analyse</td>
<td></td>
</tr>
</tbody>
</table>
Session 5: Types of Malnutrition, Causes, and Consequences

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028.

Duration: 1 hour, 45 minutes (+ 45 minutes for computer-based learning)

Introduction

This session introduces students to the UNICEF conceptual framework for malnutrition and will help them develop an understanding of the immediate, underlying, and basic contributing factors that lead to malnutrition. Students will also become aware of the key nutritional problems in Ghana and the proportion of the population affected by them.

Competency Area

Be able to explain malnutrition problems in Ghana, what can cause them, and the consequences.

Learning Outcomes

By the end of this session students will be able to:

1. Describe the different levels of the UNICEF conceptual framework of malnutrition
2. List key nutritional problems and related statistics regarding the nutrition situation in Ghana
3. State the consequences of malnutrition

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. To describe the different levels of the UNICEF conceptual framework of malnutrition | a. Small groups mindmap contributing factors of malnutrition  
   b. Computer-based learning module on aetiology and epidemiology of malnutrition | ND5_HO1a Conceptual Framework of Malnutrition  
   Community Nutrition CD (UNICEF) | 1 hour (+ 45 minutes for computer learning module) |
| 2. To list key nutritional problems and related statistics regarding the nutrition situation in Ghana | a. In pairs, discuss the main nutritional problems in Ghana  
   b. Individual work on Ghana Nutrition Situation Worksheet | ND5_HO2b Ghana Nutrition Situation Worksheet | 30 minutes                  |
| 3. To state the consequences of malnutrition                                       | Discuss the consequences of malnutrition at each life stage                |                                                                                               | 15 minutes                |

Materials Required

1. ND5_HO1a Conceptual Framework of Malnutrition
3. ND5_HO2b Ghana Nutrition Situation Worksheet

Preparation Suggestions

1. Review session plan
2. Read reference materials
3. Ensure sufficient worksheets have been printed
Further Reading and Resources

3. UNICEF. 2006. ‘Malnutrition Through the Lifecycle’ in Community Nutrition CD. St Albans: TALC.

Session Details

**Learning Outcome 1:** To describe the different levels of the UNICEF conceptual framework of malnutrition

**Activity 1a**

Small groups: Have small groups create a mindmap (see Session 1) for the factors that may lead to malnutrition. Ask them to think about the different interactions between the factors and prepare to present their mindmap to the class. Have each group present their mindmap and provide an explanation.

Explain that the UNICEF Conceptual Framework of Malnutrition divides contributing factors into immediate, underlying, and basic factors. In the same small groups, ask students to write next to each factor whether it is an immediate, underlying, or basic factor.

Feedback: Write the three levels on the board—immediate, underlying, and basic. Ask students for factors for each level.

Give students a copy of ND5_HO1a Conceptual Framework of Malnutrition (UNICEF) to compare with their own mindmaps.

**Activity 1b (optional if have access to UNICEF Nutrition CD)**

Students should complete the learning module on epidemiology and aetiology of malnutrition from the Community Nutrition CD by following these instructions:

Go to Contents: Malnutrition. Find and click on the link to ‘epidemiology and aetiology of malnutrition’. Once open, click on aetiology and epidemiology. Some of the module will recap Session 4 and provide an introduction for Session 6. This activity will probably be best conducted during the students’ own time and, ideally, before Session 6.
Learning Outcome 2: To list key nutritional problems and related statistics regarding the nutrition situation in Ghana

Activity 2a
In pairs: Have students discuss what they think are the main nutritional problems in Ghana. Write an idea from each pair on the board.

Activity 2b
Hand out ND5_HO2b Ghana Nutrition Situation Worksheet. Students should fill in the worksheet individually, matching indicators with the correct fact.

Feedback: Read out the correct answers from the table below. Discuss whether each measure is anthropometric, clinical, biochemical, or dietary.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Fact (correct answer underlined)</th>
<th>Type of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of children (under 5 years) severely stunted (&lt; -3 SD)</td>
<td>1.8%, 6.8%, 15.5%</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>% of children severely wasted (&lt; -3 SD)</td>
<td>&lt; 1%, 1.4%, 11.3%</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>Age group with highest proportion stunted (28.2%)</td>
<td>&lt; 1 year, 1–2 years, 2–3 years, 3–4 years, 4–5 years</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>Region with highest % of children who are severely wasted (2.4%)</td>
<td>Western, Central, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, Northern Upper East, Upper West</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>Age group with highest proportion (16.2%) of low BMI (&lt; 18.5 kg/m²) in women</td>
<td>15–19 years, 20–24 years, 25–29 years, 30–34 years, 35–39 years, 40–44 years, 45–49 years</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>Region with highest proportion (14.8) of low BMI in women</td>
<td>Western, Central, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, <strong>Upper East</strong>, Upper West</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>Region with highest proportion (19.4) of obese women (&gt; 30 kg/m²)</td>
<td>Western, Central, <strong>Greater Accra</strong>, Volta, Eastern, Ashanti, Brong Ahafo, Upper East, Upper West</td>
<td>Anthropometric</td>
</tr>
<tr>
<td>% of women with severe anaemia (Hb &lt; 7.0 g/dL)</td>
<td>2.0%, 6.8%, 19.1%</td>
<td>Biochemical</td>
</tr>
<tr>
<td>% of children (6–59 months) with severe anaemia</td>
<td>0.9%, 2.6%, 13.0%</td>
<td>Biochemical</td>
</tr>
<tr>
<td>% of children with any anaemia (Hb &lt; 11 g/dL)</td>
<td>24.8%, 57.0%, 76.1%</td>
<td>Biochemical</td>
</tr>
<tr>
<td>Area with the highest % of night blindness in pregnant women (3%)</td>
<td>Western, <strong>Central</strong>, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, <strong>Upper East</strong>, Upper West</td>
<td>Clinical</td>
</tr>
<tr>
<td>Proportion of pregnant women with night blindness</td>
<td>1.7%, 15.0%, 28.2%</td>
<td>Clinical</td>
</tr>
</tbody>
</table>

Sources: Child anthropometric and anaemia data from 2011 Ghana Multiple Indicator Cluster Survey. Adult anthropometric, anaemia, and night blindness data from the 2008 Ghana Demographic and Health Survey.
Learning Outcome 3: To state the consequences of malnutrition

**Activity 3**

Ask students to think back to the session on nutrition needs throughout the lifecycle and discuss the consequences of malnutrition at each life stage. Consider the following for each age group:

<table>
<thead>
<tr>
<th>Increased risk of</th>
<th>Infants &lt; 12 months</th>
<th>Children 1–5 years old</th>
<th>Primary school-age children</th>
<th>Adolescents</th>
<th>Adults</th>
<th>Pregnant women</th>
<th>Lactating women</th>
<th>Elderly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morbidity</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor growth</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low birth weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Reduced cognitive development</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undernutrition</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Reduced capacity for care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Overweight and obesity</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hypertension and stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Coronary heart disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Some cancers</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Session 6: Undernutrition—Signs, Symptoms, Causes, Management, and Prevention

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028. This session can be linked to Medical Nursing I (RGN 040/MDW 030), Community Health Nursing 1 (CHN 010), and Principles and Practice of Community Nursing and Administration I (RCN 050).

**Duration: 3 hours (+ 3 hours e-learning)**

**Introduction**

This session builds on the previous two sessions in this course to give students a full picture of the signs, symptoms, causes, management, and prevention of undernutrition disorders. The first part of this session uses an e-learning module that can be conducted either in class (if there is sufficient access to computers and internet) or during the students’ own time. The second part is a group project that should use and build on knowledge of micronutrients developed in the course.

**Competency Area**

Be able to recognise signs and symptoms of wasting, kwashiorkor, and micronutrient deficiencies and outline treatment and prevention.

**Learning Outcomes**

By the end of this session students will be able to describe the signs, symptoms, causes, management, and prevention of the following:

1. Stunting, acute malnutrition (wasting, kwashiorkor, marasmus/kwashiorkor), and underweight
2. Vitamin A deficiency, iron deficiency, and iodine deficiency

**Session Plan**

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To describe the signs, symptoms, causes, management, and prevention of stunting, acute malnutrition, and underweight</td>
<td>e-learning module on caring for infants and children with acute malnutrition</td>
<td>Computers and internet access</td>
<td>3 hours</td>
</tr>
<tr>
<td>2. To describe the signs, symptoms, causes, management, and prevention of vitamin A deficiency, iron deficiency, and iodine deficiency</td>
<td>Small groups develop a reference poster</td>
<td>ND6_HO2a Vit A, Iron and Iodine Details ND6_RS1 to ND6_RS4</td>
<td>3 hours (1 hour group work, 2 hours presenting posters)</td>
</tr>
</tbody>
</table>

**Materials Required**

1. Access to e-learning module at [https://www.som.soton.ac.uk/learn/test/nutrition/courses/](https://www.som.soton.ac.uk/learn/test/nutrition/courses/)
2. Large sheets of paper and pens for activity 2
3. ND6_HO2a Vit A, Iron and Iodine Details
Session Details

Learning Outcome 1: To describe the signs, symptoms, causes, management, and prevention of stunting, acute malnutrition, and underweight

Activity 1

Individual work: e-learning course 3—caring for infants and children with acute malnutrition. Students should work through the e-learning module either in class or during their own time. The
Learning Outcome 2: To describe the signs, symptoms, causes, management, and prevention of vitamin A deficiency, iron deficiency, and iodine deficiency

Activity 2

Group project: Divide the class into three groups and give each group a micronutrient: vitamin A, iodine, or iron.

Give a copy of ND6_HO2a Vit A, Iron and Iodine Details to each group. Each group will need access to ND6_RS1 to ND6_RS4, depending on their micronutrient.

The groups have one hour to create a poster that could be a reference tool for nurses in a health clinic. It should include information on:

- Function, forms, measurement units, sources, signs of deficiency, at risk groups, storage, preparation, and effects of high intake/toxicity.
- Students should ensure that the poster is easy to read, does not contain unnecessary information, and is relevant to Ghana in terms of food sources.

Feedback: Each group uses their poster to present key information on their micronutrient to the class. Pass around a copy of the deficiency symptoms of each micronutrient after the relevant presentation, e.g., pictures of goitre after the presentation on iodine.

Students should make notes for each micronutrient under the headings: function, forms, measurement units, sources, signs of deficiency, at risk groups, storage, preparation, and effects of high intake/toxicity.

Allow students to ask questions regarding the micronutrient after the presentation and ensure you clarify any points that were not made clear in the presentation using the reference materials.
Session 7: Management of Overnutrition

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028. This session can be linked to Medical Nursing I (RGN 040/MDW 030) and Medical Nursing II (RGN 060).

Duration: 2 hours, 30 minutes (+ 2 hours for group project)

Introduction

This session helps students to understand the importance of addressing overweight and obesity by exploring the health consequences of obesity. Students will gain an understanding in assessing the diet of a patient and providing nutritional advice to overweight and obese patients.

Competency Area

Be able to explain how to calculate and interpret body mass index (BMI) and provide nutritional advice to patients with obesity and diet-related chronic diseases.

Learning Outcomes

By the end of this session students will be able to:

1. Define overweight and obesity
2. Explain the health consequences of obesity (e.g., hypertension, hyperlipidaemia, cardiovascular disease (CVD), and type 2 diabetes) and state the dietary factors linked with hypertension/CVD (salt and saturated fatty acids)
3. Outline the nutritional advice they would give to a client and their family to manage each of the following conditions: obesity, type 2 diabetes, CVD, and peptic ulcers.

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Define overweight and obesity</td>
<td>a. Obesity short quiz</td>
<td>ND7_HO1a BMI Calculation Worksheet</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Measuring overweight and obesity using BMI calculations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Explain the health consequences of obesity</td>
<td>a. Recalling health consequences of obesity</td>
<td></td>
<td>1 hour (+ 2 hours for group project)</td>
</tr>
<tr>
<td></td>
<td>b. Small group project on obesity and diabetes/CVD—association, specific nutrients, prevention, and treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Outline the nutritional advice you would give to a client and their family to manage each of the following conditions: obesity, type 2 diabetes, CVD, and peptic ulcers</td>
<td>a. Group work on factors contributing to obesity</td>
<td>ND7_HO3c Role Plays</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>b. Pair work to discuss two cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Pair work/role play</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Materials Required

1. Calculators for BMI calculations
2. ND7_HO1a BMI Calculation Worksheet
3. ND7_HO3c Role Plays
Preparation Suggestions

1. Ask students to bring calculators for this lesson
2. Read through session plan and reference materials
3. Ensure sufficient worksheets have been printed

Further Reading and Resources

8. ND7_RS7 CASH Salt & Stomach Cancer. (Source: Consensus Action on Salt and Health. ‘Salt and stomach cancer.’ Available at http://www.actiononsalt.org.uk/salthealth/factsheets/stomach/index.html)
Session Details

Learning Outcome 1: Define overweight and obesity

Obesity is the excess accumulation of body energy in the form of fat or adipose tissue. Obesity is a disease of positive energy balance arising as a result of dysregulation of the energy balance system.

**Activity 1a**

Short quiz. Ask students to write down whether they think the following statements are true or false and why.

<table>
<thead>
<tr>
<th>Question</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>a  Overweight and obesity are linked to more deaths worldwide than underweight?</td>
<td>True</td>
</tr>
<tr>
<td>b  Obesity is a risk factor for all forms of cancer?</td>
<td>False. It is a risk factor for certain cancers—breast, endometrium, prostate, kidney, pancreas, and colon</td>
</tr>
<tr>
<td>c  Obesity is a risk factor for type 1 and type 2 diabetes</td>
<td>False—type II only</td>
</tr>
<tr>
<td>d  The proportion of overweight or obese women in Ghana is 30%</td>
<td>True (in 2008)</td>
</tr>
<tr>
<td>e  Less than 5% of women in Ghana are obese</td>
<td>False (9% in 2008)</td>
</tr>
</tbody>
</table>

**Activity 1b**

Explain: Overweight and obesity are commonly measured using body mass index (BMI) which is calculated as: weight (kg)/height (m$^2$). For example, a woman of 165.1 cm weighing 64.4 kg has a BMI of 64.4/(1.651*1.651) = 23.6.

It is important to note that BMI does not distinguish between fat and muscle mass. Muscle weighs more than fat. Very muscular people, such as heavyweight boxers, weight trainers, and athletes, may be a healthy weight even though their BMI is classed as obese. The opposite may be true for the
elderly who may lose muscle mass but appear to have a normal BMI. BMI should not be used for pregnant women.

Cut-offs have been developed to define overweight and obesity based on epidemiological studies that showed an increased risk of mortality among adults over 19 years, as shown in the following table.

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI</th>
<th>Increased risk of mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight</td>
<td>25.0–29.9 kg/m²</td>
<td>Steady increase</td>
</tr>
<tr>
<td>Obese</td>
<td>&gt; 30.0 kg/m²</td>
<td>2 times for women</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5 times for men</td>
</tr>
</tbody>
</table>

BMI is also used to measure obesity in children, but the cut-offs are gender and age specific.

The distribution of fat also affects the risk of chronic diseases. Excess abdominal adipose fat is associated with increased risk of cardiovascular disease and metabolic disorders. Abdominal adiposity is measured using a non-stretching tape measure at the mid-point between the iliac crest and the lowest point of the rib case. The risk of cardiovascular disease and metabolic disorders is substantially increased when waist circumference is > 102 cm for men and > 88 cm for women.

Individual work: Complete BMI calculations using ND&_HO1a BMI Calculation Worksheet. Ensure that students are confident doing the calculation.

Feedback: Read out the correct answers.

1. BMI: 18.4 kg/m², Classification: underweight
2. BMI: 27.6 kg/m², Classification: overweight
3. BMI: 35.7 kg/m², Classification: class II obese
4. BMI: 20.7 kg/m², Classification: normal

**Learning Outcome 2: Explain the health consequences of obesity**

**Activity 2a**

Link back to Session 1 (Activity 1d) where the health consequences of obesity are mentioned. Ask students which health consequences of obesity they can remember and write them on the board.

Feedback: Fill in any missing answers using the following list.

<table>
<thead>
<tr>
<th>Health Consequences of Obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metabolic:</strong></td>
</tr>
<tr>
<td>• Insulin resistance, impaired glucose tolerance, and <strong>type 2 diabetes</strong></td>
</tr>
<tr>
<td>• Dyslipidaemia</td>
</tr>
<tr>
<td>• Fatty liver/non-alcoholic steatohepatitis (NASH)</td>
</tr>
<tr>
<td>• Gallstones</td>
</tr>
<tr>
<td>• Polycystic ovarian syndrome/infertility in women</td>
</tr>
<tr>
<td><strong>Cardiovascular:</strong></td>
</tr>
<tr>
<td>• Hypertension</td>
</tr>
<tr>
<td>• Coronary heart disease</td>
</tr>
</tbody>
</table>
• Stroke
• Varicose veins
• Peripheral oedema

Cancers (colon, pancreas, kidney, breast, endometrial, and prostatic)
Sleep apnoea
Joint problems and osteoarthritis

Activity 2b
This research activity can be carried out either during class time or on the students’ own time. In small groups (4-5 students), have the groups research each of the diseases in terms of its relation to diet and obesity.

a. Type 2 diabetes
b. Cardiovascular disease

Give the groups 2 hours to prepare a 10 minute presentation and an information sheet for health professionals. The resources listed under further reading and resources will be useful. Either provide students with access to the resources electronically or provide print copies for the groups to use. Ask the students to include:

- How obesity is associated with the disease, i.e., what is the mechanism?
- The specific factors that are detrimental, e.g., saturated fatty acids
- Recommendations for reducing risk
- Treatment
- Other actions, e.g., increasing physical activity

Pair up two groups (one that was assigned diabetes and one CVD) and have each group present their findings to the other group. Each group provides an information sheet which is assessed to ensure that their understanding is correct.

Feedback: Ask for information from all groups using the bullets above and summarise on the board.

Discuss: Which dietary components are independent risk factors for:

- Hypertension: high salt intake and high alcohol intake
- Dyslipidaemia: high saturated fat intake (e.g., animal fat and dairy products), trans fatty acids (e.g., in packaged cakes/biscuits), and total fat intake
- Cancer: preserved meats (colorectum), salt preserved foods and salt (stomach), and alcohol (oral cavity, pharynx, larynx, oesophagus, breast, and liver).

Learning Outcome 3: Outline the nutritional advice you would give to a client and their family to manage each of the following conditions: obesity, type 2 diabetes, cardiovascular disease, and peptic ulcers

Activity 3a
Explain: Overweight and obesity are complex problems and their multiple causes need to be considered to prevent and treat obesity.
Group work: ‘What factors contribute to obesity?’ Ask the groups to create a mindmap. Consider factors on an individual, family, community, and societal level.

Feedback: Ensure the areas in the following table are covered.

<table>
<thead>
<tr>
<th>Individual</th>
<th>Family/Community</th>
<th>Societal</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Genetics may contribute to overweight and obesity. Many genes may be involved, but the contribution is likely to be small. Obesity rates have increased dramatically over the last few decades while the gene pool has been stable.</td>
<td>● Availability of food</td>
<td>● Food marketing</td>
</tr>
<tr>
<td>● Food intake—high intake of energy dense foods, high intake of sugary beverages, and large portion sizes</td>
<td>● Cost of food</td>
<td>● Import/export patterns affecting availability of food</td>
</tr>
<tr>
<td>● Sedentary lifestyle—limited physical activity, desk jobs, use of vehicles instead of walking, and cycling</td>
<td>● Family eating habits—home cooked food or street food/cafe/restaurant/fast food</td>
<td>● Activity environment—ease of walking, cycling as transport, sports facilities</td>
</tr>
<tr>
<td></td>
<td>● School environment promoting healthy food choices</td>
<td>● Work environment—sedentary versus active work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Home environment—increased use of automated equipment in the home, e.g., washing machines. Increased use of TV and computers for entertainment and leisure activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Cultural attitudes towards overweight and obesity—is it seen as desirable? Is it seen as normal?</td>
</tr>
</tbody>
</table>

Discuss with students which areas, as future health professionals, they can/will be able to influence.

Activity 3b

Pair work: Have pairs discuss advice they would give in the following two cases.

Mary, 27 years old, married, BMI 35 kg/m², had a recent miscarriage but wants to become pregnant again, has an office job and takes public transport to work, does not have time for breakfast, buys fast food for lunch, her favourite foods are fried chicken and rice.

David, 53 years old, BMI 31 kg/m², recently diagnosed with type 2 diabetes, used to be quite active but has reduced walking due to painful joints. His wife cooks all his meals and is generous with his portions. He enjoys a beer several times a week.

Feedback: Ask half of the groups to share advice they would give to Mary and half to share advice they would give to David.

Activity 3c

Pair work: Hand out ND7_HO3c Role Plays to the pairs. Tell the students to take turns being the patient and the practitioner and to do the following:

● Try to find out more details about the client’s diet and physical activity
● If clients need advice about how to eat a healthier diet and be more active, provide them with simple, tailored advice

Feedback: Ask students to share advice and ensure the following are mentioned:
• A balanced diet—increase fruits and vegetables, fibre rich food (feeling of satiety), and food low in saturated fat. Decrease high fat foods, decrease sugary soft drinks, decrease alcohol intake, and decrease salt intake

• Decreased portion size

• Physical activity—identify opportunities to embed physical activity into daily routine, e.g., walking more, playing football with children

• Help your patient to set SMART (specific, measurable, attainable, relevant, and time-bound) goals, for example:
  – Eat at least one piece of fruit as a snack in the morning instead of fried foods
  – Walk to work instead of taking public transport three days per week
  – Only drink a beer on three evenings instead of five evenings per week

Small group discussion: ‘How would your advice vary for patients with obesity, type 2 diabetes, cardiovascular disease, and peptic ulcers? Are there specific recommendations for these groups?’

Feedback: Write ideas from each group on the board.
Session 8: Factors that Influence Food Consumption and Habits

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028.

Duration: 3 hours (plus 2 hours, 30 minutes for group project 4b and 1 hour, 30 minutes for individual field work 6b)

Introduction

This session will help students to understand the food production process and the impact that this can have on the nutritional quality of food—particularly staple foods—and its safety.

Competency Area

Be able to identify key types of food in Ghana and how processing affects their nutritional value and food safety.

Learning Outcomes

By the end of this session students will be able to:

1. Describe where the staple or main foods eaten in Ghana are grown
2. Describe the ‘farm to fork’ process, i.e., how staple foods are stored/handled in distribution/processing/preservation or preparation and how this influences food choices and consumption patterns
3. State how food storage, distribution, processing, preservation, and preparation affect nutritional quality
4. Identify the key sources of food contamination for eggs, oil, maize, groundnuts, chicken and meat, and milk or milk products as they go from farm to fork
5. List foods that are fortified (and with what) to improve their nutritional value (flour, salt, oil, ready-to-use therapeutic food [RUTF], Maggi cubes)
6. Plan and budget a menu

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. Describe where the main foods eaten are grown in Ghana | a. Small groups match staple foods with the area where they are grown  
  b. Discuss the factors that affect food security | ND8_HO1ai Ghana Map (1 per 4-6 students)  
 ND8_HO1aii Labels (1 set per 4-6 students) | 20 minutes |
| 2. Describe the ‘farm to fork’ process | a. Small groups discuss the farm to fork process for a type of food  
  b. Discussion on how the processing of food available in urban areas differs from food available in rural areas  
  c. Group presentation on factors that influence the food that people eat in rural/urban areas? | | 45 minutes |
3. State how food storage, distribution, processing, preservation, and preparation affect nutritional quality
   - Groups discuss how the different stages of food production affect nutritional quality
   - Pair work to develop tips to reduce nutrient loss when preparing a meal
   - 20 minutes

4. Identify sources of food contamination of key foods from farm to fork
   - Individual work to put hazards into the correct group.
   - Small group project to research contamination and prevention in the following products: eggs, oil, chicken, maize, groundnuts, cassava, and milk
   - ND8_HO4a Biological, Chemical and Physical Hazards
   - 15 minutes (+ 2 hours, 30 minutes for group project)

5. List foods that can be fortified (and with what) to improve their nutritional value
   - Explanation of food fortification definition
   - Individual work on food vehicles and fortificants
   - ND8_HOSa Food Vehicles and Fortificants
   - 20 minutes

6. Plan and budget a menu
   - Small group discussion on how the cost of food affects food choices
   - Field work to find the cost of different foods
   - Group work to determine minimum cost of weekly food for two families
   - Nutrition for Developing Countries textbook
   - 1 hour (+ 1 hour, 30 minutes for field work)

Materials Required
1. ND8_HO1ai Ghana Map
2. ND8_HO1aii Labels
3. ND8_HO4a Biological, Chemical and Physical Hazards
4. Computers and internet for students to use for group project
5. ND8_HOSa Food Vehicles and Fortificants
6. Nutrition for Developing Countries textbook

Preparation Suggestions
1. Activity 6b is ideally conducted prior to this session so students will need to be informed of it beforehand. This activity requires visiting a shop or market, so it will be carried out during the students’ own time
2. Read through session outline and further reading and resources
3. Cut up labels for activity 1a
4. Ensure sufficient worksheets for students

Further Reading and Resources

5. WHO Food Safety website ([http://www.who.int/foodsafety/en/])

**Session Details**

**Learning Outcome 1: Describe where in Ghana the main foods eaten are grown**

**Activity 1a**

Small groups: Give each group a map of Ghana (ND8_HO1ai Ghana Map) and the cut up staple foods labels (ND8_HO1aii Labels) and ask them to put the staple food labels on the map to indicate where they are eaten (students do not need to be too specific in terms of area).

Feedback: Read out the list of staple foods and check that the students have labelled their maps correctly using the following answers. Note that some staples are commonly eaten in more than one of the regions.

- North: millet, sorghum, yam, and groundnuts
- South and West: cassava, plantains, cocoyam, and maize
- South East: maize, cassava, and red palm oil
- All regions: rice

**Activity 1b**

Discuss the factors that affect food security. For example:

- Access to agrochemicals and water to increase crop yields. Also soil quality
- Post-harvest losses and their causes
- Women’s work load (including for women-headed households) and their role in agriculture and how this might affect child care
- Market networks and road infrastructure, and the implications of these on food prices
- Transport to markets to both buy and/or sell food/crops
- Income to buy food and how seasons affect food availability and prices
- Disasters such as flood and droughts
- Illness and loss of income

**Learning Outcome 2: Describe the ‘farm to fork’ process**

**Activity 2a**

Small groups: Assign each small group a food item to discuss (maize, cassava, rice, chicken, mango, milk, eggs, oil, or beans) and write out the farm to fork process that may occur for that item. They should think about all the steps that need to happen for the food to end up on someone’s plate.
Activity 2b
Discussion: ‘How does the processing of food available in urban areas differ from food available in rural areas?’ Prompt: ‘Are there more farm to fork stages for food in urban or rural areas?’ Ask students to give an example, such as:

- Urban areas may use refrigerators and freezers. Urban areas also have access to processed food with a longer shelf life
- Rural areas use sun drying or salting (e.g., for fish) and silos for grain storage

Activity 2c
Group presentation: Divide the class into four groups. Ask: ‘What factors influence the food that people eat in rural/urban areas?’ Each group should consider one of the following and write down thoughts on a large piece of paper:

- Rich urban populations
- Poor urban populations
- Rich rural populations
- Poor rural populations

Feedback: 2-3 students from each group should present their group’s ideas to the whole class.

Discuss how the factors differ for the rich and poor in rural and urban populations.

Learning Outcome 3: State how food storage, distribution, processing, preservation, and preparation affects nutritional quality

Activity 3a
Group work: Have each group look at a different stage of food production and discuss how it could affect nutritional quality.

- Storage of grain, tubers, dried fish, vegetables, and fruit (before and after processing)
- Distribution (from farm to processing plant to vendors)
- Processing (polishing rice or milling maize)
- Preservation (sun drying)
- Preparation (chopping up and frying vegetables and meat, stewing for a long time)

Feedback: Have each group present their thoughts. Ensure that the following points are covered:

- Storage should be weatherproof, in ventilated silos/rooms that are protected against birds, insects, and rodents
- Milling reduces micronutrients because they are found in the outer layers below the husk and are removed in milling and threshing or destroyed with pounding
- Vitamins and minerals are damaged by being left in the sun or heat and air or water
- Vitamins can be lost when food is cut up into small pieces, which increases the surface area and exposes the food to the affects of light and temperature; vitamins are also lost when food is reheated or left standing after cooking
- Excessive washing and cooking of rice reduces the B-complex vitamin content
• Vitamin A content in fortified fats and red palm oil is reduced in prolonged frying at very high temperatures
• Storage for more than 6 months reduces the vitamin A content of fortified fats and red palm oil
• Storage of fortified-blended food for more than 6 months reduces micronutrient content

Activity 3b
Pair work: Have pairs think of tips they could give to a family on how to reduce nutrient loss in preparation and cooking of a meal.
Feedback: Mention the following ideas if they are not covered by the students:
• Minimising or consuming water used for washing and cooking rice reduces losses of B-complex vitamins
• Sprouting (germinating) beans increases vitamin C content
• Steaming vegetables instead of boiling reduces micronutrient loss
• Limiting addition of kaun to vegetables, which can result in micronutrient loss
• If boiling vegetables, use the vegetable water in another dish, e.g., soup
• Do not cut leaves into small pieces for cooking, leave whole or rip into large pieces
• Eat fruit and vegetables raw or lightly steamed

Learning Outcome 4: Identify sources of food contamination of key foods from farm to fork (eggs, oil, maize, groundnuts, chicken, and milk)

Explain: Foodborne hazards can be classified as biological, chemical, or physical.

• Biological hazards can be posed by parasites, viruses, or bacteria.
• Chemical contaminants in food can come from industrial pollutants and agricultural sources (pesticides, insecticides, etc.), from food processing, or from the food itself.
• Toxic chemicals also come from biological sources such as moulds and algae.
• Foreign objects present in food, e.g., stones and dirt, can be considered a physical hazard to consumers.

Activity 4a
Individual work: Hand out ND8_HO4a: Biological, Chemical and Physical Hazards. Ask students to put the hazards into the correct group.
Feedback: Review the handout noting the answers in brackets below.

• A meal contaminated with giardia lamblia (a diarrhoeagenic protozoa) as the result of faecal contamination of the food [biological]
• Cassava which has not been processed adequately so the cyanogenic compounds which cause illness are still present [chemical]
• Dairy products infected with the bacteria Salmonella from faecal contamination [biological]
• Cooked lentils containing some small stones [physical]
• Fish containing Methylmercury as a result of mercury pollution in rivers or seas [chemical]
• A meal contaminated with lead after being stored in an inadequately glazed earthenware pot [chemical]
• Undercooked beef containing beef tapeworms *T. saginata* [biological]
• Maize and groundnuts contaminated with aflatoxins (produced by a fungus) while being stored in a warm, humid environment [toxin]
• A packaged meal that contains a piece of glass [physical]
• Flour contaminated with a pesticide during storage [chemical]

During feedback explain how food processes can cause health hazards, using examples in the following table.

<table>
<thead>
<tr>
<th>Process</th>
<th>How</th>
<th>Health Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshing</td>
<td>Usually done on bare floors, under direct sunshine, and also on the roadside</td>
<td>Soil particles and stones mixed with the paddy resulting in low-grade rice</td>
</tr>
<tr>
<td>Drying</td>
<td>Normally done on the concrete floor, roof tops, road sides, or wooden platforms built over fire places in traditional kitchens</td>
<td>Poor quality drying causing fungal or bacterial contamination</td>
</tr>
<tr>
<td>Processing</td>
<td>Boiling</td>
<td>Standing by the open fire</td>
</tr>
</tbody>
</table>

**Activity 4b**

Small group project: Each group is given one or two of the following food items (depending on the number of groups)—eggs, oil, chicken, maize, groundnuts, cassava, and milk. Have the groups research the contamination risks for each of these products and what can be done to help prevent them (both commercially and at a household level). If this is not possible in the lesson time, the activity can be done during the students’ own time and presented at the next lesson. ND8_RS3 Hazards Associated with Food and Their Control will be useful, as well as the following website: [http://www.who.int/foodsafety/en/](http://www.who.int/foodsafety/en/).

During feedback ensure that the points in the following table are covered.

<table>
<thead>
<tr>
<th>Food</th>
<th>Risk Factors</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eggs</td>
<td>Biological: bacteria, especially Salmonella. Store in a cool, dry environment, cook thoroughly.</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>Chemical: rancidity from exposure to light, repeated heating, and air. Store in a cool, dark place in a container with a top to reduce exposure to air.</td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td>Biological: bacteria including <em>Escherichia coli</em>, <em>Salmonella</em>, and <em>Campylobacter</em>. Ensure meat is thoroughly cooked and cooled quickly if eaten cold. If reheated, ensure reheated to a high temperature.</td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>Chemical: mycotoxins. Store in cool, dry environment. Bacteria: e.g., <em>Salmonella</em> contamination can occur. Cook thoroughly. Do not allow cooked products, especially porridges, to stay warm for a long time as spores may grow.</td>
<td></td>
</tr>
<tr>
<td>Groundnuts</td>
<td>Chemical: aflatoxins and Cyclopiazonic acid. Ensure groundnuts are stored in a cool, dry environment.</td>
<td></td>
</tr>
<tr>
<td>Cassava</td>
<td>Chemical: cyanogenic glucosides. Prolonged processing such as those involved in making gari and fufu is required.</td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>Biological: pathogens found in milk include <em>Mycobacterium bovis</em>, <em>Brucella</em> spp., <em>Salmonella</em>, <em>Campylobacter</em>, <em>Listeria monocytogenes</em>, <em>E. coli</em>, <em>Yersinia enterocolitica</em>, <em>Staphylococcus aureus</em>, and <em>Bacillus cereus</em>. Commercial pasteurisation of milk or boiling before use.</td>
<td></td>
</tr>
</tbody>
</table>
Learning Outcome 5: List foods that can be fortified (and with what) to improve their nutritional value

Activity 5a

Explain: The World Health Organization definition of food fortification is ‘the practice of deliberately increasing the content of essential micronutrients—that is to say, vitamins and minerals (including trace elements)—in a food so as to improve the nutritional quality of the food supply and to provide a public health benefit with minimal risk to health.’

Ask: ‘Which foods are fortified in Ghana and with what micronutrient?’

Feedback: Write answers on the board that correspond with the table below. Explain to students that foods that are fortified are referred to as the food vehicle and the micronutrient that is used to fortify the food vehicle is called the fortificant.

<table>
<thead>
<tr>
<th>Food Vehicle</th>
<th>Micronutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour</td>
<td>Vitamin A and B, iron, and folic acid</td>
</tr>
<tr>
<td>Salt</td>
<td>Iodine</td>
</tr>
<tr>
<td>Oil</td>
<td>Vitamin A</td>
</tr>
<tr>
<td>RUTF (ready-to-use therapeutic food)</td>
<td>Micronutrient mix</td>
</tr>
</tbody>
</table>

Activity 5b

Individual work: Hand out ND8_HO5a Food Vehicles and Fortificants for students to read.

Pair work: Based on the handout, ask the students to discuss why the foods fortified in Ghana are appropriate food vehicles. What would be other appropriate food vehicles?

Feedback: Ask the students to share their ideas.

Learning Outcome 6: Plan and budget a menu

Activity 6a

Small groups: Ask the groups to discuss how the cost of food affects people’s food choices.

Feedback: Ask students to share their ideas. If not already addressed, ask:

- Do food choices vary between urban and rural people?
- Who is most affected by food prices?
- Are cheaper foods always the most nutritious?
- Does the cost vary in different areas? For example, fish is more expensive further away from the source.

Ask: ‘What questions could you ask to see if you could help a family with budgeting and buying food?’ In the same groups, ask the students to write a list of questions.

Feedback: Have the students share their ideas. Use list of questions from Savage-King and Burgess’s *Nutrition in Developing Countries*, Chapter 9, page 83, for more ideas, such as:
• Can the family buy from cheaper shops?
• Are the cheaper shops too far from their homes?
• Do these shops sell in quantities that poorer people can afford?
• Do cheaper shops give credit?

**Activity 6b**

This activity requires visiting a shop or market, so it will need to be carried out during the students’ own time. Ideally this activity will be conducted prior to the class.

Students should compare the cost of nutrients from different local foods and carry out activity 9.4 on page 86 in Savage-King and Burgess’s *Nutrition in Developing Countries*.

Split the class into 4 groups. Each group will research a different category of food from Table 9.1 on page 86.

<table>
<thead>
<tr>
<th>Group</th>
<th>Food Category</th>
<th>Calculate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Beans, nuts, and milk</td>
<td>Cost of 1,000 kcal and cost of 10 g of protein</td>
</tr>
<tr>
<td>B</td>
<td>Vegetables and fruit</td>
<td>Cost for 100 RE (retinol equivalent) of vitamin A</td>
</tr>
<tr>
<td>C</td>
<td>Meat and fats</td>
<td>Cost of 10 g of protein and cost of 10 g of fat</td>
</tr>
<tr>
<td>D</td>
<td>Grains and tubers</td>
<td>Cost of 1,000 kcal and cost of 10 g of protein</td>
</tr>
</tbody>
</table>

If the items listed are not available, students can substitute for another from the list on page 419. Each student should calculate for a minimum of 5 products.

If students do not have a copy of the *Nutrition in Developing Countries* textbook, you will need to make photocopies of pages 86-87.

**Activity 6c**

This activity will be best conducted after activity 6b.

Explain: When helping poor families to budget it is helpful to know approximately how much it will cost to get sufficient energy, protein, and other nutrients. This is not a recommended diet but helps to see the minimum amount of money they need each week.

Group work: Put students in groups so that in each group there is one student who found the prices of beans, nuts, and milk; one student with prices of fruits and vegetables; one student with prices of meat and fats; and one student with prices of grains and tubers. Students should look at Table 9.2 on page 88 in *Nutrition and Developing Countries*. Students should estimate the minimum cost of basic food for the following two different families for a week using this table.

• Family 1: father, mother, one adolescent boy, one child 11 years of age, one child 6 years of age
• Family 2: father, mother who is breastfeeding, one child 3 years of age, one infant age > 6 months

Feedback: Ask half of the groups for their choice of food and the total cost for family 1, ask the other half of the groups for their answers for family 2.
In small groups ask students to discuss how they could use this information to help a family with budgeting. Are there other important food groups/nutrients that they would want to include?

Feedback: Ask students to share their ideas. For example:

- They could work out how much a family is currently spending and how much the minimum is that they need to be spending on food to determine if the difference is positive or negative. If they are spending more than the minimum but are malnourished, what foods are they buying, are there non-nutritious foods, e.g., soft drinks and beer, biscuits and sweets?
- They should include a variety of fruits, vegetables, and animal products.
Session 9: Nutrition Interventions and Policies in Ghana

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028. This session can be linked to Community Health Nursing 1 (CHN 010), Principles and Practice of Community Nursing and Administration II (RCN 060), Medical Nursing (MDW 030), Paediatric Nursing (RGN 064), Child Health (CHN 026), Obstetric Nursing (NUR 051/CHN 031), Public Health Nursing (RGN 068, MDW 084), and Advanced Nursing (RGN 031).

Duration: 2 hours, 50 minutes

Introduction
This session outlines the nutrition interventions and policies in Ghana to ensure that students have an understanding of Ghana's nutrition priorities.

Competency Area
Be able to explain where and why nutrition is important in national health-related policies.

Learning Outcomes
By the end of this session students will be able to explain the components of each of the following interventions and how they fit into national policies (National Health Policy, Child Health Policy, and National Nutrition Policy):

1. Infant and young child feeding (IYCF) interventions—promotion of optimal breastfeeding practices and appropriate complementary feeding
2. Non-dietary interventions—improved hygienic practices and de-worming—and how they relate to nutritional status
3. Vitamin and mineral related interventions—supplementation and fortification
4. Treatment of acute malnutrition interventions—prevention and treatment of moderate acute malnutrition (MAM) with special foods and treatment of severe acute malnutrition (SAM) with ready-to-use therapeutic food (RUTF)
5. Family nutrition promotion interventions—promotion of consumption of diversified diets and a healthy lifestyle

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. IYCF interventions—promotion of optimal breastfeeding practices and appropriate complementary feeding | a. Pair work on the key messages to promote regarding breastfeeding and complementary feeding  
b. Class discussion on the guiding principles of the key messages | ND9_RS2 IYCF Guiding Principles | 45 minutes |
| 2. Non-dietary interventions—improved hygienic practices and de-worming—and how they relate to nutritional status | a. Small group discussion on hygienic practices and how they are related to nutritional status  
b. Discussion on how worm parasites interact with nutritional status | | 30 minutes |
3. Vitamin and mineral interventions—supplementation and fortification
   a. Pair work to discuss which vitamins and minerals are routinely supplemented
   b. Pair work to discuss food-based strategies to improve nutritional status

4. Treatment of acute malnutrition interventions—MAM and SAM
   Small groups map the different options of care for acutely malnourished children

5. Family nutrition promotion interventions
   Small groups discuss the key messages regarding a diversified diet and healthy lifestyle

Additional activity—linking interventions to the National Nutrition Policy
   Review the new National Nutrition Policy and in pairs discuss where the interventions reviewed fit.

Materials Required
1. ND9_HO3a Supplementation Recommendations
2. ND9_HOS Ghana National Health Policy. (Source: Ministry of Health, Ghana. 2007. ‘Ghana National Health Policy.’)
3. ND9_HO6 Ghana Nutrition Policy

Preparation Suggestions
1. Review session and resources
2. Ensure sufficient printouts of the required resources
3. Read and print a copy of ND9_RS2 IYCF Guiding Principles for reference for Activity 1b
4. Recommend that students read ND9_RS2 IYCF Guiding Principles prior to the lesson as it will be useful for discussion for Activity 1b

Further Reading and Resources
Session Details

Learning Outcome 1: List and explain the components of IYCF interventions (promotion of optimal breastfeeding practices and appropriate complementary feeding)

Activity 1a
In pairs: Discuss the key messages that need to be promoted regarding breastfeeding and complementary feeding.

Feedback: Ask students to share ideas. Read out the following key messages from the Child Health Policy (ND9_RS1) or ask several students to read them out.

Section 5.3.5 (p. 11)

Key neonatal care practices that shall be reinforced by all providers, including trained community providers, include: Breastfeeding initiation within 30 minutes after delivery. No pre-lacteal feeds.

Section 5.4.2.1 (p. 13) Breastfeeding

Exclusive breastfeeding will be promoted from birth to 6 months (children less than 180 days).

Exclusive breastfeeding means that the infant is breastfed and given no other solids or liquids, including water (drops of vitamins, minerals or medicines, are allowed, when medically indicated). This policy is in line with the National Breastfeeding Policy and recognizes the ‘International Code of Marketing of Breast Milk Substitutes’. Policies on breastfeeding and the use and promotion of breast milk substitutes are outlined in the National Breastfeeding Policy and ‘Breastfeeding Promotion Regulations, Legislative Instrument 1667’, enacted by Parliament in May 2000. The child health programme will support and encourage monitoring of this legislation in collaboration with the Food and Drugs Board. All mothers shall be supported to provide appropriate feeding of their infants. Health facilities with maternity services shall be encouraged to be accredited as ‘Baby Friendly’ and monitored to retain their status.

Section 5.4.2.2 (p 14) Complementary feeding

Complementary feeding shall begin at 6 months of age. Complementary foods should be of an appropriate: a) quality (energy density, micronutrient composition, food handling); b) quantity; c) frequency. Use of locally available, affordable and acceptable complementary foods will be promoted. In addition to complementary feeding, breastfeeding should continue until 2 years of age and beyond.

Activity 1b

Class discussion: Ask, ‘What are the guiding principles behind these recommendations?’

ND9_RS2 IYCF Guiding Principles is a useful resource. If students have not read this prior to the session, it may require 10-15 minutes for students to review this resource (pages 10-12 in particular).
Learning Outcome 2: Explain the components of non-dietary interventions (improved hygienic practices and deworming) and how they relate to nutritional status

Activity 2a

Small group discussion: Ask, ‘What are hygienic practices and how are they related to nutritional status?’

Feedback: Ask groups for examples of hygienic practices and how they can reduce risk of malnutrition. If it has not been mentioned, remind students of the infection-malnutrition cycle. Poor hygiene can increase risk of infection which can result in loss of appetite, malabsorption, and increased nutritional requirements. Malnutrition leads to lower immunity that can increase incidence, severity, and duration of disease. Thus improved diet, treatment of infection, and improved hygienic practices will help stop this vicious cycle.

Explain how improved hygienic practices fit into the Child Health Policy. Read out the following or ask a student to read section 5.4.4.3.4 on water, sanitation and hygiene (p. 18).

The Child Health Programme will advocate: a) adequate access to reliable supply of safe water for all communities, households and schools; b) access to sanitary facilities for human excreta disposal; c) storage and use of water under hygienic conditions; d) safe disposal of all solid and liquid wastes for communities, households and schools. The National Environmental Policy on Water Sanitation and Hygiene shall be followed.

Activity 2b

Ask: ‘How do worm parasites interact with nutritional status?’

Feedback: Write ideas on the board and supplement with the following information:

Soil-transmitted helminths are among the most common infections in developing countries. They are transmitted by eggs present in human faeces which in turn contaminate soil in areas where sanitation is poor. The main species that infect people are the roundworm (Ascaris lumbricoides), the whipworm (Trichuris trichiura) and hookworms (Necator americanus and Ancylostoma duodenale). They impair the nutritional status of the people they infect in multiple ways, including:

- Feeding on host tissues, including blood, which leads to a loss of iron and protein
- Increasing malabsorption of nutrients
- Some soil-transmitted helminths also cause loss of appetite and therefore a reduction of nutrient intake and physical fitness

Ask: ‘What can we do to prevent infection?’

Feedback: Improved hygienic practices such as using a latrine/toilet, handwashing before eating and after using the latrine/toilet, proper disposal of faeces, and washing all fruits and vegetables in clean water.

Ask: ‘How do we treat infection?’

Feedback: Mention a deworming schedule for all children over 24 months every 6 months with 400 mg albendazole and 500 mg mebendazole.
Learning Outcome 3: Explain the components of vitamin and mineral interventions (supplementation and fortification)

Activity 3a
In pairs: Have the students discuss any vitamin or minerals that are routinely given as supplements, to whom, and when.

Feedback: Ask students for ideas. Give out ND9_HO3a Supplementation Recommendations for reference.

Activity 3b
In pairs: Recall previous session (ND8) and discuss food-based strategies in Ghana to improve the nutritional status of the population.

Feedback: Ask students for ideas. Ensure the fortification details in the following table are covered.

<table>
<thead>
<tr>
<th>Food Vehicle in Ghana</th>
<th>Micronutrient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour</td>
<td>Vitamin A and B, iron, and folic acid</td>
</tr>
<tr>
<td>Salt</td>
<td>Iodine</td>
</tr>
<tr>
<td>Oil</td>
<td>Vitamin A</td>
</tr>
<tr>
<td>RUTF (Ready-to-use therapeutic food)</td>
<td>Micronutrient mix</td>
</tr>
</tbody>
</table>

Read out the reference to iodine in the Child Health Policy (Section 5.4.2.6, p. 14):

The consumption of iodized salt shall be promoted at health education contacts and to the general public. The child health programme will work with the Food and drugs Board to ensure that salt producers adequately iodize salt.

Learning Outcome 4: Explain the components of treatment of acute malnutrition interventions (MAM and SAM)

Activity 4
In small groups: Ask students to briefly map out the different options of care for acutely malnourished children.

Feedback: Ask several groups to present their ideas. Ensure the following points are covered:

- MAM—community management using RUTF/supplementary feeding programme
- SAM without complications—community management using RUTF
- SAM with complications—inpatient management following the World Health Organization’s 10 steps

Read out the reference to treatment of acute malnutrition in the Child Health Policy (section 5.4.2.7, p. 14):

Feeding of low birth weight children, abandoned children, orphans, refugees will be managed according to the Infant and Young Child Feeding Strategy (IYCFS). The revised WHO guidelines on the rehabilitation of severely malnourished children shall be followed. Hospital staff and
outpatient staff at nutrition rehabilitation centres shall be trained. Ready-to-use therapeutic food (RUTF) such as ‘Plumpy Nut’ will be used where available. Community-based management of severely malnourished children without complications will be encouraged.

**Learning Outcome 5: Explain the components of family nutrition promotion interventions**

**Activity 5**

Small groups: Put students into groups of 3-4 students. Hand out a copy of ND9_HOS Ghana National Health Policy to each group. Students should discuss and write down what key messages need to be promoted regarding consumption of diversified diets and healthy lifestyle. Students should include the following information from Chapter 4 of the National Health Policy (p. 37):

- Information for making healthy lifestyle choices
- Food safety
- Environmental sanitation
- Healthy settings (communities, schools, homes, and work places)
- Reaching people with infrastructure and services
- Enacting and enforcing legislation, e.g., food fortification
- Institutional strengthening

Feedback: Ask each group to share 1-2 ideas. Link to Ghana’s three food groups poster for diversified diets (from ND Session 2), if not already mentioned.

**Additional Activity**

Have students review the new National Nutrition Policy and discuss in pairs where the interventions covered in this session fit in.
Session 10: Essential Nutrition Actions and Other Approaches

This session is relevant for: RGN 033, MDW 040, RCN 033, and CHN 028. This session can be linked to Paediatric Nursing (RGN 064), Principles and Practice of Community Nursing and Administration II (RCN 060), and Child Health (CHN 026).

Duration: 3 hours (+ 2-3 hours for group project)

Introduction

This session covers six approaches used to implement nutrition interventions in Ghana:

1. Use of Essential Nutrition Actions (ENAs) at different health contact points
2. Integrated Management of Neonatal and Childhood Illness (IMNCI)
3. Community-based infant and young child feeding
4. Community-based growth monitoring and promotion
5. Child health weeks and mass campaigns
6. School health education

Competency Area

Be able to explain the Essential Nutrition Actions in Ghana.

Learning Outcomes

By the end of this session students will be able to:

1. List the Essential Nutrition Actions, key messages for each, and explain their role in relation to each of the nutrition actions
2. For the following approaches, outline who is involved, who is the target audience, when and where these may take place, and their importance:
   a. IMNCI
   b. Community-based IYCF
   c. Community-based growth monitoring programme
   d. Child health weeks and mass campaigns
   e. School health education programmes

Session Plan

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. To list the essential nutrition actions, key messages for each, and explain the health worker’s role in relation to each of the nutrition actions | a. Small group discussion on the Essential Nutrition Actions that health workers can promote to women to improve their own and their children’s health  
b. Pairs discuss and write down what their role as a community nurse would be in relation to each of the ENAs  
c. Discussion on where and when a health worker can share ENA messages with women | ND10_HO1c ENA Key Messages                                                                  | 1 hour    |
2. For the following approaches, outline who is involved, who is the target audience, when and where these may take place, and their importance:
   a. IMNCI
   b. Community-based IYCF
   c. Community-based growth monitoring programme
   d. Child health weeks and mass campaigns
   e. School health education programmes

a. Group project: each group presents one of the nutrition intervention implementation approaches
b. Discussion on if approaches ensure that those in the most need are reached

2 hours (for giving presentations and discussion, + 2–3 hours for group project)

Materials Required


Preparation Suggestions

1. Review session plan and resources.
2. Decide whether you would like students to do Activity 2a prior to the session (so that they can present in this session) or after this session (so they would present at the following session). If you want them to prepare for this session, ensure that they have several days notice, as they will need to get in contact with health professionals for the project. Allow at least 1 hour 40 minutes for the presentations (with questions and answers).
   An alternative activity would be to contact health professionals involved in each of the approaches prior to the session and arrange for them each to give a 10 minute presentation covering the points outlined in Activity 2a.
3. Read through ND10_HO1c ENA Key Messages.
4. Print sufficient copies of ND10_HO1c ENA Key Messages.

Further Reading and Resources

Session Details

Learning Outcome 1: To list the Essential Nutrition Actions, key messages for each, and explain the health worker’s role in relation to each of the nutrition actions

Activity 1a (Adapted from ENA Booklet on Key Messages)³

Small group discussion: Ask the groups, ‘What are the Essential Nutrition Actions that health workers can promote to women to improve their own and their children’s health?’

Feedback: Ask students for responses. Write the seven Essential Nutrition Actions and discuss any that were missing from student responses.

1. Optimal breastfeeding practices
2. Appropriate complementary feeding with breastfeeding
3. Nutritional care of sick and/or malnourished children
4. Women’s nutrition
5. Control of Vitamin A deficiency
6. Control of anaemia
7. Control of iodine deficiency disorder

Activity 1b

In pairs: Ask the students to discuss and write down what their role as a nurse would be in relation to each of the ENAs.

Feedback: Go through each ENA and ask one or two pairs for an idea for each.

Activity 1c

Give each student a copy of the ND10_HO1c ENA Key Messages. Allow students 10-15 minutes to read though the booklet.

Point out: For illustration 23 (p. 23), note that the recommendation has recently changed and women are not given postpartum vitamin A supplementation.

Discussion: Ask, ‘Where and when can the health worker share these messages with women?’ Write thoughts on the board.

Feedback: Ensure that the following points are covered:

<table>
<thead>
<tr>
<th>Health Contact Points</th>
<th>Additional Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>At every contact with a pregnant woman at a health clinic and in the community</td>
<td>Community level</td>
</tr>
<tr>
<td>At delivery in the hospital or at home</td>
<td>Credit meetings</td>
</tr>
<tr>
<td>During postpartum/family planning sessions at a health clinic and in the community</td>
<td>Farmers schools</td>
</tr>
<tr>
<td></td>
<td>Literacy groups</td>
</tr>
<tr>
<td></td>
<td>Parent-teacher association meetings/school</td>
</tr>
</tbody>
</table>

• During immunization sessions
• During well-baby clinic sessions
• During sick child visits (IMNCI and Community Case Management)
• Through Community-Based Management of Acute Malnutrition (stabilization centres, outpatient therapeutic care, and food supplementation)

Learning Outcome 2: For the following approaches, to outline who is involved, who is the target audience, when and where these may take place, and their importance: IMNCI; community-based IYCF; community-based growth monitoring programme; child health weeks and mass campaigns; and school health education programmes

Activity 2a
Group project: Split the class into five groups. Give each group one of the following approaches to research: (1) IMNCI, (2) community-based IYCF, (3) community- and facility-based growth monitoring programme, (4) child health weeks and mass campaigns, and (5) school health education programmes. Each group has to prepare a 10 minute presentation on the approach they have been assigned. The presentation should include:

• Who is involved, e.g., community health nurses, teachers, volunteers
• Who the target audience is, e.g., children under 5 years
• When the approach takes place, e.g., twice yearly, ongoing
• Where it takes place, e.g., child welfare clinics, schools
• Which nutrition interventions/policies are conducted/fulfilled through this approach
• The advantages of the approach
• The disadvantages of the approach

Students can use materials from Session ND9 to help, however, they will probably need to talk to health professionals involved in the approach to find out more details. This activity will require out of class time and presentations will either be held in the next session, or this session if the preparation is conducted prior to the session.

Each group should present their information to the class in 10 minutes with 5 minutes for questions and answers.

Activity 2b
Discussion: Ask the class, ‘Do you think these approaches ensure that those in most need are reached?’

Prompts: ‘Who are targeted? Who are hard to reach groups? Which areas are covered? What are the barriers to accessing services? What are the barriers to providing services in rural areas?’
Session 11: The Role of the Dietician and/or Nutritionist in the Health Team

This session is relevant for: RGN 033 and MDW 040. This session can be linked to Community Health Nursing 1 (CHN 010), Principles and Practice of Community Nursing and Administration II (RCN 060), Medical Nursing (MDW 030), Paediatric Nursing (RGN 064), Child Health (CHN 026), Obstetric Nursing (NUR 051/CHN 031), Public Health Nursing (RGN 068, MDW 084), and Advanced Nursing (RGN 031).

Duration: 50 minutes

Introduction

The session enables the student to think about why nurses are important for the nutrition work of health teams, because:

1. Nurses are closest to patients, their families/caregivers, and communities
2. Nurses have the technical knowledge to support specialist health professionals such as nutritionists and/or dieticians
3. Nurses explain, educate, and counsel patients/service users about diet plans and good nutrition

This session, with session 12, enables the student nurse to review and apply nutrition knowledge to nursing practice.

Competency Area

Knowledge, understanding, and ability to work effectively with nutritionists/dieticians and other members of the health team for good nutrition of patients/service users.

Learning Outcomes

Students will be able to:

1. Describe the role of the nutritionist and/or dietician in the care of patients/service users
2. Outline the roles other health professionals may play in nutrition care in their area of work
3. Suggest ways to work in a team to solve patient- or case-based nutrition problems in their own area

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. Describe the role of the nutritionist and/or dietician in the care of patients/service users | a. Review the role of the nurse in nutrition  
   b. Introduction of nutrition/dietician roles | ND11_HO1a The Health Professional’s Role  
   ND11_HO1b Nutritionist/Dietician Roles | 15 minutes |
| 2. Outline the roles other health professionals may play in nutrition care in their area of work | Small groups discuss roles of other health professionals and compare with their own experiences | ND11_HO2a Nutrition Team Roles | 15 minutes |
3. Suggest ways to work in a team to solve a patient- or case-based nutrition problem in their own area

Pair work/role play to solve a nutrition scenario

ND11_HO3a Nutrition Team Scenarios
ND11_HO3ai to HO3av: Examples of diet plans/patient information sheets for each scenario

20 minutes

Materials Required

1. ND11_HO1a The Health Professional’s Role. (Source: Britt, D. 2012. ‘The Health Professional's Role in Nutritional Care.’ Available at http://content.southuniversity.edu/output/pdf/Marketing/Insite/SU_80626_TheHealthProf essionalSRole.pdf.)
2. ND11_HO1b Nutritionist Dietician Roles
3. ND11_HO2a Nutrition Team Roles
4. ND11_HO3a Nutrition Team Scenarios
5. ND11_HO3ai Child Diet Plan from Ridge Hospital
6. ND11_HO3aii 1400 kcal Diet from Ridge Hospital
7. ND11_HO3aiii 1200 kcal Diet from Ridge Hospital
8. ND11_HO3aiv 1800 kcal diet from Ridge Hospital
9. ND11_HO3av Low Chol Diet from Ridge Hospital

Preparation Suggestions

1. Ideally, it would be good if a dietician could join the discussion. If this is not possible, try and meet with dietician to review the case scenarios that will be used in the group work.
2. Read through the session plan and resource materials.
3. Print sufficient copies of the handouts.

Further Reading and Resources

3. Accounts of challenges in Ghana:

4. Review of practices in rich countries showing the problems with nutrition in the care of adults in hospitals:

5. ND11_RS8 Health Workers and Nutrition. (Source: UNICEF. 2009. ‘How health and development workers can improve nutrition’ in ‘Community Nutrition’ CD. St Albans: TALC.)

**Session Details**

**Learning Outcome 1: Describe the role of the nutritionist and/or dietician in the care of patients/service users**

*Activity 1a*
Hand out and discuss ND11_HO1a The Health Professional’s Role to review the role of the nurse in nutrition.

*Activity 1b*
Hand out and review ND11_HO1b Nutritionist Dietician Roles with definitions of nutrition and dietetics. ND11_RS1 Liz Evans NNG is additional reading for students on working with members of health teams in hospitals.

**Learning Outcome 2: Outline the roles other health professionals may play in nutrition care in their area of work**

*Activity 2*
Small groups. Hand out ND11_HO2a Nutrition Team Roles. Ask students to discuss and complete the worksheet.

**Learning Outcome 3: Suggest ways to work in a team to solve a patient- or case-based nutrition problem in their own area**

*Activity 3*
Pair work/small group work: Using ND11_HO3a Nutrition Team Scenarios, introduce short scenarios for pairs of students to work on, based on cases in which a nurse (general nurse, mental health nurse, community nurse, or midwife) solves a nutritional problem for a patient to improve care.
Feedback: Have the groups provide their answers. Discuss with the class whether they agree or disagree with what each group/pair decided to do, suggest alternative approaches, and identify lessons learned.

Students can think about when to ask for help from a nutritionist/dietician to explain a diet plan; explain healthier eating to a patient; how/when to take or avoid food and drink with medicine; or when to refer to a specialist (doctor, speech and language therapist, etc.).
Session 12: Role of the Nurse in Nutrition Education and Counselling

This session is relevant for: RGN 033 and MDW 040. This session can be linked to Nutrition and Dietetics Session 9: Nutrition Interventions and Policies in Ghana (Activity 5) and Session 10 Essential Nutrition Actions and Other Approaches.

Duration: 1 hour

Introduction

This lesson will give students an opportunity to show how they can apply their nutrition knowledge and understanding with patients and their caregivers as partners in nutrition health care, using education and/or counselling. This aligns with the Ghana Health Service 2008 Patients’ Rights Charter, its Code of Ethics, and Nursing Ethics.

Competency Area

Be able to deliver nutrition appropriate education and counselling effectively.

Learning Outcomes

1. Shows understanding of education and counselling methods
2. Awareness of commonly used methods of communication (patient education)
3. Shows understanding of how to choose and adapt approaches appropriate to a patient/caregiver

Session Plan

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shows understanding of education and counselling methods</td>
<td>Explain the session to students and remind students of the importance of communication and counselling in the role of a nurse</td>
<td>Information about the demand and need for good communication. Examples of patient communication sheets, e.g., posters, leaflets, diet sheets, etc.</td>
<td>15 minutes</td>
</tr>
<tr>
<td>2. Awareness of methods commonly used in patient education</td>
<td>Quiz about methods of communication used in Ghana</td>
<td>ND12_HO2a Communication Quiz ND12_HO2b Communication Quiz Answers</td>
<td>10 minutes</td>
</tr>
<tr>
<td>3. Shows understanding of choosing and adapting methods of communication</td>
<td>Pair work/role play short scenarios to practice communication about nutrition with patients</td>
<td>ND12_RS1 Tutor’s Guide To Role Play ND12_HO3a Role Play Nurses Roles ND12_HO3b Role Play Patient Roles</td>
<td>35 minutes</td>
</tr>
</tbody>
</table>
Materials Required

1. ND12_HO2a Communication Quiz
2. ND12_HO2b Communication Quiz Answers
3. ND12_RS1 Tutor’s Guide to Role Play (1 copy for tutor)
4. ND12_HO3a Role Play Nurses Roles (copies for half the class)
5. ND12_HO3b Role Play Patient Roles (copies for half the class)
6. Diet sheets for adults and children

Preparation Suggestions

1. Review session plan and resources
2. Remind students to review previous sessions related to communication and counselling (Sessions 9 and 10) prior to this session
3. Prepare introductory talk and compile information about the demand and need for good communication and examples of patient communication sheets, e.g., posters, leaflets, diet sheets, etc. for activity 1a
4. Read ND12_RS1 Tutor’s Guide to Role Play
5. Become familiar with the role play scenarios and characters in ND12_HO3a and ND12_HO3b
6. Print copies of required handouts and resources

Further Reading and Resources

2. ND12_RS2 Korsah OJ Nurs. This recent qualitative research sets the scene for this topic and the challenges nurses face and often overcome. (Source: Korsah, K.A. 2011. ‘Nurses’ stories about their interactions with patients at Holy Family Hospital, Techiman, Ghana.’ Open Journal of Nursing. Available at http://www.scirp.org/journal/PaperDownload.aspx?DOI=10.4236/ojn.2011.11001.)
3. ND12_RS3 Burgess & Buijlsma Introduction to Nutrition. (Source: Bijlsma, M.; and Burgess, A. ‘How health and other development workers can improve family/community nutrition.’ NUT CD Sheet: Health workers and nutrition. UNICEF Community CD-ROM.)
6. ND12_RS6 DH Factsheet Physical Activity for Adults. (Source: Department of Health. 2011. ‘Physical Activity Guidelines for Adults (19-64 Years).’ Crown.)
7. Counselling resources around breastfeeding (see Child Health/Paediatric Nursing, Session 3: Infant and Young Child Feeding resources 4–6).
Session Details

Learning Outcome 1: Shows understanding of education and counselling methods

Activity 1
Give an introductory talk that explains the session to students and reminds students of the importance of communication and counselling in the role of a nurse.

Learning Outcome 2: Awareness of methods commonly used in patient education

Activity 2
Hand out ND12_HO2a Communication Quiz to students to complete individually. After everyone has completed the quiz, students should swap papers with their neighbour. Hand out ND12_HO2b Communication Quiz Answers for students to mark their peers' work.

Learning Outcome 3: Shows understanding of choosing and adapting methods of communication

Activity 3
Use ND12_RS1 Tutor’s Guide to Role Play as a guide to this activity. Have students work in pairs to role play short scenarios to practice patient communication about nutrition, using ND12_HO3a and HO3b. Each pair should take a turn playing the nurse and then a patient/caregiver.

Feedback: Have students discuss their reaction to the role play. Sum up the session by providing examples of good practices.
Child Health/Paediatric Nursing
Session 1: Normal Growth and Development

This session is relevant for: RGN 064, RCN 060, and CHN 026. This session can be linked to Medical Nursing I (RGN 040/MDW 030) and Medical Nursing II (RGN 060).

Duration: 2 hours, 20 minutes (+ 1 hour, 30 minutes e-learning)

Introduction

In this session students will gain an understanding of the different types of growth and development and the factors that influence them. They will learn the normal stages of growth for children from birth to adulthood.

Competency Area

Be able to explain the normal stages of growth and development and the factors that influence them.

Learning Outcomes

1. State the different types of growth and development (physical, social, emotional, cognitive, and spiritual)
2. State the factors that influence growth and development and why (hereditary, environmental, social, emotional, cognitive, and spiritual)
3. Describe the stages of normal physical growth in infancy and early childhood

Session Plan

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State the different types of growth and development (physical, social, emotional, cognitive, and spiritual)</td>
<td>Small group work to discuss the different types of growth and development</td>
<td></td>
<td>30 minutes</td>
</tr>
<tr>
<td>2. State the factors that influence growth and development and why (hereditary, environmental, social, emotional, cognitive, and spiritual)</td>
<td>Group discussion on factors that influence the different types of growth and development</td>
<td></td>
<td>30 minutes</td>
</tr>
<tr>
<td>3. Describe the stages of normal physical growth in (a) the first year of life, and b) years 2–5</td>
<td>a. e-learning module on growth, development, and ageing (either in class or own time) b. Brainstorm on developmental milestones c. Small group work on early childhood developmental stages d. Discussion on limitations of milestones</td>
<td>e-learning course on growth, development, and ageing CH1_HO3 Milestones in Early Child Development Activities</td>
<td>1 hour, 20 minutes (+ 1 hour, 30 minutes e-learning)</td>
</tr>
</tbody>
</table>
Materials Required


2. Computers and internet for the e-learning module on growth, development, and aging available at https://www.som.soton.ac.uk/learn/test/nutrition/courses/courselist/course1.asp?courseid=1. (The course is free, however, students will need to register to log in to take the course.)

Preparation Suggestions

1. Review the session plan and resources

2. Print out CH1_HO3 Milestones in Early Childhood Development Activities and prepare accordingly

Further Reading and Resources


5. CH1_RS5 Puberty and the Tanner Stages. (Source: Tanner, J.M. ‘Puberty and the Tanner Stages.’ Available at http://www.childgrowthfoundation.org/CMS/FILES/Puberty_and_the_Tanner_Stages.pdf.)


Session Details

Learning Outcome 1: State the different types of growth and development (physical, social, emotional, cognitive, and spiritual)

Activity 1
Small group work: Ask small groups to discuss what the different types of growth and development are.

Feedback: Write the different types of growth and development on the board.

- Physical
- Social
- Emotional
- Cognitive
- Spiritual

Learning Outcome 2: State the factors that influence growth and development and why (hereditary, environmental, social, emotional, cognitive, and spiritual)

Activity 2
Small group work: In the same groups ask the students to discuss what factors influence these different types of growth and development. Note: there may be overlap, e.g., genetics influence physical, social, emotional, and cognitive development.

Feedback: Ask students to share ideas. Ensure the following points are covered:

- Genetic factors—physical, emotional, and cognitive
- Environmental—pollution, especially lead, affects cognition
- In utero—physical and cognitive
- Maternal nutrition
  - Maternal substance abuse—physical and cognitive
  - Maternal emotion—emotional and cognitive
- Post birth
  - Nutrition—physical and cognitive
  - Family stability—emotional, cognitive, and social
  - Care and attention—emotional, cognitive, and social

Learning Outcome 3: Describe the stages of normal physical growth in (a) the first year of life, and (b) years 2–5

Activity 3a
Individual work: Either on their own time or in class, students should work through the e-learning course on growth, development, and aging available at https://www.som.soton.ac.uk/learn/test/nutrition/courses/courselist/course1.asp?courseid=1. The course is free, although students have to register first to access the module.
Activity 3b

Brainstorm: Ask the following questions and let students respond and give the correct answer.

- At what age should children be registered? (Answer: at birth)
- At what age can most children sit with support? (Answer: 6 months)
- At what age can children count 5 to 10 objects? (Answer: 5 years)
- At what age can children imitate the behaviour of others? (Answer: 2 years)
- At what age can children use make-believe objects in play? (Answer: 3 years)

Activity 3c

Small group work: There are many things that we all know about young children’s development, especially those who have been parents. Have participants work in small groups to see just how much they collectively know about what children are able to do at different ages.

Divide participants into groups of five and have each group gather around a blank developmental milestones flip chart on the floor (prepared using CH1_HO3 Milestones in Early Childhood Development Activities). Give each group an envelope with a full set of cards (mixed across age groups) and give them 15 minutes to sort the cards by the age at which most children should be able to do the task.

Feedback: After 15 minutes, give each group a copy of the answer sheet from CH1_HO3 and have them correct their own sorting.

Activity 3d

Discussion: Lead a general discussion regarding the activity just completed. Questions you might ask include:

- For which age group did you get the most right?
- For which age group did you get the most wrong?
- Was it difficult to classify some of the behaviours of children? Why or why not?
- Which behaviours were the most difficult to classify?

What is your own experience in relation to these aspects of children’s well-being? If questions come up about where tasks are placed, remind people that the developmental milestones are from UNICEF’s Facts for Life (this doesn’t necessarily mean that they are true for everyone, however).

Lead a discussion of the limitations of milestones. Some important ideas to get across include:

- Not all children develop at the same rate; each child is unique
- Children within any age group develop at different rates
- Not all aspects of a child’s development are at the same stage
- There are always children who develop faster than average and there are always children who develop more slowly
- There are cultural differences (e.g., children’s ability to eat with chopsticks versus spoons).

Feedback: Summarise the session by asking the students why it is important to know about milestones. The answer is that it helps us to provide appropriate experiences for the child and
family. Conclude with the idea that the more we know about what can be expected of children at different ages and stages, the more likely it is that we can give them appropriate support.
Session 2: Growth Monitoring

This session is relevant for: RGN 064, RCN 060, and CHN 026. This session can be linked to Nutrition and Dietetics (RGN 033/MDW 040/RCN 033/CHN 028).

Duration: 3 hours, 15 minutes (+ 2 hour practical)

Introduction

This session provides students with the knowledge and skills necessary to assess and interpret the growth of a child. Students will become familiar with how to plot growth on a chart/in a record book and interpret the meaning. Students will be able to explain this information to a child's caregiver in an understandable, empathetic manner.

Competency Area

Be able to chart, interpret, and explain a child’s growth to the caregivers.

Learning Outcomes

By the end of this session students will be able to:

1. Measure weight, height, and mid-upper arm circumference [MUAC]
2. Demonstrate the correct methods of plotting growth on a chart/in a record book and use standards to identify normal, faltering, and catch-up growth
3. Interpret a child's nutritional status
4. Explain a child’s nutritional status to her or her caregiver

Session Plan

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Measure weight, height, and MUAC</td>
<td>a. WHO Anthropometry Training Video</td>
<td>CH2_RS9 WHO Anthropometry Training Video</td>
<td>1 hour (+ 2 hours practice activity)</td>
</tr>
<tr>
<td></td>
<td>b. UNICEF e-learning: Measuring undernutrition in individuals, Mini lessons 3.1.1 to 3.1.3</td>
<td>Computers and internet to access e-learning course, if reviewed during class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Individual work on reading measures Practice measuring height, weight, and MUAC (alternatively as part of practicum)</td>
<td>CH2_HO1b Job Aid: Weighing and Measuring Children CH2_HO1c Reading Measures Scales, height measures, and MUAC tapes for practice activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Demonstrate the correct methods of plotting growth on a chart/in a record book and use standards to identify normal, faltering, and catch-up growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Calculating age in a record book</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Defining normal, faltering, and catch-up growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Plotting weight for age in record book</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Child health record books, <em>Nutrition for Developing Countries</em> textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Community Nutrition</em> textbook</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH2_HO2c Growth Problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Interpret a child’s nutritional status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpreting different growth charts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Explain a child’s nutritional status to his or her caregiver</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Explaining a child’s nutritional status worksheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Role play to investigate causes of undernutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH2_HO4a Explaining Child’s Nutritional Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH2_HO4b Job Aid Investigating Causes of Undernutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Materials Required

1. CH2_RS9 WHO Anthropometry Training Video and screen for showing the video. (Available to order, download, or stream online at [http://www.who.int/childgrowth/training/en/](http://www.who.int/childgrowth/training/en/).)
2. Computers and internet for students to access Section 3: Measuring undernutrition in individuals, Mini lessons 3.1.1 to 3.1.3 of the UNICEF e-learning course on Nutrition in Emergencies at [http://www.unicef.org/nutrition/training/list.html](http://www.unicef.org/nutrition/training/list.html).
5. Scales, height measures, and MUAC tapes if carrying out the practice activity at a location where these are not available (such as a nursery school)
6. Copies of child health record books

### Preparation Suggestions

1. Review session plan
2. If possible, arrange for the class to attend an under 5 clinic or go to a local nursery to practice measuring height, weight, and MUAC either during lesson time or another time


Further Reading and Resources


5. CH2_RS7 FANTA BMI charts. (Source: FANTA. 2013. BMI and BMI-for-Age Look-up Tables for Children and Adolescents 5–18 Years of Age and BMI Look-up Tables for Non-pregnant, Non-lactating Adults ≥ 19 Years of Age. Available at http://www.fantaproject.org/tools/bmi-look-up-tables.)

6. CH2_RS8 Job aid weighing and measuring adults. (Source: Regional Centre for Quality Health Care. Assessment of Nutritional Status for Adults Using Weight and Height.)

Session Details

Learning Outcome 1: Measure weight, height, and MUAC

Activity 1a

Video: If possible, show CH2_RS9 WHO Anthropometry Video (approximately 13 minutes; you do not need to show the part on skinfold measurement). If it is not possible to show the video on a large screen, students should watch the video online prior to class at http://www.who.int/childgrowth/training/en/.

Activity 1b

e-learning: Provide students with CH2_HO1b Job Aid Weighing and Measuring Children. If computers are available in class, have students review Section 3: Measuring undernutrition in individuals, Mini
lessons 3.1.1 to 3.1.3, of the UNICEF Nutrition in Emergencies course at http://www.unicef.org/nutrition/training/list.html, or students can review the lessons on their own before the class.

**Activity 1c**

Individual work: Hand out CH2_HO1c Reading Measures and ask the students to complete the worksheet.

Feedback: Read out the following answers.

1. 94.2 cm
2. 74.6 cm (this is the last line that can be seen)
3. Length is 92.0 cm (this is the last line that can be seen). Subtract 0.7 cm to convert length to height. Recorded height should be 91.3 cm.

**Activity 1d**

Practice activity: Take students to an under 5 clinic or a nursery/school where they can practice measuring height, weight, and MUAC. They should take their WHO job aid for reference (CH2_HO1b Job Aid Weighing and Measuring Children). Give students time to become familiar with equipment and ensure that they can read the results correctly. Identify 5 or 6 children that everyone should weigh and measure, including yourself. Students should work individually.

Feedback: Provide feedback during the same session or the next session depending on whether practical is conducted during class time or other time. Discuss the variation in weight and height of the children measured. Discuss difficulties encountered, such as if the child would not relax his/her arm, and how this affects the quality of the measurements. Also discuss how such difficulties can be overcome, such as having the mother talk to the child to help him/her stay calm.

If the practice activity has not been conducted, ensure that students conduct growth assessments during their practicum.

**Learning Outcome 2: Demonstrate the correct methods of plotting growth on a chart/in a record book and use standards to identify normal, faltering, and catch-up growth**

**Activity 2a**

Discussion: Provide students with a copy of the child health record to review and ask any questions. Discuss why it is important to have an accurate age. Ask students for potential problems and solutions to data on the child health record.

Ask students to read pages 177–181 in the *Nutrition for Developing Countries* textbook. If students do not have their own copies, summarise key points for these pages to class.

Read out the following case for students to discuss in pairs. Afterwards, student should write down Ruby’s date of birth and age.

‘Today is 10 July, 2013. On 19 October, 2012, Ruby was seen at the health centre for a well-child visit. Ruby’s grandmother says that Ruby’s Girl’s Growth Record has been lost. She says that Ruby will celebrate her first birthday soon, on the first day of August. The health care provider begins a new Girl’s Growth Record for Ruby by completing the Personal Data page.’
‘What is Ruby’s date of birth, as it should be recorded on the Personal Data page?’
‘What is Ruby’s age today, as it should be recorded on the Visit Notes page?’

Feedback: Read out the correct answers.

- Ruby’s date of birth: 1/8/2012
- Ruby’s age today: 11 months

Students should practice filling in the Personal Data page of the child health record using the following information:

Mary was born on 7 February, 2014. She was a single, term birth (38 weeks of pregnancy). According to her birth record, her birth weight was 2.9 kg and length was 49 cm. Her head circumference was not measured.

Mary’s parents are Aghei and Yaa. Their address is 40 Accra Road. Mary is the first and only child born to Yaa. She is breastfed, but she has also been given some water since she was 3 weeks old. There have been no unusual adverse events in her life so far.

The date of Mary’s visit to the health centre is 25 May, 2014. Her mother has brought her for immunization.

1. Ask students to complete the Personal Data page of the Girl’s Growth Record for Mary. (You may make up a record number.)
2. In the Visit Notes section of the Girl’s Growth Record, ask students to record Mary’s date of birth. On the first row, students should enter the date of Mary’s visit, her age at the time of the visit, and the reason for her visit.
3. Student should list the titles and page numbers of the four growth charts that the health care provider should use during Mary’s growth assessment.

Activity 2b

Read the following to the class, or ask students to read pp. 187-188, ‘Using child weight charts’ in Community Nutrition.

‘In 2006, WHO published new growth standards for children 5 years and up. These are based on measurements of healthy, well-fed children from different parts of the world. Although WHO also gives these data as centiles, it recommends using “z-scores”. Z-scores are a way of measuring how far a child’s measurement is from the median weight for a given height or age, or height for a given age. Z-scores are measured as positive and negative standard deviations. The majority of the population (95%) is between -2 and +2 standard deviations of the median while around 99% of the population are within -3 and +3 standard deviations for the median.’

In pairs: Ask students to look at their growth charts in the child health record and discuss what normal and faltering growth is and how to tell if growth is normal or faltering.

Feedback:

---

4 Median is the middle number in a distribution or range of numbers.
• Normal—child is growing well and gaining weight; growth line is the same shape as the reference line and lies within or near the range of healthy weights
• Faltering—child is gaining weight too slowly, not gaining weight, or losing weight; growth line is flatter than the reference line or going down
• Point out that the slope of the line is more important than its position on the chart. Growth faltering is most serious if the child is under 6 months of age, and/or the weight is below -3 SD (third centile), and/or has lasted 2 months or more.

Ask the pairs to discuss what catch-up growth is.

Feedback: Catch-up growth is weight gain that is faster than previous growth. It may involve growth lines crossing over reference lines upwards. It may happen after a period of illness when a child has lost weight or not gained weight. Children may also be putting on weight too fast if their growth line is rising very quickly and their weight is above 2 SD of the median.

**Activity 2c**

Hand out and review CH2_HO2c Growth Problems.

Read out the measures in the following table for students to plot on a weight-for-age chart in the child health record. Ensure the correct chart is selected. Students should plot the weight and write where the line falls, e.g., 0 if between +1 and -1, -2 if between -2 and -3 SD, -3 if below -3. They should also write how the child would be classified according to the growth problems sheet.

<table>
<thead>
<tr>
<th>Case</th>
<th>Feedback: Read out the correct answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boy 1, 1 year 1 month, 7.5 kg</td>
</tr>
<tr>
<td></td>
<td>-2 SD, underweight</td>
</tr>
<tr>
<td>2</td>
<td>Boy 2, 3 years 11 months, 19.5 kg</td>
</tr>
<tr>
<td></td>
<td>+1 SD, may be overweight, assess weight-for-height</td>
</tr>
<tr>
<td>3</td>
<td>Girl 1, 1 year 0 months, 7.6 kg</td>
</tr>
<tr>
<td></td>
<td>-1 SD, normal</td>
</tr>
<tr>
<td>4</td>
<td>Girl 2, 7 months, 5.2 kg</td>
</tr>
<tr>
<td></td>
<td>-3 SD, severely underweight, assess weight-for-height to determine if she has severe acute malnutrition</td>
</tr>
</tbody>
</table>

**Learning Outcome 3: Interpret a child’s nutritional status**

**Activity 3**

Draw an example growth chart on the board (with median line, + 2, +3, -2, and -3 SD). Draw three points in an upward line at the same rate as the median (normal growth). Draw the following lines and ask students to decide if growth is normal, faltering, catch-up, or too quick.

- Line is increasing, but not at the same rate as the median (faltering—slow growth)
- Line starts above the median and goes up faster than the median line but does not cross +2 (normal)
- Line is going down crossing the -2 and -3 lines (faltering—weight loss)
- Line starts at -3 and goes up crossing the -2 line (catch-up)

Explain to students that if there is an unexpected change in growth pattern, measurements should be checked in case it is due to measurement or recording error.
Learning Outcome 4: Explain a child's nutritional status to his or her caregiver

Activity 4a
In pairs: Ask student pairs to discuss what they think are important points to mention to a caregiver when explaining the results of growth monitoring.

Individual work: Hand out CH2_HO4a Explaining Child's Nutritional Status. Students should read and complete the exercises individually.

Feedback: Read out answers.

1. The best answer is ‘c.’ Answer ‘a’ uses a difficult word, ‘stagnated’. Answer ‘b’ accuses the mother of being at fault. Answer ‘c’ uses simple, non-accusatory words and explains the need to find the cause of the problem.

2. The best answer is ‘b.’ Answer ‘a’ uses two difficult words, ‘median’ and ‘obesity’. Answer ‘c’ suggests that the mother is to blame. Answer ‘b’ expresses concern in a clear way without suggesting blame.

3. Here is an example of a simpler explanation (your answer may be different): ‘Nadia is short for her age, but her weight is appropriate for her length. She looks healthy, but we want to be sure that she is getting enough good food to grow in both length and weight.’

Activity 4b
Role play: Hand out CH2_HO4b Job Aid Investigating Causes of Undernutrition. Instruct students to imagine they are a mother of a child who is wasted, stunted, or underweight and make up details about their child—name, age, and diet. In pairs, one student plays the role of the health care worker and one of the mother, and then switch roles. The student playing the health worker should follow the job aid instructions to structure their questions and advice.
Session 3: Infant and Young Child Feeding

This session is relevant for: RGN 064, RCN 060, and CHN 026. This session can be linked to Obstetric Nursing (NUR 051/RCN 062/CHN 031), and Physiology and Management of Normal Puerperium and the Neonate (MDW 042).

Duration: approximately 6 hours

Introduction

This session uses materials from UNICEF’s Community IYCF Counselling Package and the CORE Group’s Essential Nutrition Actions training guide. This session will give students the knowledge required to promote optimal breastfeeding and appropriate complementary feeding practices. Students will learn what advice to give to mothers regarding breastfeeding and complementary feeding and how to deal with breastfeeding difficulties.

Competency Area

Be able to give appropriate advice to caregivers on feeding.

Learning Outcomes

By the end of this session students will be able to:

1. Define exclusive breastfeeding and its benefits (including of colostrum), and risks of not exclusively breastfeeding and contraindications
2. State the advice they would give to a mother to help start and maintain breastfeeding (initiation, latching/detaching, etc.)
3. Explain what is meant by responsive feeding
4. State common breastfeeding barriers and problems and the advice they would give to help women overcome them
5. State the advice they would give the family of a lactating/breastfeeding mother (i.e., how to support the mother)
6. State good infant and young child feeding (IYCF) practices that they would encourage mothers/caregivers to follow (e.g., information on when to introduce complementary foods and non-human milk, cups versus bottles, and sterilisation and risk of infection)
7. State why it is important for mothers to continue to breastfeed a sick infant

---

5 UNICEF. 2012. ‘Community IYCF Counselling Package.’ Available at http://www.unicef.org/nutrition/index_58362.html.
<table>
<thead>
<tr>
<th>Session Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Outcome</strong></td>
</tr>
</tbody>
</table>
| 1. Define exclusive breastfeeding and its benefits, and risks of not exclusively breastfeeding and contraindications | a. Breastfeeding questions  
b. Pair work on breastfeeding definitions  
c. Class discussion: Why is breastfeeding important?  
d. Breastfeeding video  
e. Counselling cards introduction | CH3_HO1C Benefits of Breastfeeding  
‘Food for Life: Breastfeeding’ video  
CH3_HO1e UNICEF IYCF Counselling Cards | 45 minutes |
| 2. State the advice you would give to a mother to help start and maintain breastfeeding (initiation, latching/detaching, etc.) | a. Small group work to draw and label the anatomy of breast  
b. Demonstration on positioning the baby  
c. Pair work to discuss good and poor attachment  
d. Small group work to discuss different breastfeeding positions  
e. Demonstration/video on expression of milk and cup feeding  
f. Pair work on when to use key breastfeeding messages | CH3_HO2a Breastfeeding Illustrations  
Paper for activity 2a  
CH3_RS1 WHO IYCF Chapter  
Mother and baby for demonstration, or a doll or rolled up material for the baby if no real mother and baby are available  
CH3_HO1e UNICEF Counselling Cards  
UNICEF BFI video or breast model for activity 2e  
CH3_HO2f ENA Key Messages | 1 hour, 30 minutes |
| 3. Explain what is meant by responsive feeding | a. Small groups describe feeding practice shown in pictures  
b. Small groups discuss the meaning of responsive feeding  
c. Small groups discuss why responsive feeding is important  
d. Video on baby-led feeding | CH3_HO1e UNICEF IYCF Counselling Cards  
UNICEF BFI Baby-led feeding video | 45 minutes |
| 4. State common breastfeeding barriers and problems and the advice you would give to help women overcome them | a. Small group work on breastfeeding problems  
b. Small groups discuss HIV and breastfeeding | CH3_HO4ai Breastfeeding Problem Card Game  
CH3_HO4a Breastfeeding Troubleshooting  
CH3_HO1e UNICEF IYCF Counselling Cards | 45 minutes |
| 5. State the advice you would give the family of a lactating/breastfeeding mother, i.e., how to support the mother | Pair work to discuss messages to give to family members (e.g., husbands, mothers, mothers-in-law) of a lactating mother | CH3_HO1e UNICEF IYCF Counselling Cards  
CH3_HO2f ENA Key Messages | 20 minutes |
### Materials Required


2. CH3_HO1e UNICEF IYCF Counselling Cards. (Source: UNICEF. 2012. The Community IYCF Counselling Package. Available at [http://www.unicef.org/nutrition/index_58362.html](http://www.unicef.org/nutrition/index_58362.html).)


4. CH3_HO2f ENA Key Messages. (Source: Guyon, A.B.; and Quinn, V.J. 2011. ‘Booklet of Key ENA Messages’. Available at [http://www.coregroup.org/our-technical-work/working-groups/nutrition](http://www.coregroup.org/our-technical-work/working-groups/nutrition).)


7. If unable to get a mother and baby pair for the demonstration, use a doll (or rolled up material) for the breastfeeding role play

8. Food for Life videos—‘Breastfeeding’ and ‘What and when to feed your child’. Available at [http://medicalaidfilms.org/our-films/nutrition/?v=28462382](http://medicalaidfilms.org/our-films/nutrition/?v=28462382) and
http://medicalaidfilms.org/our-films/nutrition/?v=28509777 or DVDs can be ordered free from TALC at https://www.talcuk.org/videos-and-dvds-a.htm

9. Model breast for expressing milk demonstration or the UNICEF Baby Friendly Initiative video on baby-led feeding at
http://www.unicef.org.uk/BabyFriendly/Resources/AudioVideo/Baby-led-feeding/

Preparation Suggestions

1. Arrange for a mother and baby to attend class for breastfeeding positioning demonstration
2. Ensure sufficient handouts and resources are printed
3. Check that the two Food for Life videos work and that you have equipment set up to show them to the class
4. Practice demonstrations of expressing milk with breast model or check the link to the video
5. Ensure paper for activity 2a
6. Print and cut up cards from CH3_HO4ai BF problem card game and make sufficient sets for class

Further Reading and Resources

7. CH3_RS5 Brochure Feeding after 6 Months. (Source: UNICEF. ‘How to Feed a Baby After 6 Months’. Available at http://www.unicef.org/nutrition/files/Brochure_feeding_after_6_m.PDF.)
Learning Outcome 1: Define exclusive breastfeeding and its benefits, and the risks of not exclusively breastfeeding and contraindications

Activity 1a
Read out the questions in the following table and ask the students to write whether they think the answer is yes or no.

Feedback: Ask students to raise their hand for yes and no for each question, then read out the correct answer. Take note of any particular weaknesses and say you will discuss later. (You can ask the questions again at the end of the session so students can see whether their knowledge has improved.)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor child feeding during the first 2 years of life harms growth and brain development.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2. An infant aged 6 up to 9 months needs to eat at least 2 times a day in addition to breastfeeding.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3. A pregnant woman needs to eat 1 more meal per day than usual.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4. At 4 months, infants need water and other drinks in addition to breast milk.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5. If a mother is given correct information on how to feed her child, she will do so.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6. A woman who is malnourished can still produce enough good quality breast milk for her baby.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7. The more milk a baby removes from the breast, the more breast milk the mother makes.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8. The mother of a sick child older than 6 months should wait until her child is healthy before giving him/her solid foods.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>9. When complementary feeding starts at 6 months, the first food a baby takes should have the texture or thickness/consistency of breast milk so that the young baby can swallow it easily.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>10. During the first 6 months, a baby living in a hot climate needs water in addition to breast milk.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>11. A young child (aged 6 up to 9 months) should not be given animal-source food such as fish and meat.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>12. A newborn baby should always be given colostrum.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>13. An HIV-infected mother should never breastfeed.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>14. Men play an important role in how infants and young children are fed.</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Activity 1b
In pairs: Ask students to write key definitions for the following: infant, young child, exclusive breastfeeding, complementary feeding, and complementary food.
Feedback: Ask students for definitions and read out the definitions in the following table if necessary.

<table>
<thead>
<tr>
<th>Infant</th>
<th>From birth up to 12 months of age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young child</td>
<td>From 12 months up to 24 months of age</td>
</tr>
<tr>
<td><strong>Exclusive breastfeeding</strong></td>
<td>Refers to when an infant receives no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the infant to receive oral rehydration solutions (ORS), drops, and syrups (vitamins, minerals, and medicines)</td>
</tr>
<tr>
<td><strong>Complementary feeding</strong></td>
<td>Refers to infant feeding when breast milk alone is no longer sufficient to meet the nutritional requirements of the infant, and therefore other food and liquids are needed along with breast milk. The age range for complementary feeding starts at 6 months up to 24 months</td>
</tr>
<tr>
<td><strong>Complementary food</strong></td>
<td>Any locally-available food (from your kitchen, garden, or market) suitable as a complement to breast milk when breast milk becomes insufficient (at 6 months) to satisfy the nutritional requirements of the infant. The food needs to be local, available, feasible, and affordable.</td>
</tr>
</tbody>
</table>

**Activity 1c**

Ask: ‘Why is breastfeeding so important?’ Go around the class and ask each student for a benefit of breastfeeding and a risk of not breastfeeding. Each student should try to think of a different idea. If they are stuck for ideas, prompt them by asking for the benefits or risks to a child, mother, family, or community.

Feedback: Hand out CH3_HO1c Benefits of Breastfeeding and ask the students to read out any of the benefits/risks that have not been mentioned already.

**Activity 1d**

Video: Show the ‘Food for Life: Breastfeeding’ video (available at [http://medicalaidfilms.org/our-films/nutrition/?v=28462382](http://medicalaidfilms.org/our-films/nutrition/?v=28462382)). Ask students to write down any information that was new to them or that they did not agree with.

Feedback: Discuss any points that students have written down.

**Activity 1e**

Hand out CH3_HO1e UNICEF IYCF Counselling Cards. Explain to the students that these are a resource that can be used to help women understand the messages that they deliver to them. Allow 5 minutes for students to look through the cards and discuss in pairs what each message is saying.

**Learning Outcome 2: State the advice you would give to a mother to help start and maintain breastfeeding (initiation, latching/detaching, etc.)**

**Activity 2a**

Small groups: Ask each small group (4-5 students) to draw and label:

- The breast as it looks on the outside
• The breast as it looks on the inside

Feedback: Ask each group to explain their drawings. Compare with them with the top diagram in CH3_HO2a Breastfeeding Illustrations, highlighting any misinformation. Ask one group to explain how milk is produced; ask other groups to add additional points. If knowledge is lacking, ask students to read CH3_RS1 WHO IYCF Chapter, pages 11-13.

Ensure the following points are covered:

• When the baby suckles at the breast, stimulation of the nipple results in breast milk production and the release of breast milk
• Suckling, as well as removing plenty of milk from the breast, are essential for good milk supply
• The release of milk (sometimes called the ejection reflex) can be affected by a mother’s emotions—fear, worry, pain, embarrassment, etc.
• Montgomery’s glands secrete an oil-like substance that lubricates and cleans the nipple

Ask: ‘If the mother eats more, will she produce more milk?’

Feedback: Ensure students understand that milk production depends on frequent removal of plenty of milk from the breast—the more breast milk removed from the breast, the more breast milk the mother makes. This is why the frequency and intensity of breastfeeding is important.

Activity 2b

Demonstration: Using a real breastfeeding mother and her infant (if possible), explain the four signs of good positioning for breastfeeding and demonstrate how good positioning stimulates the baby and allows the mother to respond. If a real mother and baby are not available, ask a student to pretend to be a mother with a doll or rolled up towel as the baby. Act as though you are a health worker giving her help with breastfeeding.

Explain to the mother that:

1. The baby’s body should be straight
2. The baby’s body should be facing the breast
3. The baby should be close to the mother
4. The mother should support the baby’s whole body

Also explain that:

• The mother must be comfortable
• The infant is brought to the breast (not the breast to the infant)
• With good positioning at the breast, the baby is at the right distance to be able to focus on the mother’s eyes; when the baby feeds on one breast, and then changes to the other breast for the next feed, the baby’s eyes and brain are stimulated from both sides
• Breastfeeding stimulates the baby’s senses: touch, taste, sight, smell, and hearing
• When a baby’s head is positioned too far out at the crook of the mother’s arm, the baby will have to tilt his head downward to attach to the breast, making it difficult to swallow; the baby’s head needs to be positioned further down on the forearm. To further demonstrate:
one arm show with the opposite hand the position of (1) the buttocks of the baby (slap your hand), (2) the head of the baby (slap your forearm), (3) the facing mother (slap your stomach), and (4) the passing baby’s hand behind the mother’s waist (swoop hand behind waist)

- There are four signs of attachment and demonstrate how good attachment stimulates the baby and allows the mother to respond. The signs are:
  1. Baby’s mouth is open wide
  2. Baby’s lower lip is turned out
  3. Baby’s chin is touching the breast
  4. There is more areola showing above than below the nipple

**Activity 2c**

Pair work: Ask students to look at CH3_HO2a Breastfeeding Illustrations showing good and poor attachment. Have pairs discuss what is happening inside the baby’s mouth when attachment is good or poor, and to note the differences.

Feedback: Ask one pair to describe good attachment and one pair poor attachment. Ask other pairs to add any points missed or correct misinformation. Ask another pair for the differences.

Ensure the following points are covered:

- **Good attachment**
  - The baby has taken much of the areola and the underlying tissue into the mouth
  - The baby has stretched the breast tissue out to form a long “teat”
  - The nipple forms only about one third of the teat
  - The baby is suckling from the breast, not the nipple
  - The position of the baby’s tongue is forward, over the lower gums and beneath the areola. The tongue is in fact cupped around the “teat” of breast tissue. (Not shown in the illustration, although it may be seen when observing a baby.)
  - A wave goes along the baby’s tongue from the front to the back. The wave presses the ‘teat’ of breast tissue against the baby’s hard palate. This presses milk out of the milk ducts into the baby’s mouth to be swallowed

- **Poor attachment**
  - Only the nipple is in the baby’s mouth, not the underlying breast tissue
  - The milk ducts are outside the baby’s mouth, where the tongue cannot reach them
  - The baby’s tongue is back inside the mouth and not pressing on the milk ducts

Ask: ‘What are the results of poor attachment?’ Ensure the following points are covered:

- Sore and cracked nipples
- Pain leading to poor milk release and slow milk production

Ask: ‘What are signs of effective suckling?’ Ensure the following are covered:

- Slow deep sucks with pauses
- Seeing or hearing the baby swallowing
- Cheeks are rounded and not dimpled or indrawn
Activity 2d

Small groups: Ask the small groups (3-4 students) to look at CH3_HO1e UNICEF IYCF Counselling Cards, Card 6.

Ask: ‘What is this demonstrating?’ (Answer: different breastfeeding positions)

Ask: ‘Why are we discussing different breastfeeding positions?’ Answers:

- To facilitate correct attachment to prevent sore and cracked nipples
- To alleviate pressure on the nipple
- To provide comfort for the mother after caesarean

Students should look at each position and discuss why they think it is useful.

Feedback: Ask different groups to explain the position in one picture (positions are, clockwise from top left: cradle position, cross cradle, cradle twins, under arm twins, under arm, side lying). Ensure the following points are covered for each position:

- Cradle position—most common
- Cross cradle—useful for newborns and small or weak babies, or any baby with difficulty attaching
- Side lying—more comfortable for the mother after delivery and helps her to rest while breastfeeding. The mother and infant are both lying on their sides and facing each other.
- Under arm—the mother is comfortably seated with the infant under her arm. The infant’s body passes by the mother’s side and his/her head is at breast level. The mother supports the infant’s head and body with her hand and forearm. This position is best used:
  - After a Caesarean section
  - When the nipples are sore
  - For small babies
  - Breastfeeding twins

Activity 2e

Ask: ‘Why might a mother need to express her breast milk?’ Write ideas on the board and reference Card 9 in CH3_HO1e UNICEF IYCF Counselling Cards. Ensure the following points are covered as reasons why a mother needs to express milk for her baby:

- The baby is too weak or small to suckle effectively
- The baby is taking longer than usual to learn to suckle, for example, because of inverted nipples
- To feed a low-birth-weight baby who cannot breastfeed
- To feed a sick baby who cannot breastfeed
- To keep up the supply of breast milk when the mother or baby is ill and not able to breastfeed
- To relieve engorgement or a blocked duct
- When the mother has to be away from her baby for several hours
Note: Mention that all mothers should learn to express milk after birth (i.e., before leaving the birth facility).

Demonstration/Video: Demonstrate milk expression technique using a breast model or show the video available at http://www.unicef.org.uk/BabyFriendly/Resources/AudioVideo/Hand-expression/.

Mention the following points:

- First, the mother should wash her hands thoroughly
- She should sit or stand comfortably, holding a clean container underneath the breast
- Her first finger and thumb are on either side of the areola, behind the nipple
- Press slightly inward toward the chest until the flow slows (lasting 3 to 5 minutes), then express the other breast, then repeat both sides again (20 to 30 minutes total).
- Store breast milk in a clean, covered container. Milk can be stored 6 to 8 hours in a cool place and up to 72 hours in the back of a refrigerator
- Demonstrate cup feeding (using a doll and cup). If there is no doll, explain the following key points:
  - Bring the cup to the baby’s lower lip and allow the baby to take small amounts of milk, lapping the milk with his or her tongue. Do not pour the milk into the baby’s mouth.
  - Pour just enough breast milk from the clean covered container into the feeding cup.
  - Bottles are unsafe to use because they are difficult to wash and can be easily contaminated

Have students look at counselling cards 9 and 10 discuss what is happening in each illustration.

Activity 2f

Pair work: Hand out CH3_HO2f ENA Key Messages and ask students to look at the messages related to breastfeeding (illustrations 5–10). Ask pairs to discuss in what situations they would deliver each message.

Feedback: Ask different pairs to read out a key message, the key points, and when they could say each message (e.g., antenatal care visits, after delivery, postnatal visits, mother's groups, etc.)

Learning Outcome 3: Explain what is meant by responsive feeding

Activity 3a

Small groups: Divide the class into 5 groups and ask each group to look at one of the following cards from CH3_HO1e UNICEF IYCF Counselling Cards: 2, 3, 5, 8, and 11. Ask each group to:

1. Observe and describe what the baby/young child is doing?
2. Observe and describe what the mother is doing? (How is mother paying attention to the baby/young child?)

Feedback: Ask each group to share their findings with the class. Ensure to add on the following points: a baby communicates hunger by being alert and restless, opening mouth and turning head, putting tongue in and out, and sucking on hand or fist.
**Activity 3b**

Small groups: Ask the small groups to discuss what responsive feeding and care practices are.

Feedback: Ask several groups for ideas. Ensure that the following points are covered.

- The parent/caregiver identifies, is aware of, and interprets the infant/child’s cues or signals and vocalizations that communicate feeding needs and wants (sensitivity)
- The parent/caregiver responds promptly and appropriately

**Activity 3c**

Small groups: Ask the small groups to discuss why sensitive and responsive care is important. Write ideas on the board and ensure the following points are covered, prompting students to think about brain development and social and emotional development.

Sensitive and responsive care improves the infant/child’s:

- Nutrition through responsive feeding
- Health through attentive caregiving (talking, playing, and providing a stimulating environment—a child needs more than food to develop well)
- Cognitive development through responsive language and play
- Social and emotional development through nurturing and love
- Self-confidence and readiness to learn
- Mental and social development through following your child’s lead

Sensitive and responsive care promotes brain development because the infant/child:

- Is highly sensitive to external influences during childhood that can have lifelong effects
- Is influenced by relationships with parents and other caregivers
- Is affected by both nutrition and the environment
- Requires responsive stimulation and good nutrition early

Care practices:

- Parents, family members (older children), fathers, and child caregivers can participate in responsive feeding
- The care that the infant/child receives affects his or her survival, growth, and development
- Care refers to behaviours and practices of caregivers (mothers, siblings, fathers, and childcare providers), and includes providing:
  - Food
  - Health care
  - Stimulation
  - Emotional support

How the above practices are performed—in terms of affection and responsiveness to the child—are critical to a child’s survival, growth, and development.
**Activity 3d**


**Learning Outcome 4: State common breastfeeding barriers and problems and the advice you would give to help women overcome them**

**Activity 4a**

Small groups: Divide the class into groups of 4-5 students and give each group a package of cards (CH3_HO4ai Breastfeeding Problem Card Game). Students should lay the cards on the table with the writing facing the table and take turns picking a card to discuss. Ask the groups to consider the following questions.

1. How does the situation affect breastfeeding in your community?
2. What can be done about the situation?
3. What are good responsive feeding and care practices for the situation?

Feedback: Ask each group for their answers for 1-2 cards. Write card names on the board and ideas that students give under each. Hand out CH3_HO4aii Breastfeeding Troubleshooting for students to use as a reference.

**Activity 4b**

Explain that new World Health Organization guidelines on HIV and infant feeding were released in 2010. Highlight the following points regarding HIV and infant feeding.

- The new recommendations attempt to balance the risk of HIV infection from mother to child and the benefits of breastfeeding over replacement feeding.
- Where antiretroviral drugs (ARVs) are available, mothers known to be HIV-positive are now recommended to exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary food thereafter, and continue breastfeeding for the first 12 months of life. Breastfeeding should then only stop once a nutritionally adequate and safe diet without breast milk can be provided. Even when ARVs are not available, mothers should be counselled to exclusively breastfeed in the first 6 months of life and continue breastfeeding thereafter unless environmental and social circumstances are safe for, and supportive of, replacement feeding.
- Mothers known to be HIV-positive who decide to stop breastfeeding at any time should stop gradually within 1 month. Infants who have been receiving ARV prophylaxis should continue prophylaxis for 1 week after breastfeeding is fully stopped. Stopping breastfeeding abruptly is not advisable.
- Mixed feeding (non-exclusive breastfeeding) is not recommended as this increases risk of transmission from the mother to the child.

Pair work: Ask students to look at CH3_HO1e UNICEF IYCF Counselling Cards, Cards 23a, 23b, and Special circumstance cards, and let them discuss in pairs the messages that are portrayed in each.
Learning Outcome 5: State the advice you would give the family of a lactating/breastfeeding mother, i.e., how to support the mother

Activity 5

Pair work: Ask the students, in pairs, to look through the UNICEF IYCF Counselling Cards (CH3_HO1e) and Essential Nutrition Actions (ENA) key messages (CH3_HO2f) and list which messages are important for other family members.

Feedback: Ask each pair for one example of a message that is important for other family members and ensure that the following points are covered (wife could be exchanged for daughter/daughter-in-law/other relative).

- Encourage your wife to breastfeed straight after delivery and to feed her baby the nutrient-rich colostrum (first milk) to help protect her baby.
- Encourage your wife to only feed her baby breast milk for the first 6 months and reassure her that this is sufficient and that the baby does not require extra water or food. Encourage her to drink more fluids herself if she worries that the baby may need extra water and only feed the baby breast milk.
- Ensure that your wife eats a varied diet while she is lactating. Provide her with two extra meals every day.
- Ensure that your wife has time to breastfeed. Give her time off from chores/work to breastfeed. If possible, let her take her baby with her while she is working or allow someone to bring the baby to her to breastfeed during the day.
- If your wife is ill, let her focus her energy on breastfeeding and getting well.
- If your wife has to be away from her baby, help her by learning how to cup feed the baby with her expressed breast milk.

Learning Outcome 6: State good complementary feeding practices that you would encourage mothers/caregivers to follow

Activity 6a

Ask students to write down how much energy is provided by breast milk for an infant/young child at the following ages:

<table>
<thead>
<tr>
<th>Age</th>
<th>Energy provided by breast milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–6 months</td>
<td>100%</td>
</tr>
<tr>
<td>6–12 months</td>
<td>60%</td>
</tr>
<tr>
<td>12–24 months</td>
<td>40%</td>
</tr>
</tbody>
</table>

Feedback: Explain that where there is an energy deficit (after 6 months), the ‘energy needs’ must be filled with complementary foods. If complementary feeding is started too late, children may grow and develop more slowly due to not meeting their energy requirements and may suffer from micronutrient deficiencies, e.g., iron deficiency. Point out that children who have not been breastfed will require more energy.
Ask: ‘When a mother is NOT breastfeeding, how should she feed her child from 6 up to 24 months of age?’ Highlight the following points.

- At about 6 months an infant is better able to tolerate undiluted animal milk and a variety of semi-solid food.
- Add 1 to 2 extra meals and, depending on the child's appetite, offer 1 to 2 snacks.
- Add 1 to 2 cups of milk per day.
- Add about 2 to 3 cups per day of extra fluids in a hot climate.
- For infants 6 to 12 months of age, milk provides many essential nutrients and satisfies most liquid requirements. However, in some places, neither animal milk nor infant formula is available.
- Where suitable breast milk substitutes are not available, feed infant animal-source food (meat, poultry, fish, eggs, or milk products), additional meals, and/or specially formulated fortified food.
- Where neither breast milk substitutes nor animal milk or animal-source food are available, nutrient requirements cannot be met unless specially formulated fortified food or nutrient supplements are added to the diet.
- Calcium-rich foods such as papaya, orange juice, guava, green leafy vegetables, and pumpkin should be consumed daily.
- Infants not fed milk should be offered plain, clean, boiled water several times a day to satisfy thirst.

**Activity 6b**

Video: Show the ‘Food for Life: When and what to feed your child’ video (available at http://medicalaidfilms.org/our-films/nutrition/?v=28509777). Ask students to write down any information that was new to them or that they did not agree with.

Feedback: Discuss any points that the students have written down.

**Activity 6c**

Ask students to think about the seven things that should be considered when discussing complementary feeding. Write each of the points below on the board when they are mentioned, giving clues if needed.

Things we should consider when talking about complementary feeding:

- **A** = Age of infant/young child
- **F** = Frequency of food
- **A** = Amount of food
- **T** = Texture (thickness/consistency)
- **V** = Variety of food
- **R** = Responsive feeding
- **H** = Hygiene
**Activity 6d**

Pair work: Ask students to look at the key messages related to complementary feeding in CH3_HO2f ENA Key Messages (illustrations 12-18). Have pairs discuss when they could say each message.

Feedback: Ask different pairs to read out a key message, the key points, and when they could say each message, e.g., child health check-ups, mother and child groups, postnatal check-ups.

**Activity 6e**

Ask: ‘Are there any specific nutrients that we need to ensure that young children get enough of?’ If so, why and what are sources for the nutrients. Ensure the following are mentioned.

**Iron**

Why?

- Iron stores present at birth are gradually used up over the first 6 months.
- There is little iron in breast milk (although it is easily absorbed). After 6 months, the baby’s iron needs must be met by the food he or she eats.

Food sources:

- The best sources of iron are animal-source food, such as liver, lean meats, and fish. Some vegetarian foods, such as legumes, have iron as well. Other good sources are iron-fortified foods and iron supplements.
- Plant sources such as beans, peas, lentils, and spinach are a source of iron as well.
- Eating foods rich in vitamin C together with/or soon after a meal, increases absorption of iron.
- Drinking tea and coffee with a meal reduces the absorption of iron.

**Protein**

Why?

- Amount in breast milk after 6 months is insufficient to meet baby's needs.

Food sources:

- Meat and fish, dairy products, eggs, and pulses
- Most young children will get sufficient amounts from staple foods unless the staple is low protein, such as cassava.

**Vitamin A**

Why?

- Amount in breast milk after 6 months is insufficient to meet baby's needs.

Food sources:

- Organ foods/offal (liver) from animals; eggs, milk, and food made from milk such as butter, cheese, and yoghurt; dried milk powder; dark-green leaves; yellow-coloured fruits and vegetables (papaya, mangoes, passion fruit, carrots, pumpkins, yellow sweet potato); and other foods fortified with vitamin A.
- **NOTE:** It is important to make sure that children 6 months to 5 years receive the recommended supplement.
Fatty acids

Why?
- Improves absorption of some vitamins and provides extra energy.

Food sources:
- Oil seeds, margarine, ghee, and butter
- NOTE: Infants only need a very small amount (no more than half a teaspoon per day).

Activity 6f

Pair work: In groups of 3-4, give each group one of the following examples to create a daily meal plan for. Tell students to remember to include breastfeeding where needed. Use CH3_HO2f ENA Key Messages for guidance.

- Martha, 7 months of age
- Elisha, 1 year of age
- Jacob, 1 year, 10 months of age
- Sarah, 9 months of age, has been ill with diarrhoea for 2 days
- Elizabeth, 1 year, 4 months of age, her mother has HIV and has not been breastfeeding her

Feedback: If it is a large class, have two groups present their meal plans to each other. If it is a small class, have each group present its meal plan to the class.

Learning Outcome 7: State why it is important for mothers to continue to breastfeed a sick infant

Activity 7

Pair work: In small groups (3-4 students) ask students to write information on what, how, and how frequently to feed and why for each of the following, using CH3_HO1e UNICEF IYCF Counselling Cards 11 and 19 to help.

- A sick child (under 6 months) during and after illness
- A sick child (over 6 months) during and after illness

Feedback: Ask each group to share what they have written for one scenario. Ensure the following points are covered.
<table>
<thead>
<tr>
<th>Under 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Breastfeed more frequently during illness, including diarrhoea, to help the baby fight sickness, reduce weight loss, and recover more quickly.</td>
</tr>
<tr>
<td>• Breastfeeding also provides comfort to your sick baby. If your baby refuses to breastfeed, encourage your baby until he or she takes the breast again.</td>
</tr>
<tr>
<td>• Give only breast milk and medicines recommended by your doctor/health care provider.</td>
</tr>
<tr>
<td>• If the baby is too weak to suckle, express breast milk to give the baby. This will help you to keep up your milk supply and prevent breast difficulties.</td>
</tr>
<tr>
<td>• After each illness, increase the frequency of breastfeeding to help your baby regain health and weight.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Over 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Breastfeed more frequently during illness, including diarrhoea, to help your baby fight sickness, reduce weight loss, and recover more quickly.</td>
</tr>
<tr>
<td>• Your baby needs more food and liquids while he or she is sick.</td>
</tr>
<tr>
<td>• If your child’s appetite is decreased, encourage him or her to eat small frequent meals.</td>
</tr>
<tr>
<td>• Offer the baby simple foods like porridge and avoid spicy or fatty foods. Even if the child has diarrhoea, it is better for him or her to keep eating.</td>
</tr>
<tr>
<td>• After your baby has recovered, actively encourage him or her to eat one additional meal of solid food each day during the following 2 weeks. This will help your child regain the weight he or she has lost.</td>
</tr>
</tbody>
</table>

**Final Activity**

Go back through the questions asked at the start of the lesson in Activity 1a. Ask students to write their answers again without looking at their previous answers. They should then compare to see if they have changed any of their answers.

Feedback: Ask students to read out any of the statements for which their answers changed. Read out the correct answers as shown under Activity 1a.
Session 4: Integrated Management of Neonatal and Childhood Illness

There is no session plan for Integrated Management of Neonatal and Childhood Illness (IMNCI) as nutrition is one component among many. The folder, however, contains the resources for the World Health Organization’s (WHO’s) 2011 Integrated Management of Childhood Illness (IMCI) course—‘Caring for the sick child in the community’. This course is aimed at community health workers and can be adapted for use with nursing and midwifery students.

Some of the WHO documents do not include up-to-date criteria for inpatient and Community-Based Management of Acute Malnutrition. The documents included use mid-upper arm circumference (MUAC) which is the recognised method to assess for acute malnutrition in Ghana.

CH4_RS1 GHS IMNCI Policy shows the role of IMCI in the Ministry of Health’s Under Five’s Child Health Policy. CH4_RS6 Exec Summary Quality Care Ghana highlights the current weaknesses in IMNCI in Ghana and states that there are ‘gaps in the case management of common childhood illnesses, especially diarrhoea and malnutrition’ (p. vii). For this reason, it is important to have students reference the sessions where severe acute malnutrition is covered (ND6, CH6 and DMC2).

Resources

1. CH4_RS1 GHS IMNCI Policy. (Source: Ghana Ministry of Health. ‘Under Five’s Child Health Policy, 2007-2015’.)
Session 5: Community-Based Management of Acute Malnutrition

This session is relevant for: RGN 064, RCN 060, and CHN 026. This session can be linked to Nutrition and Dietetics (RGN 033, MDW 040, RCN 033, and CHN 028).

Duration: approximately 5 hours

Introduction

Depending on the needs of the student, trainers may choose to skip or spend more or less time on certain learning outcomes and activities. The module duration is an estimate of the time it takes to complete all of the learning objectives and activities.

This session is taken from Ghana’s Training Guide for Community-Based Management of Acute Malnutrition (CMAM), Module 4. Some of the material is condensed slightly to make it shorter in duration. If greater understanding of the other elements of CMAM is required, it is recommended that other modules are also used (see CH5_RS2 CMAM Trainers Guide).

This session introduces students to the concepts and protocols used in outpatient care for children with severe acute malnutrition (SAM) without medical complications. It provides an overview of admission and discharge processes and criteria, medical treatment, and nutritional rehabilitation in outpatient care. Emphasis is placed on the use of an action protocol, which helps health care providers determine which children require referral to inpatient care and which require follow-up at home. The module complements the World Health Organization (WHO) protocols for the management of SAM and the Ghana adapted training modules for the inpatient management of SAM with medical complications. It is intended to be used alongside the Interim National Guidelines for CMAM in Ghana.

Competency Area

Managing SAM without medical complications.

Learning Outcomes

By the end of this session students will be able to:

1. Describe the admission criteria and entry categories for CMAM outpatient care
2. Describe the process for admission to outpatient care
3. Explain the medical treatment for the management of SAM without medical complications in outpatient care
4. Explain nutritional rehabilitation and the use of ready-to-use therapeutic food (RUTF)
5. Describe the key messages for parents/caregivers used in outpatient care
6. Describe the outpatient care action protocol
7. Explain the discharge criteria and exit categories for CMAM outpatient care
8. Describe linkages between outpatient care and other services, programmes, and initiatives
### Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe outpatient care for the management of SAM without medical complications</td>
<td>Group discussion on CMAM</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.1</td>
<td>15 minutes</td>
</tr>
<tr>
<td>2. Describe admission criteria in outpatient care</td>
<td>a. Group mindmap: Who should be admitted to outpatient care?</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.1</td>
<td>40 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Small group exercise on outpatient care admission</td>
<td>Outpatient care treatment card, Outpatient care RUTF ration card</td>
<td></td>
</tr>
<tr>
<td>3. Describe the process for outpatient care admission and follow-on sessions</td>
<td>Reading and discussion around outpatient care admissions and follow-on sessions</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.2</td>
<td>30 minutes</td>
</tr>
<tr>
<td>4. Explain medical treatment for the management of children with SAM without medical complications in outpatient care</td>
<td>a. Discussion of medical treatment of SAM outpatients</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.3</td>
<td>45 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Group work on medications for to be given to children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Explain nutritional rehabilitation for the management of SAM without medical complications in outpatient care</td>
<td>a. Tasting of RUTF (optional) and ingredients in RUTF</td>
<td>RUTF samples and napkins</td>
<td>40 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Group discussion on RUTF composition</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Group work on how much RUTF a child needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Describe the key messages for parents/caregivers used in outpatient care</td>
<td>a. Group work on key messages to give to mothers/caregivers at initial and follow-on sessions</td>
<td></td>
<td>50 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Role play to practise sharing key messages</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Discussion of key topics that should be part of counselling sessions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Role play to practise giving health and nutrition messages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Recognise when further action is needed: referral to inpatient care and follow-up home visits</td>
<td>a. Mindmap action protocol for referral and follow-up</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.6</td>
<td>40 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Group work on identifying and referring children for inpatient care</td>
<td>GHS referral form</td>
<td></td>
</tr>
<tr>
<td>8. Explain the discharge criteria and exit categories for CMAM outpatient care</td>
<td>Discussion on discharge from outpatient care</td>
<td>CH5_HO1 CMAM Participants Guide, Section 4.7</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>
9. Describe linkages between outpatient care and other services, programmes, and initiatives

Group discussion on linking outpatient care to other services

20 minutes

Materials Required

1. Packets of RUTF
2. Napkins (for sampling RUTF)
3. CH5_HO1 CMAM Participants Guide. (Source: Ghana Health Service. 2011. ‘Training Guide for Community-Based Management of Acute Malnutrition, Participant Manual’. [Note: the entire course document is included, however, only Module 4 is used in the lesson plan.])
4. CH5_HO2 Outpatient Care Treatment Card
5. CH5_HO3 Outpatient Care RUTF Ration Card

Preparation Suggestions

2. Print copies of CH5_HO1 CMAM Participants Guide (one per student)
3. Prepare a chart with national protocols for the prevention and treatment of vitamin A deficiency, SAM first-line antibiotic treatment, and malaria treatments.
4. Obtain or print outpatient care treatment cards and RUTF ration cards.

Further Reading and Resources


Session Details

Learning Outcome 1: Describe outpatient care for the management of SAM without medical complications

Activity 1

Draw the figure below on the board (Figure 4.1 from CH5_RS2 CMAM Trainers Guide) and ask students:

1. What is outpatient care for SAM? What does it entail?
2. Who receives outpatient care for SAM?
3. How does outpatient care for SAM without medical complications differ from inpatient care for SAM with medical complications?

Discuss and fill in any gaps.
Learning Outcome 2: Describe admission criteria in outpatient care

Activity 2a

Ask students to name the characteristics of children who should be admitted to outpatient care (i.e., children 6–59 months, have SAM, have no medical complications, and have an appetite). Write responses on the board. If not named by the students, explain that there are a few additional categories of children who should be admitted. These include:

- Children over 6 months of age with SAM and medical complications whose parent/caregiver refuses inpatient care despite advice. The child will require follow-up home visits and close monitoring while in outpatient care.
- Children who do not meet admission criteria but whom a health care provider has determined should be admitted, such as children over 5 years with bilateral pitting oedema or who are visibly severely wasted.
- Children whose medical complications have been resolved in inpatient care and have been referred to outpatient care to complete their nutritional rehabilitation.
- Children who are recuperating from SAM and who return after defaulting (discharged after being absent for three consecutive sessions) and need to continue their treatment.

Refer students to CH5_HO1 CMAM Participants Guide, Section 4.1 (p. 45). Note that the focus of this module will be on the right-hand column of the reference tables.
**Activity 2b**

Group work: In small groups (3-4), students should work on Exercise 4.1 from CH5_HO1 CMAM Participants Guide (p. 48). Ask each group to use the information provided in the exercise to decide whether the sample children should be admitted to outpatient care and to explain why or why not.

Feedback: Ask each group for their answer for a different sample child. Discuss and fill in gaps, using the table below.

**Exercise 4.1: Outpatient Care Admissions (with answers)**

<table>
<thead>
<tr>
<th>Age (months)</th>
<th>Appetite</th>
<th>Bilateral Pitting Oedema</th>
<th>MUAC in cm</th>
<th>Should the child be admitted to outpatient care?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1</td>
<td>7</td>
<td>Yes</td>
<td>No</td>
<td>10.2 \textbf{YES, based on MUAC and the child has an appetite}</td>
</tr>
<tr>
<td>Child 2</td>
<td>24</td>
<td>Yes</td>
<td>No</td>
<td>11.7 \textbf{NO, MUAC is &gt; 11.5 cm}</td>
</tr>
<tr>
<td>Child 3</td>
<td>20</td>
<td>Yes</td>
<td>No</td>
<td>9.8 \textbf{YES, based on MUAC and the child has an appetite}</td>
</tr>
<tr>
<td>Child 4</td>
<td>60</td>
<td>Yes</td>
<td>++</td>
<td>11.7 \textbf{YES, because child has bilateral pitting oedema grade ++ and the child has an appetite} \textit{NOTE: Even though the child is over 59 months, he or she still should be admitted to CMAM and provided appropriate care}</td>
</tr>
<tr>
<td>Child 5</td>
<td>36</td>
<td>Yes</td>
<td>+</td>
<td>11.5 \textbf{YES, because the child has bilateral pitting oedema grade + and has an appetite}</td>
</tr>
<tr>
<td>Child 6</td>
<td>12</td>
<td>No</td>
<td>No</td>
<td>9.5 \textbf{NO, because the child has SAM and has no appetite; refer to inpatient care}</td>
</tr>
<tr>
<td>Child 7</td>
<td>50</td>
<td>Yes</td>
<td>No</td>
<td>10.2 \textbf{YES, based on MUAC and the child has an appetite}</td>
</tr>
<tr>
<td>Child 8</td>
<td>45</td>
<td>Yes</td>
<td>No</td>
<td>11.6 \textbf{NO, because MUAC is &gt; 11.5 cm}</td>
</tr>
<tr>
<td>Child 9</td>
<td>7</td>
<td>Yes</td>
<td>No</td>
<td>11.5 \textbf{YES. The child is a borderline case; admit to outpatient care, as the child is very likely to go below the cut-off if not treated; the child also has an appetite}</td>
</tr>
<tr>
<td>Child 10</td>
<td>5</td>
<td>No</td>
<td>No</td>
<td>10.4 \textbf{NO, infant with SAM (very low weight-for-height [WFH]); refer to inpatient care}</td>
</tr>
</tbody>
</table>

**Learning Outcome 3: Describe the process for admission and outpatient care follow-on sessions**

**Activity 3**

Refer students to the overview of the outpatient care admission process in CH5_HO1 CMAM Participants Guide, Section 4.2 (p. 49). Read through the steps, emphasising the important
considerations they need to take into account. Respond to questions and show the sample Outpatient Care Treatment Card and RUTF Ration Card.

Referring back to the steps in Section 4.2 Outpatient Care Admission Process, ask students to suggest which activities and procedures occur in outpatient care follow-on sessions. (Answer: All activities and procedures should be included except for assigning a registration number, which occurs only at admission.)

Emphasise that during each session, it is essential to determine whether referral or follow-up home visits are necessary and explain the following points.

- The parent/caregiver and child should return to a health facility that provides outpatient care for SAM without medical complications on a weekly basis. If there is a problem with attendance due to distance or other reasons, it might be necessary to ask the parent/caregiver to come to outpatient care every 2 weeks; if this is the case, the parent/caregiver should receive a 2-week supply of RUTF.
- Bilateral pitting oedema is assessed and MUAC and weight are taken at each weekly or biweekly outpatient care follow-on session.
- The appetite test is done at every session.
- A nutrition and medical assessment (i.e., anthropometry, medical history, physical examination) is done at every outpatient care follow-on session.
- Complete doses of routine medicines are given according to routine medical protocols.
- An outpatient care action protocol is followed to determine whether a referral or a follow-up home visit is needed.
- Additional medications given during outpatient care follow-on sessions should be noted on the outpatient care treatment card.
- RUTF is provided according to the child’s weight, and the parent/caregiver is counselled on its use.
- The parent/caregiver is asked whether the child has eaten all the RUTF. If there are some packets left over from the previous week, the health care provider reduces the amount of RUTF given by that number of packets. For example, if the parent/caregiver has 3 packets left from a 14-packet ration, 11 packets are provided for the next week.
- The health care provider completes the outpatient care treatment card and RUTF ration card.

**Learning Outcome 4: Explain medical treatment for the management of children with SAM without medical complications in outpatient care**

**Activity 4a**

Refer students to CH5_HO1 CMAM Participants Guide, Section 4.3 (p. 53) Medical Treatment for the Management of SAM without Medical Complications in Outpatient Care and discuss, emphasising:

- When children should NOT receive vitamin A or malaria treatment
- Why iron and folic acid are NOT given routinely
- Which treatments are given during the child’s first session at outpatient care (e.g., amoxicillin, vitamin A, malaria testing or treatment if appropriate) and which are given later (e.g., deworming, measles vaccination if necessary, treatment for anaemia if necessary)
Answer any questions and refer students to Section 4.3, Routine Medicines for SAM in Outpatient Care (p. 55). As a whole class, explain the details of the medical treatment protocols as they appear in each column and row. Relay to students any adaptations/differences that may need to be made in accordance with country-specific national drug protocols, e.g., when drugs are not available.

**Activity 4b**

Group work: Ask students to form groups of three. On the board, write the basic information for three children in outpatient care (below). Ask students to determine which medications and dosages each child needs based on whether the child is a new case, what medication the child has already received, and the child’s medical condition and age. For each patient, ask one group to present their answers and discuss among the class.

- **Patient 1:** Girl, 2 years of age
  - New admission
  - Bilateral pitting oedema: grade +
  - Paracheck (rapid malaria test): negative
  - Vaccination record: up to date
  - Vitamin A last given: 4 months ago
  **Answer:** Give amoxicillin 3 times per day for 7 days; do not give vitamin A (because of bilateral pitting oedema; it should be given upon discharge); do not give artemisinin-based combination therapy (ACT); do not give measles vaccination (given after 4 weeks).

- **Patient 2:** Boy, 18 months of age
  - New admission
  - Bilateral pitting oedema: no
  - Paracheck: positive
  - Vaccination record: incomplete
  - Vitamin A last given: 6 months ago
  **Answer:** Give amoxicillin 3 times per day for 7 days; give 200,000 IU of vitamin A on the fourth week; give ACT or other antimalarial according to national treatment protocol; give measles vaccination on week 4 or as soon as possible, plus other vaccines as per expanded programme of immunisation (EPI).

- **Patient 3:** Girl, 15 months of age
  - Second visit to outpatient care
  - Bilateral pitting oedema: grade +
  - Paracheck: negative
  - Vaccination record: incomplete
  - Vitamin A last given: 4 months ago
  - Amoxicillin last given: week 1 on admission
  **Answer:** Give measles vaccination on week 4 as well as other vaccines as per EPI; do not give vitamin A until discharge.

Direct students to Section 4.3, Supplemental Medicines for SAM in Outpatient Care (p. 57). Review briefly the supplemental medicines and in what circumstances they would be given. Answer any
Learning Outcome 5: Explain nutritional rehabilitation for the management of SAM without medical complications in outpatient care

Activity 5a

If RUTF is available, form small groups and distribute one packet of RUTF and napkins to each group. Explain how to open the package and ask students to taste the RUTF. Ask for any feedback from the groups.

Ask groups to describe what they think the ingredients are in RUTF and then write the typical composition of RUTF on the board.

- Composition of lipid-based RUTF
  - 25% peanut butter
  - 26% milk powder
  - 27% sugar
  - 20% oil
  - 2% combined mineral and vitamin mix

Activity 5b

Small group discussion: Ask students in small groups to discuss:

- How the composition of RUTF compares with F-100 (similar in composition, but RUTF has iron and is about five times more energy-nutrient dense)
- Why RUTF can be used for outpatient care (it can be eaten at home and it doesn’t require cooking or mixing with water, which prevents growth of bacteria)

Discuss further as a whole class, fill in any gaps, and answer any questions.

Activity 5c

Direct students to Section 4.4, Nutritional Rehabilitation and Ready-to-Use Therapeutic Food (p. 62). Point out to students the table on p. 64 titled ‘RUTF Rations in Outpatient Care’ dealing with Plumpy’nut® (or locally produced RUTF), and explain how to use it. Write different weights on the board, then ask students how many packets to give to a child of each weight.

Group work: In small groups, ask students to determine how much RUTF to give each child in the following examples.

- Example 1: 92 g packets of Plumpy’nut®/locally produced RUTF are distributed through outpatient care. Child 1 weighs 6.8 kg and comes to outpatient care every 2 weeks. How much RUTF do you give the child? (Answer: 36 packets)
- Example 2: 92 g packets of Plumpy’nut®/locally produced RUTF are distributed through outpatient care. Child 2 weighs 9.7 kg and comes to outpatient care biweekly. How many packets of RUTF do you give the child? (Answer: 56 packets)
- Example 3: Child 3 weighs 7.2 kg and will return to outpatient care next week. How many packets of your locally produced RUTF will you give the child? (Answer: 21 packets)
Feedback: Ask for volunteers to write their group’s answers on the board. Discuss and fill in gaps.

**Learning Outcome 6: Describe the key messages for parents/caregivers used in outpatient care**

**Activity 6a**

Explain to students that outpatient care includes individual counselling, health and nutrition education, and social and behaviour change communication at each session. The initial counselling session should focus only on a few key messages so that the parent/caregiver clearly understands the practices that are essential to managing SAM in a child. As the child’s condition improves, other messages should be given.

In the initial counselling session, health care providers counsel the parent/caregiver with key messages on the following topics:

1. How to feed RUTF to the child
2. When and how to give medicines to the child
3. When to return to outpatient care
4. Bringing the child to the health facility immediately if his or her condition deteriorates

Group work: In groups of 4-5 students, ask the students to write six key messages to give to the parent/caregiver during his or her initial session in outpatient care. Have one group present and the other groups add additional messages. Discuss, clarify, and fill in gaps. Also discuss what additional messages would be important in subsequent outpatient care follow-on sessions.

**Activity 6b**

Role play: In the same groups, have one student act as a parent/caregiver who has come to outpatient care for the first time and another act as the CMAM counsellor, with the remaining students in each group observing. Have the actors practise counselling with the most important key messages. Ask the observers for feedback. Have the parent/caregiver and counsellor switch roles and continue practising if time allows.

**Activity 6c**

Ask students to think of key health and nutrition topics that should be a part of individual counselling in outpatient care follow-on sessions. Write answers on the board and fill in any gaps. Possible answers include:

- Hygiene
- Continuation of optimal breastfeeding behaviours (especially with infants and young children ages 6–23 months)
- The importance of frequent and active feeding
- What local food to give young children (while reinforcing the message that the child in outpatient care MUST finish eating all RUTF before other food is given)
- Identifying undernutrition (when to bring children to outpatient care)
- Managing diarrhoea and fever
- Recognising danger signs
**Activity 6d**

With students in the same groups, ask the observers in the role-play in Activity 6b to break into pairs to play the roles of parent/caregiver and CMAM counsellor. Ask them to practise counselling with health and nutrition messages. Ask observers to provide feedback. Switch roles and continue practising if time allows.

**Learning Outcome 7: Recognising when further action is needed: referral to inpatient care and follow-up home visits**

**Activity 7a**

Note to students that an action protocol (in line with IMNCI guidelines) has been developed to help health care providers determine:

- Whether children should be referred to inpatient care (such as those with medical complications, no appetite, or deteriorating condition)
- Whether children require follow-up visits at home between outpatient care follow-on sessions (such as those with weight loss, a deteriorating condition, not eating enough RUTF, or absent from outpatient care follow-on session), which may be done by an outreach worker (e.g., community health worker or volunteer)

As a whole class, ask students to name medical complications that would require referral to inpatient care. Write them on the board. Then ask what medical complications or symptoms might require a follow-up home visit. Refer students to Section 4.6, Outpatient Care Action Protocol (p. 66) and compare responses on the board to those in the second column of the action protocol. Describe symptoms that would require either referral or follow-up visits (e.g., bilateral pitting oedema ++++, weight loss for 2 consecutive weeks) and ask what action is dictated by the protocol (*ANSWER: referral to inpatient care or follow-up home visits*). Continue asking questions until students seem comfortable using the action protocol.

Explain to students the inpatient care referral system, use of referral slips, referral to tertiary care, and key points related to referring for follow-up home visits. Refer students to Section 4.6, Referral to Tertiary Care and Follow-Up Home Visits (pp. 67-68).

**Activity 7b**

Group work: Direct students to Exercise 4.2 Identifying Children Who might Need Referral to Inpatient Care or Follow-Up Home Visits (p. 73). In groups of 3-4 students, ask them to read the descriptions of the children and determine what action to take: referral, follow-up home visits, or continuation in outpatient care. Ask students to refer to Section 4.6, Outpatient Care Action Protocol (p. 66).

Feedback: Ask groups to present and explain their answers and compare with the answers provided in the table below.

Show a sample copy of a GHS referral form and demonstrate how to fill it out using a sample child who requires inpatient care.
### Exercise 4.2 Answers

| Child A | **Question:** Child A is 2 years old, has a MUAC of 10.9 cm, and has been referred by the community health worker to CMAM services. On admission, the child refuses to eat the RUTF during the appetite test. You ask his parent/caregiver to move to a quiet area and try again. After a half-hour, the child still refuses to eat the RUTF. During the medical examination, you discover that the child has been vomiting for 2 days. What action is needed?  
**Answer:** Refer to inpatient care for medical care and support because the child has a serious danger sign of no appetite. |
|---|---|
| Child B | **Question:** Child B is presented at the outpatient care site with bilateral pitting oedema + and a MUAC of 11.8 cm. The child has a good appetite and no other signs of medical complications. What action is needed?  
**Answer:** Admit to outpatient care as a bilateral pitting oedema admission. |
| Child C | **Question:** Child C was admitted to outpatient care with a MUAC of 10.9 cm and weight of 10 kg. The child did not gain any weight in the first 3 weeks, and by the fourth week has actually lost weight. The child now weighs 9.5 kg. What action is needed?  
**Answer:** This child is not gaining weight after 4 weeks in the CMAM service; you must refer him/her to inpatient care for further medical assessment and treatment. Ideally, this child should have had a follow-up home visit after the outpatient care follow-on session the previous week (after the third week), according to outpatient care action protocols. Refer to the child’s outpatient care treatment card (or to the community health worker or volunteer who visited the home if nothing was written on the card) to see how the child was doing at home and what the possible reasons for not gaining weight are, based on the follow-up home visit. Discuss this with the parent/caregiver and then refer the child to inpatient care. |
| Child D | **Question:** Child D is presented at the outpatient care site with bilateral pitting oedema ++ and a MUAC of 10.8 cm. What action is needed?  
**Answer:** Refer to inpatient care for medical care and support because the child has marasmic kwashiorkor. All marasmic kwashiorkor cases should be referred to inpatient care. |
| Child E | **Question:** Child E is 4 months old. The grandmother brings the visibly very wasted and dehydrated child to the health facility. On investigation, you find that the mother died shortly after the child was born and that the child has been given cow’s milk and tea. What action is needed?  
**Answer:** The child should be referred to inpatient care because the child is under 6 months old and visibly wasted. The inpatient care facility can stabilise the child with therapeutic milks (F-100 Diluted) and appropriate medical attention and counselling. Management of acute malnutrition in children under 6 months normally requires a combination of improved or re-established breastfeeding; temporary or longer-term therapeutic feeding; and nutrition, psychological, and medical care for mothers. However, since this child’s mother has died, the inpatient care staff must discuss feeding options with the grandmother. Options include re-lactation of the grandmother if she is willing (which could be encouraged through supplemental suckling at the inpatient care facility) or asking another woman in the family or community who is lactating to nurse the child. In the absence of other options, the child should be kept on diluted F-100 until 6 months of age.  
(Reference: Emergency Nutrition Network Modules on Infant Feeding in Emergencies; the national infant and young child feeding strategy also can be consulted.) |
| Child F | **Question:** Child F is presented at the outpatient care site with bilateral pitting oedema ++++. You want to refer the child to the hospital. Despite your best efforts to persuade the mother, her family refuses to let her take the child to the hospital. What action is needed?  
**Answer:** All cases of bilateral pitting oedema +++ should be referred to inpatient care for medical care and support. However, if a parent/caregiver refuses to take the child to inpatient care, the child should be admitted to outpatient care and receive the systematic treatment. The child should receive regular follow-up home visits during the first weeks to monitor the child’s condition, and the parent/caregiver should be encouraged to bring the child back to the health facility if the condition worsens at any time. The child should again be referred to inpatient care if the condition worsens. |
Child G

Question: Child G is over 6 months of age and was admitted with a MUAC of 10.9 cm and a weight of 5 kg. The child gained a little weight the first week, but has not gained weight for the past 2 weeks. His medical examination does not show any signs of illness or medical complications. What action is needed?

Answer: The health care provider should talk with the parent/caregiver about how the child is eating the RUTF and observe the appetite test. The health care provider should ask whether the child has had diarrhoea, vomiting, or fever, and should give counselling. The child also requires a follow-up home visit.

Learning Outcome 8: Explain the discharge criteria and exit categories for CMAM outpatient care

Activity 8

Using the text in Section 4.7, Discharge Criteria and Exit Categories in CMAM Outpatient Care as a reference (p. 68 of CH5_HO1 CMAM Participants Guide), review the criteria for discharge from outpatient care, noting that:

- A child is discharged from outpatient care when he or she has recovered from bilateral pitting oedema or low weight and, therefore, no longer has SAM.
- The decision to discharge the child is based on the child’s recovery from the initial SAM condition, consistently gaining weight, and being clinically well and alert.
- Discharge rules differ based on the criteria used to admit the child.

Refer students to 4.7, Discharge Criteria for CMAM (p. 69) and Exit Categories for CMAM (p. 70), directing them to the right-hand columns of each chart, which deal with outpatient care.

Learning Outcome 9: Describe linkages between outpatient care and other services, programmes, and initiatives

Activity 9

Note to students that outpatient care provides a good opportunity to link the management of SAM to other services, including prevention programmes, such as growth monitoring and promotion. Linkages can and should be made with IMNCI, national-level or nongovernmental organisation facility and community initiatives, programmes to manage MAM, immunisations and vitamin A supplementation, family planning, water and sanitation, health and nutrition education, malaria and HIV treatment, food security and livelihoods programmes, and other support services.

Ask students to form groups of three or four, by district or region if possible. Ask each group to write on a piece of paper all of the health services, programmes, and initiatives in their district and explain how these can link to outpatient care (mapping). Ask groups to explain to the class their prescribed links to outpatient care and discuss.
Session 6: Inpatient Management of Severe Acute Malnutrition

This session is relevant for: RGN 064. This session can be linked to Advanced Nursing (RGN 031).

Duration: 3 hours, 45 minutes

Introduction

This module provides an overview of inpatient treatment of severe acute malnutrition (SAM). Students should have covered therapeutic feeding as part of Pharmacology and Therapeutics and completed the e-learning module on caring for infants and children with SAM as part of Nutrition and Dietetics, Session 6. If more in-depth knowledge is required for any particular element of care, relevant modules can be selected from the Ghana Inpatient Care Training Materials designed for in-house training for doctors and nurses (see CH6_RS4 Ghana IC facilitators guide for more details). Elements from the introductory module are included here and Module 2 of the Ghana Inpatient Care Training Materials will be used for reference.

Competency Areas

Managing SAM with medical complications.

Learning Outcomes

By the end of this session students will be able to:

1. List the criteria for admitting children into inpatient care
2. List the criteria for discharging children from inpatient care
3. List the 10 steps for the successful management of SAM
4. Explain the three phases of management of SAM with medical complications in inpatient care

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. List the criteria for admitting children into inpatient care | a. Small group work on the signs and measures used to decide whether a child should be admitted for inpatient management of SAM  
b. Oral drill on z-scores and MUAC | CH6_HO1a Ghana IC Job Aids | 30 minutes |
| 2. Explain the principles of care for management of SAM | Individual work on guiding principles | CH6_HO2a Activity  
CH6_HO3a Ghana IC Module 2 Principles of Care | 15 minutes |
| 3. List the criteria for discharging children from inpatient care | Pair work on how to tell if a child should be discharged or referred | CH6_HO3a Ghana IC Module 2 Principles of Care | 15 minutes |
4. List the 10 steps for the successful management of SAM

- **a.** Group project and presentation to research and write a 1-page summary on 2 of the 10 steps and present information
- **b.** Design a poster of the 10 steps

<table>
<thead>
<tr>
<th>CH6_HO4ai to CH6_HO4aiii</th>
<th>Large sheets of paper for poster (for 5 groups)</th>
<th>CH6_HO4b 10 Steps Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours, 30 minutes</td>
<td></td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

5. Explain the three phases of management of SAM with medical complications in inpatient care

- **Group discussion on steps that are part of each of the three phases**

<table>
<thead>
<tr>
<th>Materials Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. CH6_HO1a Ghana IC Job Aids</td>
</tr>
<tr>
<td>b. CH6_HO2a Activity</td>
</tr>
<tr>
<td>c. CH6_HO3a Ghana IC Module 2 Principles of Care</td>
</tr>
<tr>
<td>d. CH6_HO4ai Ghana IC Module 3 Initial Management</td>
</tr>
<tr>
<td>e. CH6_HO4aii Ghana IC Module 4 Feeding. From: Module 4 Feeding</td>
</tr>
<tr>
<td>f. CH6_HO4aiii Ghana IC Module 5 Daily Care. From: Module 5 Daily care</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparation Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Review session plan and further reading and resources</td>
</tr>
<tr>
<td>2. Prior to this session, suggest that students recap the material that was covered in the Nutrition and Dietetics session on undernutrition. They may want to redo the e-learning module on caring for infants and children with acute malnutrition (definition and classification of malnutrition) available at <a href="https://www.som.soton.ac.uk/learn/test/nutrition/courses/">https://www.som.soton.ac.uk/learn/test/nutrition/courses/</a> (free registration required)</td>
</tr>
<tr>
<td>3. Ensure a copy of CH6_HO1a, HO2a, HO3a, and HO4b is printed for each student</td>
</tr>
<tr>
<td>4. Ensure 2 copies of each of HO4ai, HO4aii, and HO4aiii are printed for activity 4a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Further Reading and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. CH6_RS2 Ghana IC Module 7 Involving Mothers. (Source: see previous.)</td>
</tr>
</tbody>
</table>
Session Details

Learning Outcome 1: List the criteria for admitting children into inpatient care

Explain that the inpatient management of SAM is a small part of the broader community management of acute malnutrition. Draw the following flow diagram on the board and explain the components of Community-Based Management of Acute Malnutrition (CMAM) and the relationship between inpatient and outpatient care.

New Classification for Acute Malnutrition

Components of CMAM

1. Community outreach
2. Outpatient care for the management of SAM without medical complications
3. Inpatient care for the management of SAM with medical complications
4. Programmes that address moderate acute malnutrition (MAM)

Relationship Between Outpatient Care and Inpatient Care

- Complementarity: Inpatient care for the management of SAM with medical complications until the medical condition is stabilized and the medical complication is resolving
- Different priorities
  - Outpatient care component prioritises coverage and access
  - Inpatient care component prioritises clinical care
**Activity 1a**

Group work: In small groups (4-5 students), students should write a list of what signs and measures are used to decide whether a child should be admitted for inpatient management of SAM. If students struggle with ideas, prompt by asking them to think about anthropometric measurements, signs of kwashiorkor, and medical complications that might make community management inappropriate.

Feedback: Ask students for ideas. Using the list below, write any ideas on the board which are part of the protocol. Add any missing points. Students can refer to CH6_HO1a Ghana IC Job Aids, page 3.

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 6–59 months</td>
<td>Any of the following:</td>
</tr>
<tr>
<td></td>
<td>• Bilateral pitting oedema (generalised) +++</td>
</tr>
<tr>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>• Marasmus-kwashiorkor (MUAC &lt; 115 mm with any grade of oedema) OR</td>
</tr>
<tr>
<td></td>
<td>• MUAC &lt; 115 mm or bilateral oedema +/- WITH any of the following:</td>
</tr>
<tr>
<td></td>
<td>– Anorexia/no appetite for RUTF</td>
</tr>
<tr>
<td></td>
<td>– Vomits everything</td>
</tr>
<tr>
<td></td>
<td>– Hypothermia ≤ 35.5°C</td>
</tr>
<tr>
<td></td>
<td>– Fever ≥ 38.5°C</td>
</tr>
<tr>
<td></td>
<td>– Severe pneumonia</td>
</tr>
<tr>
<td></td>
<td>– Severe dehydration</td>
</tr>
<tr>
<td></td>
<td>– Severe anaemia</td>
</tr>
<tr>
<td></td>
<td>– Not alert (very weak, lethargic, unconscious, fits, or convulsions)</td>
</tr>
<tr>
<td></td>
<td>– Moderate to severe skin lesions</td>
</tr>
<tr>
<td></td>
<td>– Eye signs of vitamin A deficiency</td>
</tr>
<tr>
<td></td>
<td>– Conditions requiring intravenous infusion or tube feeding</td>
</tr>
<tr>
<td>Infants &lt; 6months</td>
<td>• Infant is too weak or feeble to suckle effectively (independently of his/her weight-for-length). OR</td>
</tr>
<tr>
<td></td>
<td>• Weight-for-length &lt; -3 SD (in infants &gt; 45 cm) OR</td>
</tr>
<tr>
<td></td>
<td>• Visible severe wasting in infants &lt; 6 months OR</td>
</tr>
<tr>
<td></td>
<td>• Presence of bilateral oedema</td>
</tr>
<tr>
<td>Other reasons for inpatient enrolment:</td>
<td>• Re-admission of children previously discharged from inpatient care, but meet inpatient care enrolment criteria again</td>
</tr>
<tr>
<td></td>
<td>• Return of children after default (away from inpatient care for 2 consecutive days) if they meet the admission criteria</td>
</tr>
<tr>
<td>Recap: Ask different students to explain the following</td>
<td>• How to measure MUAC</td>
</tr>
</tbody>
</table>
- How we measure weight for length
- How to test for bilateral pitting oedema and how it is graded (+, ++, +++)
- How to test for appetite

Ask other students to add any missing information if necessary.

**Activity 1b**

Explain to students that a drill is a fun, lively group exercise. It is not a test, but rather an active way to practise using information.

Oral drill on z-score: Students should look at Table 3 ‘Weight-for-Height/Length Reference Tables’ on pages 5-6 in CH6 HO1a Ghana IC Job Aids. Tell students that you will call on them one by one to participate, calling on them in order going around the class. If a student cannot answer, you will go quickly to the next person and ask the question again. They should wait to be called on and should answer as quickly as they can.

Call out the information in the left column in the following table and ask the first student to use the reference card and provide the child’s z-score. Then give the additional information in the third column and ask whether the child should be classified as having SAM. If a student cannot answer or makes a mistake, let the next person try.

<table>
<thead>
<tr>
<th>Sex, length, weight</th>
<th>z-score?</th>
<th>Additional information</th>
<th>Classify as SAM?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girl, 82.0 cm, 7.8 kg</td>
<td>&lt; -3</td>
<td>no oedema</td>
<td>Yes</td>
</tr>
<tr>
<td>Boy, 74.0 cm, 7.9 kg</td>
<td>-2</td>
<td>no oedema</td>
<td>No</td>
</tr>
<tr>
<td>Girl, 73.8 cm, 6.2 kg</td>
<td>&lt; -4</td>
<td>no oedema</td>
<td>Yes</td>
</tr>
<tr>
<td>Boy, 67.0 cm, 6.1 kg</td>
<td>-3</td>
<td>++ oedema</td>
<td>Yes</td>
</tr>
<tr>
<td>Girl, 55.5 cm, 3.9 kg</td>
<td>&lt; -2</td>
<td>++ oedema</td>
<td>Yes</td>
</tr>
<tr>
<td>Girl, 67.1 cm, 4.9 kg</td>
<td>&lt; -4</td>
<td>no oedema</td>
<td>Yes</td>
</tr>
<tr>
<td>Boy, 90.0 cm, 10.8 kg</td>
<td>&lt; -2</td>
<td>+ oedema (both feet)</td>
<td>Yes</td>
</tr>
<tr>
<td>Girl, 70.5 cm, 6.1 kg</td>
<td>&lt; -3</td>
<td>no oedema</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Oral drill on MUAC: Similar to the previous drill, call out the information for each child in the first three columns of the table below for a student to quickly answer if the child should be classified as having SAM. If a student cannot answer or makes a mistake, let the next person try.

<table>
<thead>
<tr>
<th>Age</th>
<th>MUAC</th>
<th>Additional information</th>
<th>Classify as SAM?</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 months</td>
<td>11.5 cm</td>
<td>no oedema</td>
<td>No (child has MAM but is likely to become severely malnourished)</td>
</tr>
<tr>
<td>28 months</td>
<td>9.8 cm</td>
<td>+ oedema (both feet)</td>
<td>Yes</td>
</tr>
<tr>
<td>52 months</td>
<td>10.2 cm</td>
<td>no oedema</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Learning Outcome 2: Explain the principles of care for the inpatient management of SAM

Activity 2
Write the following questions on the board and ask students to write answers to them. If students struggle, recommend that they do the e-learning module on caring for infants and children with acute malnutrition (definition and classification of malnutrition) available at https://www.som.soton.ac.uk/learn/test/nutrition/courses/ (free registration required).

1. When a child has SAM, why is it important to begin feeding slowly and cautiously?
2. Why should all children with SAM be given antibiotics?
3. Why is it dangerous to give iron early in treatment?
4. Why is Rehydration Solution for Malnutrition (ReSoMal) preferable to regular or low-osmolarity oral rehydration solution (ORS) for children with SAM who have severe and/or persistent diarrhoea and/or dehydration?

Feedback: Ask students for answers to the four questions and add to or correct answers using the following answers.

1. The body’s systems have slowed down (‘reductive adaptation’) and must gradually ‘learn’ to function fully again. Rapid changes (such as rapid feeding or fluids) would overwhelm the systems, so feeding must be conducted slowly and cautiously.
2. Nearly all children with SAM have bacterial infections. In addition, as a result of reductive adaptation, the usual signs of infection may not be apparent because the body does not use its limited energy to respond in the usual ways, such as inflammation or fever. So, assume that infection is present and treat all children with SAM with broad spectrum antibiotics.
3. Giving iron early in treatment will not cure anaemia, as the child already has a supply of stored iron. Giving iron early in treatment can also lead to ‘free iron’ in the body. Free iron can cause problems; it promotes the formation of free radicals and bacterial growth and causes some infections to get worse. In addition, the body tries to protect itself from free iron by converting it to ferritin, and this conversion requires energy and amino acids that are diverted from other critical activities.
4. ReSoMal has less sodium and more potassium than regular or low-osmolarity ORS, and children with SAM already have excess sodium in their cells, so sodium intake should be restricted.
Individual work: Hand out CH6_HO2a Activity and have students write their answers to the questions.

Feedback: Review the answers, which are on page 53 of CH6_HO3a Ghana IC Module 2 Principles of Care, with the students.

**Learning Outcome 3: List the criteria for discharge and referral from inpatient care**

**Activity 3**

Group work: In pairs, ask students to discuss what criteria they think may be used for discharge from inpatient care and referral.

Feedback: Ask students to share ideas. Students should read pages 38-40 of CH6 HO3a Ghana IC Module 2 Principles of Care for an explanation of the criteria.

**Learning Outcome 4: List and explain the 10 steps for the successful management of SAM**

**Activity 4a**

Group work: Split the class into groups of equal numbers. Each group will focus on 2 of the 10 steps.

- Steps 1 and 2: Treat/prevent hypoglycaemia and treat/prevent hypothermia
- Steps 3 and 4: Treat/prevent dehydration and correct electrolyte imbalance
- Steps 5 and 6: Treat/prevent infection and correct micronutrient imbalance
- Steps 7 and 8: Start cautious feeding and achieve catch-up growth
- Steps 9 and 10: Provide tender loving care and sensory stimulation and prepare for follow-up

Give students 45-60 minutes to research details about how to carry out the activities involved in their steps. They should write a concise 1-page summary and be prepared to explain it to others in the class. Provide the module booklets CH6_HO4ai, CH6_HO4aii, and HO4aiii as reference materials.

Feedback: Have students form groups consisting of one student from each of the previous groups. Starting at Step 1, students have maximum of 10 minutes to present the information they learned. Other student should take notes so that at the end they have a complete guide for the 10 steps. Feedback will take roughly 1 hour. While students are sharing information, walk around and listen to the different groups, making sure that the information on their summary sheets is accurate.

**Activity 4b**

Group work: To ensure understanding of the different elements, each newly formed group should make a poster to be a reference tool for nurses, outlining the 10 steps. Students will have 30 minutes to make the poster. The poster should contain a definition of each step; prevention, warning signs, and immediate action for the first 5 steps; and management (actions) for the last 5 steps.

Feedback: Walk around the classroom and look at each poster, highlight any errors or missing points. Hand out CH6_HO4b 10 Steps Poster and let students compare their poster with this one.
Learning Outcome 5: Explain the three phases of management of SAM with medical complications in inpatient care

Activity 5

Discussion: Explain that management of the child with SAM is divided into three phases. Ask students to name them. If they do not know them, read them out.

1. Initial treatment (stabilisation): Life-threatening problems are identified and treated in a hospital or residential care facility, specific deficiencies are corrected, metabolic abnormalities are reversed, and feeding is begun.
2. Transition: This prepares the child for outpatient care and can last up to 3 days. RUTF is gradually introduced in this phase.
3. Rehabilitation and follow-up: Intensive feeding is given to recover most of the lost weight, emotional and physical stimulation are increased, and, in most cases, rehabilitation will take place in outpatient care using RUTF. During rehabilitation in outpatient care, the mother and child are followed up to prevent relapse and assure the continued physical, mental, and emotional development of the child.

Looking at their posters, students should discuss which steps refer to the initial treatment or stabilisation phase, which to transition, and which to rehabilitation and follow-up. Ask students to name the stages for each phase. Point them to the diagram on page 35 of CH6_HO3a Ghana IC Module 2 Principles of Care for reference.
Session 7: Nutrition Disorders—Rarer Micronutrient Deficiencies

This session is relevant for: RGN 064 and CHN 026.

Duration: 1 hour

Introduction

This session will briefly introduce students to rarer micronutrient deficiencies so that they become aware of the causes, signs, and symptoms and preventive measures.

Competency Areas

Be aware of less common micronutrient deficiencies that can occur in Ghana.

Learning Outcomes

By the end of this session students will be able to:

1. List the deficiencies for less common micronutrients, such as thiamine, niacin, riboflavin, vitamin C, and vitamin D
2. Explain the signs and symptoms of these deficiencies
3. Explain methods to help prevent deficiencies

Session Outline

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. List the deficiencies for less common micronutrients</td>
<td>a. Pair work on consequences of insufficient intake of four micronutrients</td>
<td>CH7_RS1 Micronutrient Malnutrition CH7_HO1a Micronutrient Malnutrition Photocards</td>
<td>25 minutes</td>
</tr>
<tr>
<td></td>
<td>b. Group discussion on who might suffer from deficiency diseases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Explain the signs and symptoms of deficiencies</td>
<td>Photo card quiz</td>
<td>CH7_HO2a Test Cards</td>
<td>15 minutes</td>
</tr>
<tr>
<td>3. Explain methods to help prevent deficiency diseases</td>
<td>Group mindmap on ways to prevent deficiency diseases</td>
<td>CH7_RS1 Micronutrient Malnutrition</td>
<td>20 minutes</td>
</tr>
</tbody>
</table>

Materials Required

Preparation Suggestions

1. Review session plan and resources
2. Print off CH7_HO1a Micronutrient Malnutrition Photocards for either each student or for every 2-3 students
3. Print off CH7_HO2a Test Cards or 2–3 copies to pass around the class for activity 2

Further Reading and Resources


Session Details

Learning Outcome 1: List the deficiencies for less common micronutrients

Activity 1a

Pair work: Ask students to name the four nutrients which are focused on in public health initiatives (iron, folate, vitamin A, and iodine). Ask students in pairs to briefly discuss the consequences of insufficient intake of each of these micronutrients.

Feedback: Ask different pairs to provide feedback on each micronutrient. Other groups can add to answers if incomplete. If knowledge is clearly lacking, briefly go through CH7_RS1 Micronutrient malnutrition slides.

Hand out CH7 HO1a Micronutrient Malnutrition Photocards and go through CH7_RS1, slides 12-25 with students. Explain that the focus will now be on rarer micronutrient deficiencies.

Activity 1b

Small groups: Ask small groups to discuss what deficiencies they might find in which groups of the population, and what the causes are. The discussion should include marginalised communities in more remote areas and people in an emergency setting such as drought or conflict areas.

Feedback: Ask groups to provide an example from their discussion, and provide the following examples if they aren’t mentioned.

1. Scurvy in populations who do not have access to fresh fruit and vegetables
2. Beriberi in populations whose staple is polished white rice
3. Ariboflavinosis in populations who do not eat pulses, eggs, and liver
4. Pellagra in populations whose staple is maize and eat little meat and dairy products
5. Rickets/osteomalacia in populations whose skin is covered up and not exposed to the sun
Learning Outcome 2: Explain the signs and symptoms of deficiency diseases

Activity 2

Pair work: Ask students to turn over CH7_HO1a Micronutrient Malnutrition Photocards. Show pictures of deficiency diseases in CH7_HO2a Test Cards by passing around 2–3 copies to the class. Students can discuss in pairs and write down which nutrient has caused the deficiency.

Feedback: Show the pictures again and ask a different student for their response for different pictures. Correct them when necessary. For each photo test card the main clinical sign, micronutrient deficiency disease, and deficient nutrient is listed below.

1. Test Card 1: Bitots spots (X1B); xeropthalmia; vitamin A deficiency
2. Test Card 2: Bilateral dermatitis on the arms; pellagra; vitamin B3 (niacin) deficiency
3. Test Card 3: Goitre; iodine deficiency disorder; iodine deficiency
4. Test Card 4: Perifollicular haemorrhage; scurvy; vitamin C deficiency
5. Test Card 5: Angular stomatitis; ariboflavinosis; vitamin B2 (riboflavin) deficiency
6. Test Card 6: Casal’s necklace; pellagra; vitamin B3 (niacin) deficiency

Learning Outcome 3: List the methods to help prevent deficiency diseases

Activity 3

Group work: In small groups, ask students to mindmap ways that could help prevent deficiency diseases.

Feedback: Ask each group to give 2-3 ideas. Write ideas on the board. Ensure the points from CH7 RS1, slides 37-46 are covered.
Health Promotion
Counselling on Infant and Young Child Feeding

This session is relevant for: RGN 024, RGN 064, MDW 037, RCN 024, CHN 022, and CHN 026. This session can be linked to Session 12 in Nutrition and Dietetics (for RGN 033 and MDW 040).

Duration: 2 hours, 20 minutes

Introduction

This module is taken from the UNICEF Community IYCF Counselling Package. Students will consider key skills necessary for effective counselling and learn the steps involved in the 3 A’s (assess, analyse, and act) approach to infant and young child feeding (IYCF) counselling.

Competency Area

Be able to effectively listen and counsel mothers about infant and young child feeding.

Learning Outcomes

By the end of this session, students will be able to:

1. Outline the skills needed to build confidence and give support
2. Identify listening and learning skills
3. Describe the IYCF 3-step counselling approach (3 A’s approach)

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Outline the skills needed to build confidence and give support</td>
<td>Discuss what helps give a parent/caregiver confidence and support</td>
<td></td>
<td>10 minutes</td>
</tr>
<tr>
<td>2. Identify listening and learning skills</td>
<td>a. Pair work on storytelling b. Non-verbal communication and listening skills demonstration c. Asking questions</td>
<td>HP_HO1 UNICEF 4.1 Listening &amp; Learning Skills</td>
<td>30 minutes</td>
</tr>
<tr>
<td>3. Describe the IYCF 3-step counselling approach (3 A’s)</td>
<td>a. Demonstration and explanation of the 3 A’s b. Role play to practice using the 3 A’s c. Case studies/role plays to practice 3 A’s</td>
<td>HP_HO2 UNICEF 9.1-9.2 Building Confidence &amp; Giving Support HP_HO3 UNICEF IYCF Counselling Cards HP_HO4 UNICEF Key Messages Booklet HP_HO5 UNICEF Observation Checklist for IYCF Assessment HP_HO6 UNICEF Brochure How to Breastfeed HP_HO7 UNICEF Brochure Feeding after 6 Months HP_HO8 UNICEF Brochure Maternal Nutrition</td>
<td>1 hour, 40 minutes</td>
</tr>
</tbody>
</table>
Materials Required

The following resources are part of the UNICEF Community IYCF Counselling Package (2012), available at [http://www.unicef.org/nutrition/index_58362.html](http://www.unicef.org/nutrition/index_58362.html).

1. HP_HO1 UNICEF 4.1 Listening & Learning Skills. (In participant materials.)
2. HP_HO2 UNICEF 9.1-9.2 Building Confidence & Giving Support. (In participant materials.)
3. HP_HO3 UNICEF IYCF Counselling Cards.
4. HP_HO4 UNICEF Key Messages Booklet.
5. HP_HO5 UNICEF Observation Checklist for IYCF Assessment. (In participant materials.)
6. HP_HO6 UNICEF Brochure How to Breastfeed.
7. HP_HO7 UNICEF Brochure Feeding after 6 Months.

Preparation Suggestions

1. Review session and resources.
2. If possible, before the session, ask a student to be prepared to role play in demonstrating how to listen and counsel.
3. Print copies of HP_HO1, HP_HO2, and HP_HO5 (1 per student)
4. Print copies of HP_HO3, HP_HO4, HP_HO6, HP_HO7, and HP_HO8 (1 per 3 students)

Further Reading and Resources


Session Details

**Learning Outcome 1: Outline the skills needed to build confidence and give support**

**Activity 1**

Ask: ‘What helps give a caregiver confidence and support?’ Probe until the following skills listed for building confidence and giving support are mentioned.

1. Accept what a parent/caregiver thinks and feels (to establish confidence, let the parent/caregiver talk through her/his concerns before correcting information)
2. Recognize and praise what a parent/caregiver and baby are doing correctly
3. Give practical help
4. Give a little, relevant information
5. Use simple language
6. Use appropriate counselling card or cards
7. Make one or two suggestions, not commands
Learning Outcome 2: Identify listening and learning skills

Activity 2a
Group work: In pairs, ask students to tell each other a story so that both people are speaking at the same time for 2 minutes. Then, ask the large group:

1. How did you feel talking at the same time with another person?
2. Did you catch any of the story?

In the same pairs repeat the exercise, but this time ask them to concentrate on listening to one another (not taking notes, but listening carefully). Then, have the pairs tell each other’s stories back to their partner (each of the pair speaks for 1 minute). Ask the large group:

1. ‘How much of your story did your partner get right?’
2. ‘How did it make you feel to tell a story and see someone listening to you?’
3. ‘What things did you do to make sure that your partner was listening to you?’ (Responses should include: use of responses and gestures that show interest and use of non-verbal communication.)

Activity 2b
Demonstration: Ask one student to volunteer to tell their story in front of the class. Act as the counsellor and demonstrate good and bad examples of the following non-verbal communication skills.

1. Keep head at same level
2. Pay attention (eye contact)
3. Remove barriers (tables and notes)
4. Take time
5. Appropriate touch

For example, for the first behaviour, sit on a chair while the student is on the floor, look around the room, at your watch, and not at the student, have your book upright in front of you. Then repeat the activity for the remaining five skills.

Ask a different student volunteer to act as a mother who has introduced complementary foods to her baby at 4 months, as she believes breast milk is not enough food for her infant. This time demonstrate “reflecting back” and “non-use of judging words” by first demonstrating the opposite of these skills, followed by the proper skills. For example, for the first behaviour, do not summarise what they have said to show understanding, and use judgemental phrases like, ‘You shouldn't always follow advice of your mother-in-law’, or ‘Your understanding is not correct’.

1. Explain that judging words include: right, wrong, well, badly, good, enough, properly, should, must. If you use these words when you ask questions, you may make a mother feel that she is wrong, or that there is something wrong with her baby.
2. Explain that reflecting back means repeating back what a mother has said to you, to show that you have heard, and to encourage her to say more. Try to say it in a slightly different way. For example, if a mother says: ‘My baby was crying too much last night’, you could say: ‘Your baby kept you awake crying all night?’
3. Explain that listening and learning skills are the first set of skills to be learned and practised.

**Activity 2c**

Ask students to each think of one question to ask you. Then go around the room and let students ask you a question and answer truthfully. After all students have asked a question, ask: ‘What did you get from this exercise?’ Explain that some types of questions bring out more information than others. For example, asking about age gets a specific piece of information, which is what you sometimes want. Point out that open-ended questions usually begin with why, how, when, and where?

Ask: ‘What things can you do to bring out more information?’

1. Reflect back what the parent/caregiver says
2. Listen to the parent/caregiver’s concerns
3. Avoid using judging words

Distribute HP_HO1 UNICEF 4.1 Listening & Learning Skills. Discuss and summarize the different listening and learning skills. Explain the general rule of counselling: ‘We have two ears and one mouth, so we must listen twice as much as we talk’.

**Learning Outcome 3: Describe the IYCF 3-step counselling approach (assess, analyse, and act)**

**Activity 3a**

Note: one student should have been asked in advance to act as Tamina in this demonstration. They should be given the following information about Tamina:

1. Has a 7-month son called Ahmed
2. Breastfeeds whenever Ahmed cries
3. Feels she does not produce enough milk
4. Gives Ahmed some watery porridge two times a day (porridge is made from maize meal)
5. Does not give any other milk or drinks to Ahmed

Distribute HP_HO2 UNICEF 9.1-9.2 Building Confidence & Giving Support. Demonstrate the steps (below) between a mother (Tamina) with 7-month son Ahmed and the counsellor to complete 9.2: IYCF Assessment in HP_HO2. HP_HO3 and HP_HO4 will also be needed.

**Step 1: Assess**

1. Greet the parent/caregiver and ask questions that encourage her/him to talk, using skills in listening and learning, building confidence, and giving support.
2. Complete 9.2: IYCF Assessment in HP_HO2 by asking the following questions:
   a. What is your name, and the child’s name?
   b. Observe the general condition of the parent/caregiver.
   c. What is the age of your child?
   d. Has the child been sick recently? If presently sick, refer parent/caregiver to health facility.
   e. In areas where child growth cards exist, ask the parent/caregiver if you can check the child’s growth card. Is the growth curve increasing? Is it decreasing? Is it levelling off? Does the parent/caregiver know how the child is growing?
f. Ask the parent/caregiver how the child is doing and whether the child is gaining weight (don’t just rely on the plots on the growth card).

g. In areas where there are no child growth cards, ask the parent/caregiver how he or she thinks the child is growing?

h. Ask about the child’s usual intake.

i. Ask mother about breastfeeding:
   i. About how many times/day do you usually breastfeed your baby? (frequency)
   ii. How is breastfeeding going for you? (possible difficulties)

j. Observe the mother and baby’s general condition.

k. Observe the baby’s position and attachment.

l. Ask the parent/caregiver about complementary foods:
   i. Is the child getting anything else to eat? What type/kinds?
   ii. How many times/day are you feeding the child? (frequency)
   iii. How much are you feeding the child? (amount)
   iv. How thick are the foods you give the child? (texture thickness/consistency: mashed, sliced, chunks)

m. Ask about other milk:
   i. Is child drinking other milk?
   ii. How many times/day does the child drink other milk? (frequency)
   iii. How much other milk does the child drink? (amount)
   iv. (if breastfeeding) Why do you think your baby needs additional milk?

n. Ask about other liquids:
   i. Is the child drinking other liquids? What kinds?
   ii. How many times/day does the child drink other liquids? (frequency)
   iii. How much? (amount)

o. Does the child use a cup? (If response is ‘no’, then ask ‘What does the child use to drink from?’)

p. Who assists the child to eat? Ask about responsive feeding and care practices.

q. Are there other challenges in feeding the child?

Step 2: Analyse

1. Is feeding age-appropriate? Identify feeding difficulty (if any).
2. If there is more than one difficulty, prioritize difficulties.
3. Answer the parent/caregiver’s questions (if any).

Step 3: Act

1. Depending on the age of the baby and your analysis (above), select a small amount of information relevant to the parent/caregiver’s situation. (If there are no difficulties, praise the parent/caregiver for carrying out the recommended breastfeeding and complementary feeding practices).
2. Praise the parent/caregiver.
3. For any difficulty, discuss with the parent/caregiver how to overcome the difficulty.
4. Present options/small doable actions (time-bound) and help the parent/caregiver select one that he or she can try to overcome the difficulty.
5. Share with the parent/caregiver the appropriate counselling cards (HP_HO3 UNICEF IYCF Counselling Cards) and discuss.


7. Share counselling card 18: How to add micronutrient powders to complementary foods if micronutrient powders are provided in the area.

8. Ask the parent/caregiver to repeat the agreed upon new behaviour to check her/his understanding.

9. Let the parent/caregiver know that you will follow-up with her/him at the next weekly visit.

10. Suggest where the parent/caregiver can find additional support (e.g., educational talks; IYCF support groups in the community; knows how to reach the community health worker; supplementary feeding programme, if available, in cases where food availability is a constraint in feeding children; or a social protection programme for vulnerable children if available).

11. Refer as necessary.

12. Thank the parent/caregiver for his or her time.

Feedback: Discuss the demonstration with participants and answer questions. Summarise the following key information.

1. Alternative terms for assess, analyse, and act may be: ask, think, and discuss.

2. The IYCF 3-step counselling process involves:
   a. Assessing age-appropriate feeding and condition of parent/caregiver and child by asking, listening, and observing.
   b. Analysing feeding difficulty—identifying difficulty and prioritizing if there is more than one.
   c. Acting—discuss, suggest small amount of relevant information, and agree on feasible doable option that parent/caregiver can try.

3. The purpose of the 3 A’s is to provide IYCF information and support to the parent/caregiver.

**Activity 3c**

Group work: In groups of three, ask the student to decide who will play the role of a mother, counsellor, and observer.

1. Refer those acting as counsellors to HP_HO1 and HP_HO2.

2. Refer those acting as observers to HP_HO5 Observation Checklist for IYCF Assessment.

3. Ensure each group has copies of HP_HO3, HO4, HO6, HO7, and HO8.

Case study/role play:

1. Ask the students who are role playing as mothers to gather together.

2. Read case study 1 (see text box below) to the mothers only, and ask the mothers to return to their working groups. Note: the mothers need to be sure that they give all the information included in their case study and not embellish.

3. The counsellor of each working group asks the mother about her situation and practises the assess, analyse, and act steps using listening and learning skills and building confidence and giving support skills.
4. In each working group, the observer’s task is to record the skills the counsellor used on HP_HO5 Observation Checklist for IYCF Assessment and provide feedback after the case study.

5. After the first case study, ask the students to switch roles and repeat the above steps using case studies 2 and 3.

**Case study 1.** Read to mothers: You are Fatuma. Your son, Shukri, is 18 months old. You are breastfeeding him on demand. You are giving Shukri milk and millet cereal 3 times a day.

**Case study 2.** Read to mothers: You are Justina. Your daughter, Anna, is 8 months old. You are breastfeeding Anna because you know breast milk is the best food for her. You also give Anna water because it is so hot. You do not think Anna is old enough to eat other food. Anna has been gaining weight well, but she had diarrhoea the last week.

**Case study 3.** Read to mothers: You are Irene. You are breastfeeding your 1 year old, Zakia. You have two other children. You give Zakia food that the family is eating, 3 times a day. Zakia is very healthy and has not been sick.

Feedback: Ask three different groups to demonstrate a case study in front of the class. Discuss and note anything that was missing, using the following examples for reference.

**Case study 1 examples (do not read out)**

**Step 1: Assess**
1. Greet Fatuma and ask questions that encourage her to talk, using listening and learning, building confidence, and giving support skills.
2. Complete the IYCF Assessment in HP_HO2.
3. Observe Fatuma and Shukri’s general condition.
4. Listen to Fatuma’s concerns, and observe Shukri and Fatuma.
5. Accept what Fatuma is doing without disagreeing or agreeing.

**Step 2: Analyse**
1. Fatuma is breastfeeding Shukri on demand.
2. Fatuma is giving other milk to Shukri.
3. Fatuma is not following age-appropriate feeding recommendations (i.e., frequency and variety; check on amount).

**Step 3: Act**
1. Praise Fatuma about continuing breastfeeding.
2. Talk with Fatuma about the characteristics of complementary feeding: frequency, amount, texture (thickness/consistency), variety, responsive feeding, and hygiene.
3. Present options/small do-able actions (time-bound) to overcome the difficulty of inadequate complementary food, e.g., increase feeding frequency of food to 4 times a day; ask about the amount of cereal Shukri receives and the possibility of increasing the amount; ask about the texture (thickness/consistency) of the cereal, and ask about adding other locally available food.
Case study 2 examples (do not read out)

Step 1: Assess
1. Greet Justina and ask questions that encourage her to talk, using listening and learning, building confidence, and giving support skills.
2. Complete the IYCF Assessment in HP_HO2.
3. Observe Justina and Anna’s general condition.
4. Listen to Justina’s concerns, and observe Anna and Justina.
5. Accept what Justina is doing without disagreeing or agreeing.

Step 2: Analyze
1. Justina is breastfeeding Anna.
2. Justina is also giving water to Anna.
3. Anna had diarrhoea last week.
4. Justina has not started eating complementary food.

Step 3: Act
1. Praise Justina for breastfeeding.
2. Talk with Justina about the importance of breastfeeding.
3. Talk about breast milk being the best source of liquid for Anna.
4. Discuss the risks of contaminated water.
5. Suggest that Anna may have had diarrhoea last week because of contaminated water.
6. Talk with Justina about beginning complementary foods and why it is necessary for Justina at this age.
7. Talk with Justina about the characteristics of complementary feeding: frequency, amount, texture (thickness/consistency), variety, responsive feeding, and hygiene.
8. Present options/small do-able actions (time-bound) and help Justina select one or two that she can try, e.g., beginning with a small amount of staple food (porridge or other local examples); adding legumes, vegetables/fruit, and animal foods; and increasing feeding frequency of foods to 3 times a day. Talk about appropriate texture (thickness/consistency) of staple; assisting Anna during feeding times; and hygienic preparation of food.
9. Select the portion of the information on the age-appropriate counselling card that is most relevant to Anna’s situation, and discuss it with Justina. The relevant cards and other materials include:
   a. Counselling card 12: Good hygiene (cleanliness) practices prevent disease
   b. Counselling card 14: Complementary feeding from 6 up to 9 months
   c. Counselling card 17: Food variety
   d. Brochure on how to feed a baby after 6 months to take home (HP_HO7 Brochure Feeding after 6 Months)
10. Share with Justina responsive feeding and care practices depicted in counselling cards (reflected in HP_HO4 UNICEF Key Messages Booklet).
11. Share with Justina counselling card 18: How to add micronutrient powders to complementary foods (if micronutrient powders are provided in her area).
12. Ask Justina to repeat the agreed upon behaviour.
13. Tell Justina that you will follow-up with her at her next weekly visit.
14. Suggest where Justina can find support (e.g., an action-oriented group, IYCF support group in the community, and supplementary food programme, community health worker).
15. Refer as necessary
16. Thank Justina for her time

Case study 3 examples (do not read out)

Step 1: Assess
1. Greet Irene and ask questions that encourage her to talk, using listening and learning, building confidence, and giving support skills.
2. Complete the IYCF Assessment in HP_HO2.
3. Observe Irene and Zakia's general condition.
4. Listen to Irene's concerns, and observe Zakia and Irene.
5. Accept what Irene is doing without disagreeing or agreeing.

Step 2: Analyse
1. Irene is breastfeeding Zakia.
2. Irene is feeding Zakia family food 3 times a day.
3. Irene has two other children.

Step 3: Act
1. Praise Irene for breastfeeding.
2. Talk with Irene about the importance of breastfeeding for at least 2 years.
3. Praise Irene for giving Zakia family food 3 times a day.
4. Talk with Irene about what to consider when giving complementary food: frequency, amount, texture (thickness/consistency), variety, responsive feeding, and hygiene.
5. Present options/small doable actions (time-bound) and help Irene select one or two that she can try, e.g., increasing frequency of foods to 4 times a day. Ask about the amount of food Zakia receives, texture (thickness/consistency), and adding other locally-available food.
6. Select the portion of the information on the age-appropriate counselling card that is most relevant to Zakia’s situation, and discuss it with Irene. These include the following cards and other materials.
   a. Counselling card 12: Good hygiene (cleanliness) practices prevent disease
   b. Counselling card 16: Complementary feeding from 12 up to 24 months
   c. Counselling card 17: Food variety
   d. Brochure on how to feed a baby after 6 months to take home (HP_HO7 UNICEF Brochure Feeding after 6 Months)
7. Share with Irene responsive feeding and care practices depicted in counselling cards (reflected in HP_HO4 UNICEF Key Messages Booklet).
8. Share with Irene counselling card 18: How to add micronutrient powders to complementary foods (if micronutrient powders are provided in her area).
9. Suggest it may be helpful for Zakia to have his own plate.
10. Ask Irene to repeat the agreed upon behaviour.
11. Tell Irene that you will have someone come to follow-up with her in two days.
12. Suggest where Irene can find support (action-oriented group, IYCF support group in the community, or community health worker).
13. Thank Irene for her time.
Medical Nursing I/
Principles of Disease Management and Control II
Session 1: Use of Zinc in the Management of Diarrhoea

This session is relevant for: RCN 040 and CHN 050.

Introduction

This session consists of reading and resources to give students an overview of the clinical management of acute diarrhoea. The session provides WHO guidance for policymakers and programme managers.

Competency Area

Be able to provide appropriate clinical management of acute diarrhoea.

Reading and Resources


Session 2: Nutrition Care and Support in the Context of HIV and/or Tuberculosis

This session is relevant for: RGN 031, RGN 040, MDW 031, MDW 042, RCN 050, and CHN 080.

Duration: 6 hours, 50 minutes

Introduction

This session uses resources from the Nutrition Care for People Living with HIV and/or Tuberculosis Clients in Ghana course that was developed for in-house training of nutritionists, dieticians, nurses, doctors, and those working with patients with HIV or tuberculosis (TB). Materials from several modules have been condensed in this session plan. This session should give students an overview of nutrition care and support for people living with HIV (PLHIV) and/or TB-infected patients. It also provides the new recommendations for HIV-positive mothers and prevention of maternal to child transmission of HIV.

Competency Area

Be able to provide appropriate nutrition support to people with HIV and/or TB.

Learning Outcomes

By the end of this session students will be able to:

1. Explain the additional nutritional requirements for TB clients and PLHIV
2. Describe the interaction between TB, HIV, and nutrition
3. Explain how malnutrition can be prevented
4. List the critical nutrition actions for PLHIV
5. List the components of NACS (nutrition assessment, counselling, and support)
6. Explain the methods of nutritional status assessment for children and adults
7. Explain the criteria for inpatient management of adults and children with severe acute malnutrition (SAM) and the nutrition care plan
8. Explain the criteria for outpatient management of adults and children with SAM and moderate acute malnutrition (MAM) and the nutrition care plan
9. Describe the purpose and types of specialised food products
10. State entry and exit criteria for specialised food products
11. Explain the steps in managing clients on specialised food products
12. Explain the nutrition care plan for those with normal nutritional status
13. Explain the new guidelines for prevention of mother-to-child transmission of HIV (PMTCT)
<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the additional nutritional requirements for TB clients and PLHIV</td>
<td>Presentation on nutritional requirements for TB clients and PLHIV</td>
<td>DMC2_RS1 Ghana NACS Presentation&lt;br&gt;DMC2_HO1a_Ghana NACS Course Participant Manual</td>
<td>10 minutes</td>
</tr>
<tr>
<td>2. Describe the interaction between TB, HIV, and nutrition</td>
<td>a. Presentation on nutrition, TB, and HIV interactions&lt;br&gt;b. Exercise 1: Causes of Malnutrition in PLHIV and/or TB Clients&lt;br&gt;c. Recap clinical symptoms and signs of malnutrition&lt;br&gt;d. Discussion on what happens to people with HIV or TB who are malnourished</td>
<td>DMC2_RS1 Ghana NACS Presentation&lt;br&gt;DMC2_HO1a_Ghana NACS Course Participant Manual&lt;br&gt;DMC2_RSS Ghana NACS Job Aids</td>
<td>45 minutes</td>
</tr>
<tr>
<td>3. Explain how malnutrition can be prevented and managed</td>
<td>Discussion on how to prevent and manage malnutrition</td>
<td>DMC2_RS1_Ghana NACS Presentation&lt;br&gt;DMC2_HO1a_Ghana NACS Course Participant Manual</td>
<td>15 minutes</td>
</tr>
<tr>
<td>4. List the critical nutrition actions for PLHIV</td>
<td>Presentation on the critical nutrition actions</td>
<td>DMC2_RS1_Ghana NACS Presentation&lt;br&gt;DMC2_HO1a_Ghana NACS Course Participant Manual</td>
<td>10 minutes</td>
</tr>
<tr>
<td>6. List the components of NACS</td>
<td>Discussion on nutrition services health care facilities can provide</td>
<td>DMC2_RS1_Ghana NACS Presentation&lt;br&gt;DMC2_HO1a_Ghana NACS Course Participant Manual</td>
<td>30 minutes</td>
</tr>
<tr>
<td>7. Describe the purpose and types of specialised food products</td>
<td>a. Presentation on specialised food products for malnourished people&lt;br&gt;b. Discussion on how NACS differs from other food supplementation&lt;br&gt;c. Exercise 9. Specialised Food Products for NACS</td>
<td>DMC2_RS1_Ghana NACS Presentation&lt;br&gt;DMC2_HO1a_Ghana NACS Course Participant Manual&lt;br&gt;Packets of RUTF and 2 kg of FBF</td>
<td>30 minutes</td>
</tr>
<tr>
<td>8. State entry and exit criteria for specialised food products</td>
<td>Group work on challenges in using entry criteria for different subgroups</td>
<td>DMC2_HO1a_Ghana NACS Course Participant Manual</td>
<td>35 minutes</td>
</tr>
<tr>
<td>Learning Outcome</td>
<td>Activities</td>
<td>Materials</td>
<td>Duration</td>
</tr>
<tr>
<td>------------------</td>
<td>------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| 9. Explain the steps in managing clients on specialised food products | a. Presentation on prescribing and monitoring specialised food products  
b. Group work to fill in the NACS Client Management Form using case studies from Exercise 4  
c. Group work on exiting services using Exercise 4 | DMC2_RS1_Ghana NACS Presentation  
DMC2_HO1a_Ghana NACS Course Participant Manual | 45 minutes |
| 10. Explain the criteria for inpatient management of SAM for children and adults, and the relevant nutrition care plan | a. Recap the criteria to classify children and adults as having SAM  
b. Presentation and discussion on what nutrition care clients with SAM need | DMC2_RS1_Ghana NACS Presentation  
DMC2_HO1a_Ghana NACS Course Participant Manual | 30 minutes |
| 11. Explain the criteria for outpatient management of SAM and MAM for children and adults, and the nutrition care plan | a. Presentation and discussion on the criteria and outpatient management of SAM and MAM  
DMC2_HO1_Ghana NACS Course Participant Manual | 60 minutes |
| 12. Explain the nutrition care plan for people with normal nutritional status | a. Discussion on nutrition care for PLHIV, TB clients, and clients with normal nutritional status  
b. Group work on Nutrition Care Plan for Normal Nutritional Status | DMC2_RS1_Ghana NACS Presentation  
DMC2_HO1_Ghana NACS Course Participant Manual | 35 minutes |
| 13. Explain the new guidelines for PMTCT | Discussion on when and how HIV can be transmitted from mother-to-child, and infection rates | | 20 minutes |

**Materials Required**

1. DMC2_RS1 Ghana NACS Presentation. (Source: Ghana Ministry of Health. 2013. ‘Nutrition Care for People Living with HIV and/or Tuberculosis Clients in Ghana’. PPT Presentation.)
3. DMC2_RS5 Ghana NACS Job Aids. (Source: Ghana Ministry of Health. 2013. Nutrition Assessment, Counselling, and Support (NACS) for PLHIV and/or TB: Job Aids.)
4. DMC2_HO2a Pre Quiz
5. Packets of Ready-to-Use Therapeutic Food (RUTF)
6. 2 kg of Fortified-Blended Food (FBF)

Note: where slides are referred to, these are slides from DMC2_RS1. Where the Participant Manual is referred to, this is DMC2_HO1a.
Preparation Suggestions

To determine whether time needs to be spent on other areas of the course that are not included in this session, give each student a copy of DMC2_HO2a Pre Quiz before the lesson. Tell them they are allowed 15 minutes to complete the pre-test and should not use reference materials, as this is to test their existing knowledge. They do not have to put their names on the form, if they do not want, as it is to see areas of weakness in the entire class. Ideally, these should be returned before this session to calculate the scores and identify topics that need emphasis during the training.

Further Reading and Resources


Session Details

Learning Outcome 1: Explain the additional nutritional requirements for TB clients and PLHIV

Activity 1

Presentation: Explain that people with HIV and/or TB need more energy because these diseases cause weight loss and decrease the body’s ability to absorb and use nutrients and fight infection.

Show Slides 14 and 15 and explain that energy requirements are greater for children and adults with HIV and/or TB. Point out that energy requirements differ depending on the presence of HIV or TB-related symptoms such appetite loss, diarrhoea, nausea, weight loss, and other opportunistic infections. Refer students to Table 1.1 Energy Requirements and Table 1.3 Food Equivalents to Meet Extra Energy Needs of PLHIV and/or TB in DMC2_HO1a Ghana NACS Course Participant Manual. Point out the sample food equivalents for the increased energy needs of PLHIV.

Show Slide 16 and explain that the protein, micronutrient, and fat requirements of PLHIV are the same as for people without HIV. PLHIV need to increase their total energy intake while maintaining the same balanced proportions between carbohydrate, protein, and fat as recommended for people without HIV.

Learning Outcome 2: Describe the interaction between TB, HIV, and nutrition

Activity 2a

Presentation: Explain that it is difficult to separate the influence of nutrition on TB from economic, environmental, and genetic factors. It is not known whether malnutrition predisposes people to TB or is a consequence of TB, but the association between malnutrition and disease is well recognised.

Show Slide 17 on nutrition and TB. Explain that TB reduces appetite and increases the body’s use of energy, which increases the risk of wasting. Underweight people have a higher risk of developing TB.
Poor nutritional status may make essential nutrients unavailable to the body and make TB infection more likely to develop into TB disease (active TB). Because TB increases energy expenditure and breaks down tissue, people with TB have higher micronutrient requirements. However, because they have poor appetite, they cannot meet these increased requirements through their diet and may, therefore, need to take supplements.

Also explain that the nutrient requirement guideline for PLHIV is applicable to TB clients (10% more energy required for asymptomatic, 20% or more for advanced or symptomatic clients).

Show Slide 18 on HIV-TB co-infection. Explain that TB is increasing, largely because of the spread of HIV. The case fatality rate from TB is over 50% in areas where HIV prevalence is high.

Show Slides 19 and 20 and follow the arrows to explain that HIV and TB increases nutritional needs but also decreases appetite and nutrient absorption. This leads to poor nutrition, which increases vulnerability to infections, which increase nutritional needs.

Ask students to refer to Figure 1.1 that shows the vicious cycle between nutrition and HIV and/or TB in the participant manual (DMC2_HO1a). Explain that the job aids (including DMC2_RS5) are tools they can use in their workplaces to counsel clients and to find information quickly.

Explain that some medications can interfere with the absorption, digestion, metabolism, and utilisation of food. In return, nutritional status and diet can affect the action of medications. Knowing what medications clients are taking allows health care workers to counsel them on how to manage drug-food interactions and drug side effects.

**Activity 2b**

Ask: ‘Besides infections such as TB and HIV, what else can cause PLHIV and TB clients to become malnourished?’ Refer students to Exercise 1. Causes of Malnutrition in PLHIV and/or TB Clients on page 9 in the Participant Manual, and in groups of 3–4 people, ask them to complete the exercise.

Feedback: Ask students to provide their answers and list them on the board. Compare them with the information on Slides 22 to 24 for immediate causes of malnutrition and Slide 25 and 26 for underlying causes of malnutrition. Students can refer to Annex 1 for answers to the exercise.

Refer students to Figure 1.2 Conceptual Framework of Malnutrition in the Student Manual. Ensure that they are familiar with this.

**Activity 2c**

Recap clinical symptoms and signs of malnutrition. Explain that without appropriate interventions, people with illness, decreased appetite, or poor nutrient absorption and utilisation can become malnourished.

Show Slide 28 and explain the signs of SAM in the children in the photos (oedema in both feet or legs, wasting, and hair colour change [not shown]).

Explain that people can be moderately malnourished without showing obvious signs. Moderate malnutrition puts people at risk of severe malnutrition. It is important to assess all clients’ nutritional status so they can be counselled on how to maintain good nutritional status and avoid becoming severely malnourished.
Remind students that overweight and obesity are also signs of malnutrition, in this case overnutrition. Overweight and obesity put people at risk of diabetes, hypertension, and heart problems.

**Activity 2d**

Ask: ‘What happens to people with HIV or TB who are malnourished?’ List responses on the board. Compare them with the information in Slide 29.

Explain that metabolism is the set of chemical processes needed to maintain life. If the body does not receive an adequate supply of nutrients (because of either stress or inadequate supply) to support the growth and repair of cells (anabolism) the body will begin to break down (catabolism) tissues such as muscle and fat stores. Metabolic complications are problems in the body’s ability to make or use energy. Examples are impaired glucose metabolism, abnormal body fat distribution, and lactic acid disorders.

Ask: ‘Why is nutrition important in the care and treatment of PLHIV and TB clients?’

Feedback: Compare students’ answers with the information in Slides 30 and 31.

Ask: ‘How can good nutrition help prevent and fight infections?’

Feedback: List responses on the board and compare them with the information on Slide 32. Follow the cycle from one arrow to another, explaining that good nutrition strengthens the immune system so the body can prevent and fight infection.

**Learning Outcome 3: Explain how malnutrition can be prevented and managed**

**Activity 3**

Discussion: Review the causes of malnutrition discussed earlier. Ask: ‘How can people prevent and manage malnutrition?’ List responses on the board and compare them to the information on Slides 33 and 34. Facilitate discussion.

Explain to students that this information is also found in Session 1.6 Preventing and Managing Malnutrition in the Participant Manual.

**Learning Outcome 4: List the critical nutrition actions for PLHIV**

**Activity 4**

Presentation: Refer students to the Critical Nutrition Actions for PLHIV and TB Clients in Session 1.6 in the Participant Manual. Explain that the eight Critical Nutrition Actions (CNAs) can help clients prevent and manage malnutrition. Show Slides 35 and 36 and ask different students to read aloud each CNA.

**Learning Outcome 5: Explain the methods of nutritional status assessment for adults**

**Activity 5a**

Explain that body mass index (BMI) is the preferred indicator of thinness for adults over 18 years old who are not pregnant or within 6 months post-partum. BMI is a proxy measure for 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, mid-upper arm circumference (MUAC) is used to measure the nutritional status of pregnant and post-partum women.

Explain that BMI is used to assess the nutritional status of adults living with HIV 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. However, explain that BMI does not account for changes in body composition including changes in PLHIV caused by antiretroviral therapy (ART).

Explain again that BMI is only used to classify the nutritional status of non-pregnant and non-lactating adults. MUAC is used to measure children 6 months–17 years, pregnant and lactating women, and adults who are too sick to stand. Ghana has adopted the use of MUAC only to screen and admit children 6 months–17 years of age.

Ask students to refer to Table 2.5 Algorithm for Assessing Malnutrition in Children 6 Months to 17 Years in Session 2.3 of the Participant Manual. Ask them to read through the columns on the first page of the job aid under ‘Assess’. Explain that these are the steps health care workers should follow to find out whether children are malnourished.

Then refer students to Table 2.1 How to Assess the Nutritional Status of a Child in the Participant Manual. Ask volunteers to identify the four things to assess under ‘EXAMINE AND MEASURE’ (Answer: bilateral pitting oedema, medical complications, MUAC, and weight).

Refer students to Table 2.6 Algorithm for Assessing Malnutrition in Adults in the Participant Manual, and point out the BMI cut-offs for classification of malnutrition in non-pregnant, non-post-partum adults. Pregnant, post-partum women should be measured using MUAC.

**Activity 5b**

Group work: Divide the class into small groups of about 5-6 people. Refer the groups to Exercise 4. Case Study: Nortey, Narku, and Kande in the Participant Manual (pp. 39–40). Ask a volunteer to read Part 1 aloud. Ask the groups to continue with Exercise 4, Parts 2–7. Instruct the groups to use the appropriate algorithms, BMI chart, and MUAC information to classify nutritional status. Also ask the groups to list other problems in each part of the exercise.

Feedback: Ask one or two groups to present their results and compare them with the information in the box.

**ANSWERS**

Part 1: Nortey has moderate malnutrition but has some complications that need to be addressed otherwise he may be at risk of severe malnutrition. He has other conditions including:

- Anaemia
- Oral thrush
- Diarrhoea

Part 2: Narku is classified as having SAM (based on MUAC and oedema) with medical complications.
He has other conditions including:

- Sunken eyes
- Prolonged skin pinch
- Chest in-drawing
- Finger clubbing, etc.

Part 3: Nortey is classified as having SAM without medical complications (he has some social issues in the area of worry and alcohol consumption).

Part 4: Narku is classified as having SAM without medical complications.

Part 5: Kande has SAM without medical complications.

Part 6: Narku is classified as having MAM.

Part 7: Narku is classified as normal and Kande is classified as having MAM.

Learning Outcome 6: List the components of NACS

Activity 6

Ask: ‘What kind of nutrition services can health care facilities provide?’ List responses on the board and compare them with the information on Slide 37.

Explain that health care 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. Health care workers should then counsel clients on how to improve their nutritional status and refer them for needed medical care or social support. Nutrition support can include prescribing specialised food products to clients with acute malnutrition.

Show Slide 101 to explain the components of NACS services.

Refer students to Session 4.1 NACS Services in the Participant Manual (p. 86). Ask volunteers to read the NACS activities aloud. Facilitate discussion about why each component is important to promote good nutrition and prevent and treat acute malnutrition.

Ask students: ‘What clients does NACS target?’ List responses on the board. Compare the responses with the information on Slides 102 and 103.

Learning Outcome 7: Describe the purpose and types of specialised food products

Activity 7a

Presentation: Show Slide 105 on specialised food products for acutely malnourished people. Ask a volunteer to read aloud the last point on the slide. Stress by reading out loud to students that specialised food products are prescribed as medicine according to a standard protocol and strict eligibility criteria to treat a serious medical condition and are not intended to supplement a family’s diet.

Refer students to Specialised Food Products in Ghana in Session 4.3 in the Participant Manual (pp. 88–89). Ask volunteers to take turns reading each section aloud.
Show Slide 106 to explain specialised food products. Facilitate discussion about how specialised food products can improve adherence to medication (they can improve nutrition to make medicines more effective and be an incentive for clients to return for follow-up visits).

Reinforce the message that therapeutic and supplementary foods are not appropriate for infants under 6 months old.

**Activity 7b**

Ask students: ‘How are specialised food products different from other food support?’ List responses on the board and compare them to the information on Slide 107. Stress that specialised food products are special formulations prescribed as medicine according to a standard protocol and have strict eligibility criteria for individual clients to treat acute malnutrition, while food support is usually staple food given to households to improve food security. Facilitate discussion.

Show Slide 108 on the specialised food products used in NACS services in Ghana.

**Activity 7c**

Group work: Ask students to form small groups, distribute samples of RUTF and FBF, and refer them to Exercise 9. Specialised Food Products for NACS in Session 4.3 of the Participant Manual (p. 90). Ask the groups to fill out the matrix by referring to the food packages, and to answer the three questions at the bottom of the page. Give the groups 10 minutes for this activity.

Feedback: After 10 minutes, ask one group to present its results. The answers to the exercise questions are shaded below.

<table>
<thead>
<tr>
<th>Question</th>
<th>RUTF</th>
<th>FBF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of specialised food</td>
<td>Plumpy’Nut®</td>
<td>(depends on brand)</td>
</tr>
<tr>
<td>Number of grams per sachet</td>
<td>92</td>
<td>300</td>
</tr>
<tr>
<td>Total calories per sachet</td>
<td>500</td>
<td>1,350 (450 kcal per 100 g)</td>
</tr>
<tr>
<td>Micronutrients</td>
<td>23 (13 vitamins and 10 minerals)</td>
<td>24 (12 vitamins and 12 minerals)</td>
</tr>
<tr>
<td>Level of Recommended Dietary Allowance (RDA) of most of the micronutrients</td>
<td>Approximately 1</td>
<td>Between 0.5 and 1.2</td>
</tr>
<tr>
<td>Is water needed for preparation?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Is water needed for consumption?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Taste, consistency, and texture</td>
<td>(up to each student)</td>
<td>(up to each student)</td>
</tr>
<tr>
<td>Expiry date</td>
<td>(depends on the package)</td>
<td>(depends on the package)</td>
</tr>
</tbody>
</table>

Ask volunteers to read their answers to the three questions under the table in Exercise 9.

**Learning Outcome 8: State entry and exit criteria for specialised food products**

**Activity 8**

Group work: Refer the groups to Session 4.4 Admission and Discharge Criteria for NACS in Ghana in the Participant Manual (pp. 91–92). Ask volunteers to read the admission criteria (cut-offs) for each
group of clients. Stress that any client, adult or child, with bilateral pitting oedema should be classified automatically as having SAM with medical complications, regardless of anthropometric measurements.

Assign the following NACS target groups to each of the student groups:

1. Groups 1 and 2: Acutely malnourished children
2. Groups 3 and 4: Acutely malnourished non-pregnant, non-lactating adults
3. Groups 5 and 6: Acutely malnourished pregnant/post-partum women

Ask each group to identify any challenges they might find in using the entry criteria (e.g., clients who do not know their age or pregnancy status) and ways to address these challenges. Give the groups a time limit of 20 minutes. Then ask each group to present its results. Facilitate discussion and answer questions as needed.

**Learning Outcome 9: Explain the steps in managing clients on specialised food products**

**Activity 9a**

Presentation: Show Slide 111 on the steps to follow for prescribing and monitoring specialised food products. Point out the first bullet on the slide: Classify the client’s nutritional status.

Ask students: ‘What anthropometric measurements and indices can be used to classify a client’s nutritional status?’ Write responses on the board and compare to the following information. Fill in gaps as needed.

- Weight
- Height
- MUAC for children 6 months to 14 years of age, adolescents 15–17 years age, and pregnant and post-partum women
- BMI for non-pregnant/post-partum adults

Point out the second bullet on Slide 111: Conduct a medical assessment. Explain that clients with SAM should receive a medical assessment. The medical assessment consists of a medical history and physical examination. Explain that taking a medical history should include asking about breastfeeding history (for children up to 6 months of age), immunisation status, foods and fluids taken in the past few days, and duration and frequency of vomiting or diarrhoea.

Explain that the physical examination includes assessing the client for bilateral pitting oedema and other medical complications and doing an appetite test.

Ask students: ‘What medical complications should health care workers look for in severely malnourished clients?’ Write responses on the board and compare with the following information.

- Bilateral pitting oedema
- Wasting
- Anorexia or poor appetite
- Persistent diarrhoea
- Nausea or vomiting
- Severe dehydration
- High fever (> 38.5°C)
- Difficult or rapid breathing or increased pulse rate
- Convulsions
- Severe anaemia
- Mouth sores, thrush, or difficulty swallowing
- HIV
- Hypothermia (temperature < 35°C)
- Hypoglycaemia
- Lethargy or unconsciousness
- Extreme weakness
- Opportunistic infections
- Extensive skin lesions
- Eye signs of vitamin A deficiency

**Activity 9b**

Group work: Refer the groups to Exercise 4. Case Study: Nortey, Narku, and Kande in the Participant Manual (pp. 39–40). Ask the groups to fill out three copies of the NACS Client Management Form in the Participant Manual (p. 105)—one for Nortey on his first clinic visit (Part 1), one for Narku on his first clinic visit (Part 2), and the third for Kande on her first visit (Part 5). Encourage the groups to use Tables 2.5 and 2.6 Algorithms for Assessing Malnutrition in Children and Adults (pp. 31–32) and the Nutrition Care Plans in Session 2.6 (pp. 41–61) of the Participant Manual to find the information.

Explain that the case study does not include enough information to fill in all the columns for the three clients.

Feedback: Move among the groups to make sure the forms are filled in correctly. Ask one group to present its results and ask the other groups to make corrections as needed.

**Activity 9c**

Group work: Divide the students into small groups of about 5-6 people. Ask the groups to refer again to Exercise 4. Case Study: Nortey, Narku, and Kande in the Participant Manual (pp. 39–40) and read Part 7. Based on the information in the case study, ask: ‘Can Narku exit from specialised food products? If not, why not? If yes, why?’ (ANSWER: Yes, because he is now 57 months old and his MUAC is 12.9 cm, which falls in the green section in Table 2.5 Algorithm for Assessing Malnutrition in Children in the Participant Manual.)

Ask: ‘Can Kande exit from specialised food products? If not, why not? If yes, why?’ (ANSWER: No, because her MUAC is now 21.5 cm, which falls in the moderate category for pregnant/lactating women in Table 2.6 Algorithm for Assessing Malnutrition in Adults in the Participant Manual.)
Learning Outcome 10: Explain the criteria for inpatient management of SAM for children and adults and the nutrition care plan

**Activity 10a**

Ask: ‘What criteria classify children and adults as having severe acute malnutrition? Write the responses on the board and compare them to the information in Slide 56.

Show Slide 57 with photos of an adult and children with SAM. Ask students whether they have seen such cases in their work.

Explain that the final step in nutrition assessment is to determine the correct Nutrition Care Plan for the client. Refer to Session 2.6 Nutrition Care Plans in the Participant Manual (pp. 41–61). Point out that there are different Nutrition Care Plans for different classifications of nutritional status.

Refer students to Tables 2.5 and 2.6 Algorithms for Assessing Malnutrition in Children and Adults in the Participant Manual (pp. 31–32). Ask them to find the criteria for the Nutrition Care Plan for SAM. Explain that it is red for ‘danger’ because SAM is a life-threatening condition that requires urgent treatment.

Review Slides 58–60, which provide the criteria for inpatient management of children and adults with SAM.

**Activity 10b**

Ask: ‘What nutrition care do inpatient clients with severe acute malnutrition need?’ Write the responses on the board and compare them to the information in Slides 61–62 for inpatient treatment.

Refer students to the Nutrition Care Plan for Adults with SAM, inpatient section, in the Participant Manual (p. 49). Ask different students to read out the points. Show Slides 61–62 on the protocol for inpatient management of SAM.

Learning Outcome 11: Explain the criteria for outpatient management of SAM and MAM for children and adults and the nutrition care plan

**Activity 11a**

Presentation: Show Slides 63–64 on the criteria for outpatient treatment of SAM, focusing on Slide 64. Refer students back to the Nutrition Care Plan for Adults with SAM in the Participant Manual (p. 49–50), but focus on outpatient management. Ask different students to read out the points.

Ask: ‘What criteria classify children and adults as having moderate acute malnutrition?’ Write the responses on the board and compare them to the information in Slide 68.

Refer students to Tables 2.5 and 2.6 Algorithms for Assessing Malnutrition in Children and Adults in the Participant Manual (pp. 31–32). Ask them to find the criteria for the Nutrition Care Plan for MAM in the algorithms. Explain that the yellow represents ‘caution’ because clients with MAM can become severely malnourished if not counselled and treated. Note that one in every five HIV-positive person who starts ART has MAM, usually associated with an opportunistic infection.

Ask students: ‘What nutrition care do clients with moderate acute malnutrition need?’ Compare the responses to the information in Slide 69.
**Activity 11b**

Group work: Ask students to form small groups and use Tables 2.5 and 2.6 Algorithms for Assessing Malnutrition in Children and Adults (pp. 31–32) and Nutrition Care Plans for Children and Adults with MAM (pp. 53–57) to answer the questions in Exercise 6. Nutrition Care Plan for MAM (p. 58) in the Participant Manual.

Feedback: Ask one group to present its answers and let the other groups fill in gaps as needed. Answers are provided in the following box.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
</table>
| 1. What eligibility criteria qualify adults and children for the Nutrition Care Plan for MAM? | **ANSWERS:**
  - Adults:
    - BMI ≥ 16.0 to < 18.5 kg/m² OR
    - MUAC > 19 to 21.0 cm
  - Pregnant and lactating women:
    - MUAC > 21 to 23.0 cm
    - Poor weight gain
  - Children:
    - 6 to 59 months: MUAC ≥ 11.5 to < 12.5 cm
    - 5 to 9 years: MUAC ≥ 13.5 to < 14.5 cm
    - 10 to 14 years: MUAC ≥ 16.0 to < 18.5 cm
    - 15 to 17 years: MUAC ≥ 17.5 to < 19.5 cm
    - OR confirmed weight loss since the last visit |
| 2. What specialised foods are given to clients under the Nutrition Care Plan for MAM? | **ANSWER:** FBF or food supplementation (food basket) |
| 3. What quantities of specialised foods per day do you give to the following under the Nutrition Care Plan for MAM? | **ANSWERS:**
  - Child 3 years of age: 150 g FBF or food supplementation (food basket)
  - Child 6 years of age: 150 g FBF or food supplementation (food basket)
  - Woman 7 months pregnant: 300 g FBF
  - Non-pregnant/post-partum woman 38 years: 300 g FBF |
| 4. What key messages should health care workers give an adult with MAM? | **ANSWERS:**
  - Continue to eat three meals and two snacks every day, consuming 20% more energy from home foods.
  - Add sugar, eggs, or milk to enrich food.
  - Continue to take medicines as advised by the health care worker.
  - Get weighed every month.
  - Manage symptoms through diet.
  - Maintain good sanitation and hygiene. |
• Exercise to strengthen muscles and improve appetite.

5. How often should health care workers follow up clients with MAM?

**ANSWER:** Every month.

Refer the groups again to Exercise 4. Case Study: Nortey, Narku, and Kande in the Participant Manual (pp. 39–40), Part 6. Explain that Narku has been discharged from treatment for SAM but still has MAM. Narku was initially severely malnourished and was being treated for TB. Ask the groups what support they would give Narku based on the Nutrition Care Plan for MAM. One student from each group should write their responses on the board. Give the groups a time limit of 10 minutes. Then ask one or two groups to present their results.

Ask students to identify challenges they might face in providing care and support to moderately malnourished clients in their health care facilities.

**Learning Outcome 12: Explain the nutrition care plan for those with normal nutritional status**

**Activity 12a**

Discussion: Ask students, ‘Why are a significant proportion of PLHIV not malnourished, and people with TB are?’ Compare students’ responses to the following information.

Most PLHIV are not malnourished because:

- They are in the initial stages of HIV and still asymptomatic (they have no AIDS-related illnesses that cause appetite loss or affect other aspects of nutrition)
- They only need 10% more energy (because of HIV infection) than HIV-negative people, which most can attain unless they are in situations of severe food insecurity
- Most have begun treatment, for example, PCP (*Pneumocystis carinii pneumonia*) prophylaxis and treatment of opportunistic infections

With TB disease:

- Most persons are malnourished by the time of diagnosis because TB is a wasting disease and manifests with significant weight loss
- TB treatment in most cases leads to a significant improvement in nutritional status

Ask students to refer again to Tables 2.5 and 2.6 Algorithms for Assessing Malnutrition in Children and Adults in the Participant Manual (pp. 31–32) and find the anthropometric measurements that qualify children and adults as having normal nutritional status. Compare the responses to the information on Slide 71. Explain that green represents ‘OK’.

Ask students to look at the right-hand column (Treatment/Care) of Tables 2.5 and 2.6. Ask, ‘What nutrition care do clients with normal nutritional status need?’ Compare student responses to the information in Slide 72.

**Activity 12b**

Group work: In their groups, ask students to use the Nutrition Care Plans for Children and Adults in Session 2.6 in the Participant Manual (pp. 41–61) to answer the questions in Exercise 7. Nutrition Care Plan for Normal Nutritional Status (p. 62).
Feedback: Ask one group to present its answers and let the other groups fill in gaps as needed. Answers are provided in the following box.

1. How much food does a healthy adult need in a day?
   
   **ANSWER:** Three balanced meals a day to provide about 2,500 kcal

2. How much food gives 10% extra energy?
   
   **ANSWER:** One snack

3. What snack can provide 10% additional energy for an asymptomatic HIV-positive or TB-infected adult?
   
   **ANSWER:** Examples are 250 ml of porridge or 1 avocado

4. How many snacks a day should an HIV-positive or TB-infected pregnant or post-partum woman eat?
   
   **ANSWER:** Two for adults and three for pregnant and post-partum women

5. What can a caregiver add to porridge to increase a child’s energy intake by 10%?
   
   **ANSWER:** 2 teaspoons of oil or 1–2 teaspoons of sugar

Refer the groups again to Exercise 4. Case Study: Nortey, Narku, and Kande in the Participant Manual (pp. 39–40). Ask a volunteer to read Part 7. Ask the groups to discuss how they would care for Kande and Narku based on their nutritional and health status in Part 7, with one group member writing the responses on the board.

Feedback: Ask two groups to share their responses. Facilitate discussion and fill in gaps as needed. Ask the groups to identify challenges they might face in providing this support in their workplaces. Refer students to Module 2 Key Points in the Participant Manual (p. 62).

**Learning Outcome 13: Explain the new guidelines for the prevention of mother-to-child-transmission of HIV (PMTCT)**

**Activity 13a**

Ask: ‘When can HIV be transmitted from mother-to-child? (Answer: during pregnancy, labour and delivery, and through breastfeeding.)

Ask: ‘How is HIV passed on from an infected mother to the infant? (Answer: through exposure to infected blood during delivery and body fluid—breast milk—during breastfeeding.)

Ask students to estimate the following: If 100 pregnant woman are HIV-positive and deliver their baby and breastfeed for 2 years, how many may be infected with HIV at 2 years? Write the following answers on the board:

1. About 25 may be infected with HIV during pregnancy, labour, and delivery.
2. About 10 may be infected with HIV through breastfeeding, if the mothers breastfeed their babies for 2 years.
3. About 65 of the babies will not get HIV.
Ask students to estimate the second scenario. If 100 HIV-infected women and their babies take antiretrovirals (ARVs) and practise exclusive breastfeeding during the first 6 months, how many will be:

1. Infected during pregnancy, labour, and delivery (Answer: about 2 babies)
2. Infected through breastfeeding (Answer: about 3 babies)
3. Not get HIV (Answer: about 95 babies will not get HIV)

Explain the following to the students.

1. When a mother takes ARVs from the time of HIV testing and as early as 14 weeks of pregnancy, the risk of transmission during pregnancy and labour and delivery is virtually non-existent. Some studies have also shown that the transmission during breastfeeding with ARVs can be as low as 1 out of 100 babies. Breastfeeding can continue for at least 12 months and/or until appropriate feeding is available.
2. While maternal infection with HIV during pregnancy or breastfeeding greatly increases the risk of transmission to the foetus or child; it is also important for the mother to avoid a new infection during these times.
3. The risk of HIV transmission from breastfeeding after 6 months is relatively low, especially with prophylaxis/ARVs.
4. Where ARVs are available, mothers known to be HIV-infected are now recommended to exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary food thereafter, and continue breastfeeding for the first 12 months of life. Breastfeeding should then only stop once a nutritionally adequate and safe diet without breast milk can be provided. Even when ARVs are not available, mothers should be counselled to exclusively breastfeed in the first 6 months of life and continue breastfeeding thereafter unless environmental and social circumstances are safe for, and supportive of, replacement feeding.
5. Mothers known to be HIV-infected who decide to stop breastfeeding at any time should stop gradually within one month. Mothers or infants who have been receiving ARV prophylaxis should continue prophylaxis for one week after breastfeeding is fully stopped. Stopping breastfeeding abruptly is not advisable.
6. Mixed feeding (nonexclusive breastfeeding) is not recommended as this increases risk of mother-to-child transmission.
Obstetric Nursing/Physiology and Management of Normal Puerperium and Neonate
Session 1: Antenatal Care

This session is relevant for: NUR 051, MDW 042, RGN 062, and CHN 031.

Duration: 1 hour, 15 minutes

Introduction

These activities are intended to help students become aware of the iron and folic acid (IFA) supplementation regimes and recap dietary sources of iron.

Competency Area

Be able to manage dietary anaemia in pregnant women and to know when to refer women.

Learning Outcomes

By the end of this session students will be able to:

1. Explain the iron and folic acid supplementation regimen for both antenatal care and for all menstruating women (women in fertile age)
2. Explain how to improve dietary diversity to increase iron intake

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials Required</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the iron and folic acid supplementation regimen for both antenatal care and for all menstruating women (women in fertile age)</td>
<td>In groups write summary recommendations for one of the two iron and folic acid supplementation regimes</td>
<td>NAPN1_HO1a WHO IFA Pregnancy&lt;br&gt;NAPN1_HO1b WHO Intermittent IFA Pregnancy&lt;br&gt;NAPN1_HO1c WHO Weekly IFA 1&lt;br&gt;NAPN1_HO1d WHO Weekly IFA 2</td>
<td>50 minutes</td>
</tr>
<tr>
<td>2. Explain how to improve dietary diversity to increase iron intake</td>
<td>a. Pair work to discuss dietary sources of iron&lt;br&gt;b. Discuss maternal nutrition brochure</td>
<td>NAPN1_HO2b Brochure Maternal Nutrition</td>
<td>25 minutes</td>
</tr>
</tbody>
</table>

Materials Required

Preparation Suggestions

1. Review session plan and resources.
2. Ensure sufficient print copies of relevant pages of resources: NAPN1_HO1a to HO1d—one of each per 8-10 students; NAPN1_HO2b—one per pair.

Further Reading and Resources

1. NAPN1_RS1 Role of Nutrients and Sources. (Source: CARE USA. HIV/AIDS & Nutrition CD-ROM.)

Session Details

Learning Outcome 1: Explain the iron and folic acid supplementation regimen for both antenatal care and for all menstruating women (women in fertile age)

Activity 1

Group work: Split the class into small groups of 4–5 students. Provide copies of NAPN1_HO1a to HO1d, enough for one copy of either NAPN_HO1a and HO1b or HO1c and HO1d per group. Ask half the groups to read the resources regarding pregnant women (NAPN_HO1a and NAPN_HO1b) and half the groups to read the resource regarding menstruating women (NAPN_HO1c and NAPN_HO1d). Give the groups 15 minutes to write a 1-page brief summary of the recommendations that should include:

- WHY is this recommended?
- WHAT is the dose, frequency, and duration?
- WHO is included/excluded?

Pair up two groups (one from each topic) and give each group 5 minutes to share the information that they have learned.

Feedback: Ask two students to share with the class the information they learned from the other group. Other students can add to the information. Ensure the following points are covered:

Iron and folic acid for pregnant women:

- Why: reduces risk of low birth weight, maternal anaemia, and iron deficiency
• What: one supplement of 30–60 mg elemental iron and 400 μg folic acid per day throughout pregnancy, or 120 mg elemental iron and 2,800 μg folic acid once per week
• Who: pregnant women
• If a pregnant woman is diagnosed with anaemia, she should be treated with 120 mg elemental iron and 400 μg folic acid per day until her haemoglobin rises to normal
• Any pregnant women with very severe anaemia should be referred to a health facility

Iron and folic acid for menstruating women (women in fertile age):
• Why: to improve iron status in non-pregnant women and to decrease risk of neural tube defects in early pregnancy (through improving pre-pregnancy status/very early stages when status is unknown)
• What: 60 mg elemental iron and 2,800 μg folic acid once per week for 3 months, then none for 3 months
• Who: all women in fertile age in areas where prevalence of anaemia among non-pregnant women is > 20%.
• Any women with very severe anaemia should be referred to a health facility

Learning Outcome 2: Explain how to improve dietary diversity to increase iron intake

Activity 2a
Pair work: Ask the students, in pairs, to write a list of foods that can help increase iron intake as well as absorption promoters and inhibitors.

Feedback: Ask pairs to read out an item on their list. Ensure the following points are mentioned.

• High absorption: red meat, liver, fish, poultry, shellfish
• Low absorption: eggs, legumes, peanuts, some grains, some vegetables
• Promoters: vitamin C
• Inhibitors: whole grains, tea, coffee, green leafy vegetables (containing phytates)

Activity 2b
Pair work: Hand out and ask pairs to look at NAPN1_HO2b Brochure Maternal Nutrition and discuss with their partner how they could use this leaflet and if there is any more information that they would give to a woman regarding nutritional status during pregnancy.

Feedback: Ask students to share their ideas.
Session 2: Postnatal Care

This session is relevant for: NUR 051, MDW 042, RGN 062, and CHN 031.

Duration: 25 minutes

Introduction

These activities help students to become aware of the postnatal iron and folic acid (IFA) and vitamin A supplementation regimes and recap the nutritional needs of women during lactation (covered in Nutrition and Dietetics, Session 3).

Competency Area

Be able to provide appropriate nutrition supplements to postnatal women.

Learning Outcomes

By the end of this session students will be able to:

1. Explain the postnatal IFA and vitamin A supplementation regime
2. Explain the nutritional needs of women during lactation

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials Required</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the postnatal IFA and vitamin A supplementation regime</td>
<td>Discuss the postnatal recommendations for IFA and vitamin A supplementation</td>
<td>NAPN2_RS1 WHO Vit A Postpartum</td>
<td>10 minutes</td>
</tr>
<tr>
<td>2. Explain the nutritional needs of women during lactation</td>
<td>Pair work on recommendations to lactating women to meet nutritional requirements</td>
<td>NAPN2_HO2 Maternal Nutrition in Pregnancy and Lactation</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

Materials Required


Preparation Suggestions

1. Review session plan and resources
2. Ensure sufficient print copies of resources (NAPN2_RS1—one copy for reference; NAPN2_RS2—one copy per pair)
Further Reading and Resources


1. NAPN2_RS2 IPAC Advice on Postpartum Supplementation.
2. NAPN2_RS3 IPAC Advice on Postpartum—Check Pallor.

Session Details

**Learning Outcome 1: Explain the postnatal iron and folic acid (IFA) and vitamin A supplementation regime**

Explain that the intermittent IFA supplementation for menstruating women also applies for postnatal women.

Ask: ‘What is the recommendation for IFA supplementation for menstruating and postnatal women?’

- **ANSWER:** Recommendation is 60 mg elemental iron and 2,800 μg folic acid once per week for 3 months, then none for 3 months.

Ask: ‘Should we supplement women with vitamin A postnatally?’

- **ANSWER:** Explain that the WHO 2011 guidelines (NAPN2_RS1 WHO Vit A Postpartum) suggest that this is not an effective intervention and so it is no longer recommended. Women should try to eat vitamin A-rich food as part of a diversified diet.

**Learning Outcome 2: Explain the nutritional needs of women during lactation**

Ask: ‘Roughly how many extra calories per day does a lactating woman need to account for breastfeeding?’ (ANSWER: 500 kcal)

Pair work: Ask students to discuss in pairs what they could recommend to lactating women to ensure that they have the additional energy needed and meet their nutritional requirements. Hand out NAPN2_HO2 Maternal Nutrition in Pregnancy and Lactation for students to use as a guide.

Feedback: Ask several pairs to share their ideas and discuss.
Session 3: Neonatal Care

This session is relevant for: NUR 051, MDW 042, RGN 062, and CHN 031.

Duration: 1 hour

Introduction

These activities help students to recall the importance of early initiation of breastfeeding and exclusive breastfeeding. This session links to Child Health/Paediatric Nursing, Session 3 on infant and young child feeding.

Competency Area

Be able to provide appropriate breastfeeding advice in the neonatal period.

Learning Outcomes

By the end of this session students will be able to:

1. Explain what is meant by early initiation of breastfeeding and its importance
2. Explain what is meant by exclusive breastfeeding and its importance

Session Plan

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Activities</th>
<th>Materials Required</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain what is meant by early initiation of breastfeeding and its importance</td>
<td>Pair work on why early initiation of breastfeeding is important and how to help a mother initiate breastfeeding</td>
<td>NAPN3_HO1 IPAC Advice on Newborn Care—Counsel on Breastfeeding</td>
<td>20 minutes</td>
</tr>
<tr>
<td>2. Explain what is meant by exclusive breastfeeding and its importance</td>
<td>Pair work on the importance of exclusive breastfeeding</td>
<td>NAPN3_RS1 Importance of Breastfeeding NAPN3_HO2 IPAC Advice on Newborn Care—Assess Breastfeeding</td>
<td>40 minutes</td>
</tr>
</tbody>
</table>

Materials Required

Preparation Suggestions

1. Review session plan and resources
2. Ensure sufficient copies of resources (NAPN3_HO1 and HO2—one per student; NAPN3_RS1—one copy for reference)

Further Reading and Resources

1. NAPN3_RS2 WHO IYCF Chapter (Source: WHO. 2009. Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals. Chapter 4. Available at http://www.who.int/nutrition/publications/infantfeeding/9789241597494/en/.)

Session Details

Learning Outcome 1: Explain what is meant by early initiation of breastfeeding and its importance

Ask: ‘What is early initiation of breastfeeding?’ (Answer: starting breastfeeding within one hour after birth.)

Pair work: Ask students to discuss in pairs why early initiation of breastfeeding is important.

Feedback: Ask different pairs for ideas. Ensure the following points are covered:

- Delays in initiation of breastfeeding after the first hour increase the risk of neonatal mortality, in particular neonatal death due to infections
- Provides baby with colostrum, which is the nutrient-rich first milk (for 2–3 days post birth) that also protects the baby from infection by providing antibodies and white blood cells
- Helps uterus to contract and reduces risk of haemorrhage
- Helps with expulsion of placenta
- Helps initial bonding of mother and baby
- Stimulates milk production in the mother

Ask the student pairs, ‘What should you do to help mothers with initiating breastfeeding after birth?’

Feedback: Ask different pairs for ideas. Hand out NAPN3_HO1 IPAC Advice on Newborn Care–Counsel on Breastfeeding for reference. Let students add additional information to what is included in the resource.

Learning Outcome 2: Explain what is meant by exclusive breastfeeding and its importance

Discussion: Ask students to write down a definition of exclusive breastfeeding.

Feedback: Read out the following definition (from WHO/UNICEF/USAID, 2008).

Exclusive breastfeeding means that an infant receives only breast milk from his or her mother or a wet nurse, or expressed breast milk, and no other liquids or solids, not even water, with
Go around the class and ask each student to name one benefit of exclusive breastfeeding (or one risk of nonexclusive breastfeeding). Use NAPN3_RS1 Importance of Breastfeeding to prompt students or to supplement student responses.

Pair work: Ask students to discuss in pairs what they would do in the following situations to encourage a woman/others regarding breastfeeding (for example, what questions could they ask, what observations could they make, what advice could they give, what resources could they use/give). Note that this activity will be easier if the students have already done Child Health, Session 3 on infant and young child feeding; if not, they may be limited in ideas. Hand out NAPN3_HO2 IPAC Advice on Newborn Care–Assess Breastfeeding as a tool to help.

Feedback: Ask one or two pairs to provide feedback on one situation.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Types of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In an antenatal clinic, a woman attends with her husband and his mother. It is clear that the mother-in-law is in charge.</td>
<td>Ask about her breastfeeding plans, ask if you can explain the benefits of exclusive breastfeeding for her and the whole family (for mother-in-law, focus on cost saving, time-saving, and benefit to the health of the baby)</td>
</tr>
<tr>
<td>2. In a hospital, after delivery, a woman has begun breastfeeding her baby on the first day but worries that the milk has not ‘come in’.</td>
<td>Explain that in the first 2-3 days smaller amounts of colostrum are produced. Explain that that is the right amount for the baby and the importance of colostrum. Explain that more milk will ‘come in’ after a few days. Watch her breastfeed and encourage her if position and attachment is good. If there are problems, help her correct position or attachment.</td>
</tr>
<tr>
<td>3. In a hospital, a mother is struggling with attaching her baby to her breast, on day 2 after a C-section.</td>
<td>Ask her which positions she has tried, suggest alternatives, e.g., side-lying or under-arm, and help her try out the different position. If she is still struggling with attachment, provide advice on how to improve attachment, e.g., the baby’s body should be straight, facing the breast, close to mother, and mother (or pillow if lying down) should support the baby’s whole body.</td>
</tr>
<tr>
<td>4. A woman with a 36 week baby is trying to breastfeed but worries that her baby can’t suck properly yet.</td>
<td>Watch her breastfeed and encourage her if it looks like the baby is suckling effectively. Explain to her that feeds may be slow and last a long time. If the position or attachment is not correct, suggest under-arm or cross-arm position. If the baby is not suckling or losing weight, the mother could express milk and cup feed or alternate the two methods until the baby is suckling well.</td>
</tr>
<tr>
<td>5. In a postnatal clinic, a mother says she has begun giving her 2 month baby some water alongside breastfeeding as the baby was so thirsty.</td>
<td>Check the baby’s weight to ensure no weight loss. Acknowledge that she is trying to do the best for her baby but reassure her that breast milk has all the water the baby needs and she can increase her water intake to help. Explain that giving water to the baby exposes it to risks of infection and may mean that it becomes malnourished as it takes less breast milk. Encourage her to return to exclusive breastfeeding.</td>
</tr>
</tbody>
</table>
Pharmacology and Therapeutics
Pharmacology and Therapeutics

This session is relevant for: RGN 037, MDW 039, and RCN 062. This session can be linked to Nutrition and Dietetics (RGN 033, MDW 040, and RCN 033), Advanced Nursing (RGN 031), and Principles and Practices of Community Nursing and Administration II (RCN 060).

Duration: 1 hour, 55 minutes (+ 1 hour individual project)

Introduction

This session covers the formulation and use of oral rehydration solutions and therapeutic food for severely malnourished children. This session uses materials from the *Ghana CMAM Training Course on Inpatient Management of Severe Acute Malnutrition* (Chapter 4: Feeding).

Competency Area

Be able to explain how to prepare therapeutic food used for treatment of severe acute malnutrition (SAM).

Learning Outcomes

By the end of this session students will be able to:

1. Explain why it is necessary to treat children with SAM using specially prepared therapeutic food
2. List the ingredients and method of preparation of F-75, F-100, and ReSoMal
3. Explain when you would use F-75, F-100, ReSoMal, and ready-to-use therapeutic food (RUTF)

Session Plan

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities</th>
<th>Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain why it is necessary to treat children with SAM using specially prepared therapeutic food</td>
<td>Small group discussion on physiological basis for treatment of SAM</td>
<td>PT_HO1a WHO Physiological Basis for Treatment of SAM</td>
<td>40 minutes</td>
</tr>
<tr>
<td>2. List the ingredients and method of preparation of F-75, F-100, ReSoMal, and RUTF</td>
<td>a. Identifying the food product based on its use and list of ingredients b. Write step by step instructions for preparation of F-75, F-100, and ReSoMal c. Troubleshooting questions</td>
<td>PT_HO2a Therapeutic Feeds Ingredients PT_RS1 Ghana IC Chapter 4 Feeding PT_RS2 Ghana IC 1.6 ReSoMal PT_RS3 Ghana IC Chapter 2, Annex D&amp;E Compositions</td>
<td>30 minutes (+ 1 hour project)</td>
</tr>
<tr>
<td>3. Explain when you would use F-75, F-100, ReSoMal, and RUTF</td>
<td>Pair work on how to treat cases</td>
<td>PT_RS1 Ghana IC Chapter 4 Feeding PT_RS2 Ghana IC 1.6 ReSoMal PT_RS3 Ghana IC Chapter 2, Annex D&amp;E Compositions PT_RS4 Ghana IC Job Aids</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>
Materials Required


2. PT_HO2a Therapeutic Feeds Ingredients


Preparation Suggestions

1. Review session plan and resources

2. Be familiar with the Ghana protocols for treating SAM

Further Reading and Resources

1. PT_RS5 Local Production of RUTF. (Source: Fellows, P. 2004. ‘Local production of RUTF’. Available at http://fex.ennonline.net/102/4-3-1.)


Session Details

Learning Outcome 1: Explain why it is necessary to treat children with SAM using specially prepared therapeutic food

Activity 1

Group work: Ask students to form small groups and discuss the physiological effects of malnutrition on different organs and systems, including the following.

- Cardiovascular system
- Liver
- Genitourinary system
- Immune system
- Endocrine system
- Circulatory system
- Cellular function
- Skin, muscles, and glands

Feedback: Write each of the above bullet points on the board and ask each group to share ideas for 1 or 2 areas. Write the ideas on the board if they are correct. Hand out PT_HO1a WHO Physiological Basis for Treatment of SAM and ask students to read out any points that have not been mentioned.

**Learning Outcome 2: List the ingredients and method of preparation of F-75, F-100, ReSoMal, and RUTF**

**Activity 2a**
Hand out PT_HO2a Therapeutic Feeds Ingredients. Students should identify the therapeutic feed from the list of ingredients. They can discuss the answers in pairs.

Feedback: Read out the correct answers:

1. ReSoMal
2. F-75
3. F-100
4. RUTF

**Activity 2b**
Students should individually produce a pocket guide to preparing F-75, F-100, and ReSoMal. The guide should include the ingredients list (with alternatives), the preparation instructions, and feeding volumes. It should also include when the product would be used. Students will need access to an electronic or paper copy of PT_RS1, PT_RS2, and PT_RS3. Give students 1 hour to complete the activity, or as an alternative, students can create the pocket guide at home.

Feedback: Ask students to present their pocket guides. One student should present F-75, another F-100, and another ReSoMal.

**Activity 2c**
Write the questions in the left column in the table below on the board. Students should answer the troubleshooting questions by referencing PT_RS1, PT_RS2, and PT_RS3.

Feedback: Ask students for answers and, if incorrect, provide the correct answer as shown in the right hand column below.

<table>
<thead>
<tr>
<th>What do you do if...</th>
<th>Correct answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>You are using dried skimmed milk instead of whole milk for making F-75 and F-100?</td>
<td>Decrease quantity of milk from 35 g to 25 g and add 30 g vegetable oil instead of 20 g (See Page 4, PT_RS1)</td>
</tr>
<tr>
<td>You do not have any CMV (combined mineral and vitamin mix) for F-75 and F-100?</td>
<td>Vitamin and mineral solution can be made (See PT_RS3)</td>
</tr>
<tr>
<td>You do not have CMV for ReSoMal?</td>
<td>Mineral solution can be made or potassium, magnesium, and zinc can be given separately if this is not possible (See PT_RS3)</td>
</tr>
<tr>
<td>You do not have cooking facilities for making F-75 and what can the problems be with</td>
<td>Do not include cereal flour. Instead increase sugar to 100 g. This is sometimes not well tolerated in children with</td>
</tr>
</tbody>
</table>
Learning Outcome 3: Explain when you would use F-75, F-100, ReSoMal, and RUTF

Activity 3

Pair work: Write the cases in the table below on the board or read them out loud. Ask students to discuss in pairs whether the child for each case study has SAM or MAM, whether they should be treated as an inpatient or outpatient, which feeding product is appropriate, and the initial feeding schedule and quantities. They should use PT_RS1, PT_RS2, PT_RS3, and PT_RS4 to help answer questions.

Feedback: Ask different pairs for answers for different cases. Correct or supplement answers using the answers in the right hand column in the table below.

<table>
<thead>
<tr>
<th>Cases</th>
<th>Correct response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 year old girl, 6.8 kg, WFH -2 SD with +++ bilateral pitting oedema</td>
</tr>
<tr>
<td>2</td>
<td>7 month boy, 4.1 kg, WFH -3 SD</td>
</tr>
<tr>
<td>3</td>
<td>4 year, 2 month girl, 9.8 kg, MUAC 112 mm with diarrhoea and vomiting</td>
</tr>
<tr>
<td>4</td>
<td>2 year, 6 month old boy, 11 kg, MUAC 119 mm</td>
</tr>
<tr>
<td>5</td>
<td>2 year, 3 month old girl, 9.1 kg, WFH -2 SD, ++ bilateral pitting oedema</td>
</tr>
</tbody>
</table>