Complementary Feeding of Children of 6 to 24 Months Old

Training Manual for Health Extension Workers and Community Volunteers to Train Mothers and Care Givers

Prepared by:
Food Science and Nutrition Program - Addis Ababa University

WWW.AAU.EDU.ET/FOOD SCIENCE
Forward

Breast milk alone is ideal to start a child's life. It should be fed alone for the first 6 months of life. However, after this period additional foods are needed. The foods that are given in addition to breast milk are called complementary foods. To make sure that young children grow well and stay healthy, they need complementary foods that are nutritious and safe and are fed in adequate amounts. This training manual fills an important gap: it provides information and guidance on the selection and preparation of locally available, nutritious and safe complementary foods that are easy to prepare for feeding children of 6 to 24 months old. It is aimed at improving the skills of health extension workers, community volunteers and care givers that are working with such children in many parts of Ethiopia.

“HIS NAME IS TODAY”

“We are guilty of many errors and many faults, but our worst crime is abandoning the children, neglecting the fountain of life. Many of the things we need can wait, the child cannot. Right now is the time his bones are being formed, his blood is being made and his senses are being developed. To him we cannot answer tomorrow. His name is today.”

Gabriela Mistral
Nobel Prize Winning Poet from Chile
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Introduction

This training guide is for the use of Woreda Trainers (Woreda CBN Master Trainers, Home Economist, and HEWs) who will train mothers and caregivers in the preparation of ready to use complementary food mix and in implementing this at their community level.

Training Duration

This training is for two days

Day-1

<table>
<thead>
<tr>
<th>No.</th>
<th>Session</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Registration</td>
<td>30 m</td>
</tr>
<tr>
<td>2</td>
<td>Welcome, Introductions &amp; Training Objectives</td>
<td>30 m</td>
</tr>
<tr>
<td>3</td>
<td>Knowing participants expectations from the training</td>
<td>15 m</td>
</tr>
<tr>
<td>4</td>
<td>View training schedule and set ground rules</td>
<td>15 m</td>
</tr>
<tr>
<td>5</td>
<td>Problems of stunting and its consequences</td>
<td>30 m</td>
</tr>
<tr>
<td>6</td>
<td>Introduction to complementary feeding and 4R's</td>
<td>1 hr</td>
</tr>
<tr>
<td>7</td>
<td>Ingredients for complementary foods</td>
<td>30 m</td>
</tr>
<tr>
<td>8</td>
<td>Processing cereals and legumes based on roasting</td>
<td>1 hr</td>
</tr>
<tr>
<td>9</td>
<td>Processing cereals and legumes based on germination</td>
<td>1 hr</td>
</tr>
<tr>
<td>10</td>
<td>Key messages of the day: Revisited</td>
<td>30 m</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>6 hrs</strong></td>
</tr>
</tbody>
</table>

Day-2

<table>
<thead>
<tr>
<th>No.</th>
<th>Session</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Recap</td>
<td>20 m</td>
</tr>
<tr>
<td>12</td>
<td>Preparation of ready to use complementary food mix</td>
<td>40 m</td>
</tr>
<tr>
<td>13</td>
<td>Texture (thickness/ consistency) of complementary foods</td>
<td>30 m</td>
</tr>
<tr>
<td>14</td>
<td>Frequency and amount of complementary foods</td>
<td>30 m</td>
</tr>
<tr>
<td>15</td>
<td>Hygiene and safety of Complementary food preparation</td>
<td>30 m</td>
</tr>
<tr>
<td>16</td>
<td>Active / Responsive Feeding</td>
<td>30 m</td>
</tr>
<tr>
<td>17</td>
<td>Enriching Complementary Foods</td>
<td>1 hr</td>
</tr>
<tr>
<td>18</td>
<td>Making community decisions needed for monitoring and sustainability</td>
<td>30 m</td>
</tr>
<tr>
<td>19</td>
<td>Key Messages of the day: Revisited</td>
<td>30 m</td>
</tr>
<tr>
<td></td>
<td><strong>Conclusion and wrap-up</strong></td>
<td><strong>30 m</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>5 hrs</strong></td>
</tr>
</tbody>
</table>
## Schedule for the training

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Sessions</th>
<th>Facilitator/ Co Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>DAY ONE</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:30 -9:00 am</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:00-9:30 am</td>
<td>Welcoming, Introduction and Objectives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:30-9:45 am</td>
<td>Knowing the participants expectations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:45-10:00 am</td>
<td>View training schedule and set ground rules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10:00-10:30 am</td>
<td>Tea break</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10:30-11:00 am</td>
<td>Problems of stunting and consequences for the child and the family</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11:00-12:00 am</td>
<td>Complementary Feeding and the 4R's</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00-1:00 pm</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:00-1:30 pm</td>
<td>Ingredients for complementary food</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30-2:30 pm</td>
<td>Processing of cereals and legumes based on roasting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2:30-3:00 pm</td>
<td>Tea break</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:00-4:00 pm</td>
<td>Processing of cereals and legumes based on germination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4:00-4: 30 pm</td>
<td>Key messages of the day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>DAY TWO</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:30-8:50 am</td>
<td>Recap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:50-9:30 am</td>
<td>Preparation of ready to use complementary food mix</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:30-10:30 am</td>
<td>Texture (thickness/ consistency) of complementary foods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10:30-11:00 am</td>
<td>Tea break</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11:00-11:30 am</td>
<td>Frequency and amount of complementary foods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11:30-12:00 am</td>
<td>Hygiene and safety of Complementary food preparation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00 -1:00 pm</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:00 -1:30 pm</td>
<td>Active / Responsive Feeding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:30-2:30 pm</td>
<td>Enriching Complementary Foods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2:30-3:00 pm</td>
<td>Making community decisions needed for monitoring and sustainability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:00-3:30 pm</td>
<td>Key Messages of the day: Revisited</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:30-4:00 pm</td>
<td>Conclusions and wrap-up</td>
<td></td>
</tr>
</tbody>
</table>

5
Alert for trainer

Since germination will take 36-48 hours, germinate the cereals and legumes 4-5 days before the start of training. The germinated cereal will be used on session-9 of day-1 of the training.

DAY-1

SESSION 1: REGISTRATION

Time: 30 minutes

Materials:
- List of trainees who have been invited for training
- Registration form
- Badges/ name tags for trainees

Activity: Trainers arrange a pleasant and welcoming environment and register all trainees using the sample form given.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of trainee</th>
<th>Woreda</th>
<th>Kebele</th>
<th>Badge received</th>
<th>Materials Received (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>2</td>
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<tr>
<td>5</td>
<td></td>
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</tr>
</tbody>
</table>

SESSION 2: WELCOMING, INTRODUCTION AND OBJECTIVE

Introduction:

In this session trainers will welcome the trainees and the trainees will introduce themselves to each other. The purpose of the training and what will be their role the program will be explained.

Objectives: At the end of this session, trainees will be able to:

- Understand the purpose of the training and what their role will be in the program
- Know each other and have laid the foundation for relationship building
- Understand what is expected from them
- Feel comfortable and understand the approaches and principles of the training

Time: 30 minutes
Methodology: Introductory games or introduction in pairs

Materials:
- Flip charts and markers
- Any material for any introductory game (ex. small ball)

Handout 2: Objective of the training

Activities:
1. Welcome
   - Welcome participants to the training.
   - Explain that the Kebele has been chosen to implement an integrated community grants to improve children of age 6 to 24 months, especially complementary feeding.

2. Introduction and Objective of the training
   - Explain to mothers and caregivers who is training them and the objectives of the training (see from handout 2 below)
   - Explain to mothers and caregivers why the need of the training

Handout 2: Objective of the training

General Objectives
The overall aim of these training manual is to provide nutritious and safe complementary food preparation skills to mothers, health extension workers and caregivers from locally available food products in complementary food piloting areas.

Specific Objectives
- To provide insight on the importance of breast feeding and complementary food
- To provide appropriate blending proportions in the preparation of complementary foods with optimal quality.
- To train mothers, other family and community members to adopt desired complementary feeding behaviours.
- To demonstrate appropriate complementary food preparation for mothers and caregivers
- To provide possible mechanisms to enrich complementary foods with energy and micronutrients (vitamins and minerals) using means like fortification and others
SESSION 3: KNOWING PARTICIPANTS EXPECTATIONS FROM THE TRAINING

Objective: At the end of the session, participants will:

- Share their expectations of the training and create a common understanding of the scope of the training.

Time: ☑ 15 minutes

Materials:

- Pieces of paper and tape
- Marker

Activities:

- Ask participants what they expect from the training and do this in groups.
- Let participants write their expectations on a flip chart and post it on the wall.
- Reflect on their expectations and the nature of the training.

SESSION 4: REVIEW TRAINING SCHEDULE AND SET GROUND RULES

Objective: At the end of the session, participants will:

- Know and agree on training schedule and set ground rules for the training

Time: ☑ 15 minutes

Methodology: Interactive presentation

Materials: Pieces of paper and tape, Marker

Activities:

- Post the training schedule and ask participants to come up with the ground rules that will be used throughout the training
- Record the agreed up on ground rules on a flip chart

Possible ground rules can be:

- Listen
- Participate actively, Energizers elected
- Respect each other's opinions and experiences
- Understand that there are no right and wrong opinions
- Post the ground rules in a visible spot in the training place
SESSION 5: PROBLEMS OF STUNTING AND WASTING AND CONSEQUENCES FOR THE CHILD

Objective: At the end of this session, the participants will be able to:

♥ Possible causes and prevention of stunting/wasting
♥ Explain the right age for intervention to prevent stunting.
♥ Explain the level of malnutrition in their Kebele in simple terms.

Time: ☑ 30 minutes

Materials

 Picture of a stunted and wasted child

Handout

Handout 4: Picture of a stunted/wasted child

Activity

♦ Ask participants of their knowledge on stunting and wasting
♦ Ask their knowledge on the causes of stunting and wasting
♦ Ask their knowledge on the prevention of stunting and wasting
♦ Summarize their ideas
♦ Show them pictures/posters of stunted child

Handout 4: Picture of a stunted/wasted child

 Here is a picture that you can use while starting discussions on stunting/wasting among children. Find your own picture also
SESSION 6: INTRODUCTION TO COMPLEMENTARY FEEDING AND THE 4R'S

Introduction:

This session covers the importance of continuing breastfeeding, the optimal age for children to start complementary feeding, the current complementary feeding practices in the participants' community, what might happen if complementary foods are started too soon or too late, and the key messages to deliver to mothers or caregivers about when to start complementary foods.

Objectives:

At the end of this session, participants will be able to:

• Explain the importance of complementary feeding.
• Explain the importance of continued breastfeeding.
• State the optimal age to start complementary feeding.
• Name the characteristics/elements of complementary feeding.
• Review key messages.

Time: 1 hour

Methodologies: Brainstorming, Group discussion

Materials:

♦ Flip chart, markers
♦ 3 glasses with water: completely full, ½ and ⅓ filled respectively

Handouts:

Handout 6a: Why complementary feeding in the first two years of life matters and the importance of continued breastfeeding
Handout 6b: Timely introduction of complementary foods
Handout 6c: Four R's of complementary foods

Activities:

♦ Ask participants to name all the things necessary to have a healthy child and write them on the flipchart.
♦ Write "energy needs” of a child from 0 up to 6 months, 6 up to 12 months and from 12 up to 24 months on a flipchart; leave posted throughout the training.
♦ Demonstrate the same information using 3 glasses: completely full, half (½) and one third (⅓) filled. Explain the following with regards to energy needs:
  - From 0 up to 6 months breast milk supplies all the "energy needs" of a child
  - From 6 up to 12 months breast milk continues to supply about half (½) the "energy needs" of a child; the other half of "energy needs" must be filled with complementary foods
  - From 12 up to 24 months breast milk continues to supply about one third (⅓) the energy needs of a child; the missing "energy needs" must be filled with complementary foods

♦ Ask what might happen if complementary foods are started too soon. And assign 3 groups to discuss what might happen if complementary foods are started too late

♦ Brainstorm with participants the question: What are the characteristics/elements of complementary feeding?

♦ Probe until the following characteristics/elements are mentioned: Right Consistency (thickness), Right Time, Right Amount and Right Quality (4'Rs)
Handout 6a: Why complementary feeding in the first two years of life matters and the importance of continued breastfeeding

- The first two years of life are a critical period since rates of malnutrition usually peak at this time with consequences that persist throughout life.
- This period is also important for optimal growth, health and development
- It is during this period that children become vulnerable to growth retardation, micronutrient deficiencies, and common childhood illnesses.

Complementary feeding and continued breastfeeding

- Feeding only breast milk to babies for the first six months provides them with the best nourishment possible. It also protects them from common childhood illnesses such as diarrhea and respiratory infections.
- However, after six months breast milk alone is no longer sufficient to meet the energy as well as the micronutrient requirements, such as iron, of the growing baby.
- Breast milk can provide half or more of the energy requirement between 6 up to 12 months and one third of the energy requirement and other nutrients between 12 up to 24 months of age. Thus, complementary feeding is needed to fill the gap between total nutritional needs of the baby and the nutrients provided by breast milk.
- Complementary feeding is giving suitable foods in addition to breast milk to babies.
- These foods should complement, not replace, breast milk.
- Breast milk continues to make important nutritional contributions. Thus, continued, frequent, and on-demand breastfeeding until 2 years of age or beyond is crucial.
- Children 6 up to 24 months are at an increased risk of illness and malnutrition. Continued breastfeeding protects them from illness and malnutrition.
- During the period of complementary feeding, a baby gradually becomes accustomed to eating soft family foods.
- Complementary foods should be introduced at 6 months. At this age, babies’ digestive systems are mature enough to digest different foods. Both early and delayed introduction of complementary foods have negative consequences.
- Before 6 months babies have a sucking reflex enabling them to draw milk from the mother’s breast. However after the 6 months infants develop a chewing reflex that enables them to swallow soft porridges. As a result mothers / caregivers should not be afraid that the food will choke the child, as often assumed.
- Hence, timely introduction of complementary feeding, at 6 months, is important so babies can grow healthy and strong.
- Besides nutrition, breastfeeding continues to:
  - Provide closeness, comfort, and contact that help development
Handout 6c: Four R’s of complementary foods

Right Time
Timely
Complementary foods should be introduced, at 6 months, when the child’s need for energy and nutrients exceeds what can be provided through exclusive breastfeeding.

Right Amount
Adequate
Complementary foods should provide sufficient energy, protein and micronutrients to meet the nutritional needs of the growing child. Therefore, complementary food should be prepared in such a way that it will provide the appropriate amount, density, diversity and consistency.

Right Quality
Safe
Complementary foods should be hygienically prepared and fed with clean utensils, but not in bottles.

Right Frequency
Properly fed
Complementary foods are fed based on the child’s signal of appetite and satiety. The meal frequency and feeding methods are suitable for age.

Key Messages for Mothers and Fathers

- Introduce complementary foods at 6 months of age to make your baby grows healthy and strong.
- Continue to breastfeed your child on demand, at least 8 times, day and night until two years and beyond to maintain child’s strength.

Handout 6b: Timely introduction of complementary foods

Timely introduction of complementary foods is important since both delayed and early initiation of complementary foods is harmful.

Early introduction of complementary foods:

- **Displaces breast milk**: If other foods are given, the baby breastfeeds less and the mother produce less breast milk. Thus it will be more difficult to meet the child's nutritional needs.

- **Increases risk of diarrhea**: Child receives less of the protective factors in breast milk, so the risk of diarrheal diseases increases since complementary foods may not be as clean as breast milk.

- **Results in un-met nutritional needs**: Nutritional needs may not be met because the foods given are usually thin and watery to make them easy for babies to eat and for the thin gruel to pass through the teat of a bottle. These foods fill the stomach but provide fewer nutrients than breast milk, and so the child’s needs are not met.

Late introduction of complementary foods is dangerous because:

- Child does not get extra food needed to fill the energy and nutrient gaps
- Child stops growing or grows slowly
- The risk of malnutrition and micronutrient deficiencies increases

Timely introduction of complementary foods should be introduced, at 6 months, when the child's need for energy and nutrients exceeds what can be provided through exclusive breastfeeding.
SESSION 7: INGREDIENTS FOR COMPLEMENTARY FOODS

Introduction: In this session, local foods that can be used to prepare complementary foods will be identified. The benefits of the different food groups will be explained.

Objectives:
At the end of this session, participants will be able:

- Identify different types of local foods that can be used as complementary foods.
- Explain the benefits of the different types of foods.
- Discuss the importance of feeding a variety of complementary foods to the child throughout the day.

Time: 30 minutes

Materials: Flip charts, markers

Methodologies: Group discussion, Game, Brainstorming,

Handouts:
Handout 7a: Different types of local foods
Handout 7b: Benefits of different types of local foods

Activities:
- Ask participants to identify common foods in their communities.
- With examples of local foods or illustrations of local foods (staples, legumes and seeds, vitamin A rich fruits and vegetables, other fruits and vegetables, animal-source foods, and oils), ask participants to choose from the local foods or illustrations and match to the right group.
- Discuss Breastfeeding (Breastfeed as often as the child wants) + Animal foods (local examples) + Staples (porridge, other local examples) + Legumes (local examples) + Fruits/Vegetables (local examples).
- Share Handout 7a: Different types of local foods. Ask each group to share the benefit of one food from their bowl, and other groups add additional points.
- Ask: which foods will make the child healthy and strong?
- Share Handout 7b: Benefits of different types of local foods
- Fill-in gaps, summarize
### Handout 7a: Group of ingredients for complementary food preparation

<table>
<thead>
<tr>
<th>Cereals (staples)</th>
<th>![Cereals Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains such as maize, wheat, rice, millet and sorghum and roots and tubers such as cassava and potatoes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legumes</th>
<th>![Legumes Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>such as beans, lentils, peas, groundnuts and seeds such as sesame.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruits</th>
<th>![Fruits Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>such as mango, papaya, passion fruit, oranges, dark-green leaves, carrots, yellow sweet potato and pumpkin and other fruits.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>![Vegetables Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>such as banana, pineapple, avocado, watermelon, tomatoes, eggplant and cabbage.</td>
<td></td>
</tr>
<tr>
<td><strong>NOTE</strong>: include locally-used wild fruits and other plants.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Animal Source foods</th>
<th>![Animal Source Foods Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>including flesh foods such as meat, chicken, fish, liver and eggs and milk and milk products.</td>
<td></td>
</tr>
<tr>
<td><strong>Note</strong>: animal foods should be started at 6 months.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Oil and fat</th>
<th>![Oil and Fat Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>such as oil seeds, margarine, ghee and butter added to vegetables and other foods will improve the absorption of some vitamins and provide extra energy. Infants only need a very small amount (no more than half a teaspoon per day).</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Food Group</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Grains, root and tubers</td>
</tr>
<tr>
<td>2</td>
<td>Legumes and Nuts: Peas, beans, lentils and nuts (good sources of protein)</td>
</tr>
<tr>
<td>3</td>
<td>Milk other than breast milk, cheese or yogurt</td>
</tr>
<tr>
<td>4</td>
<td>Flesh foods (meat, fish, poultry and liver/organ meats)</td>
</tr>
<tr>
<td>5</td>
<td>Eggs</td>
</tr>
<tr>
<td>6</td>
<td>vitamin-A rich fruits and vegetables: Papayas, mangos, bananas, avocados, pumpkin, orange fleshe sweet potato and carrot.</td>
</tr>
<tr>
<td>7</td>
<td>Oils, fats and sugars</td>
</tr>
<tr>
<td>8</td>
<td>Other fruits and Vegetables:</td>
</tr>
</tbody>
</table>
SESSION 8: PROCESSING OF CEREALS AND LEGUMES BASED ON ROASTING

Introduction: There are different food processing methods that could be carried out before preparing foods for consumption. Household strategies such as germination, roasting, soaking and fermentation can enhance nutrient quality of complementary foods, thereby helping to better utilize the available nutrients in foods.

Objectives:
At the end of the lesson, participants will be able to:

❤ Clean cereals and legumes properly before roasting
❤ Roast cleaned cereals and legumes properly before de-hulling them
❤ De-hull roasted cereals and legumes before milling them
❤ Pack flours in plastics properly using polyethylene bag sellers

Time: ☇ 1 hour

Materials: Roasting Pan, Tray (traditional sefed), Mortar and pestle (Traditional mukecha), polyethylene bags, containers (for the rural setup)

Methodology:
Demonstration of cleaning, roasting, de-hulling, Mixing, milling and packing and distribution

Activities:
♦ Ask participants to share experiences about what they know or have heard with regards to household food processing strategies practiced in their community.
♦ Explain household food processing strategies (roasting, germination, fermentation, soaking).
♦ Explain how household food processing strategies can improve the quality of complementary foods.
♦ Measure 3 parts of cereals and 1 part legume (ex. 3 kg cereals and 1 kg legumes) as the decision of the trainer
♦ Keep 15 % of the cereal for next session (germination)
♦ Demonstrate how to do the cleaning, roasting, de-hulling and packing of cereals and legumes
♦ Roast cereals and legumes in different temperature and ask participants which one of the three is properly roasted
Show the flowchart of handout 8 and summarize

Handout 8: Processing procedures based on roasting

Figure 2: Flow chart of processing cereals and legumes based on roasting

**N.B: 15 % of the cleaned cereals should be kept for the next session of germination**

**Cleaning**
Maize, sorghum, wheat, teff, broad beans, field peas, chick peas, kidney beans

**Manual cleaning**
By spreading or sifting the grain on tray or sifted remove impurities manually. Sieve also through available sieve until the grain is clean. Wash the grain with hygienically clean water

**Roasting**
Maize, sorghum, wheat, broad beans, field peas, chick peas, kidney beans

**Roasting**
Roast using traditional roasting pan and wood fire roast cereals and legumes until it attains golden brown color and attractive aroma released except teff

**Dehulling**
Maize, sorghum, wheat, broad beans, field peas, chick peas, kidney peas

**Dehullling**
De-hull all cereal grain and legumes using traditional mortar and pestle or with grinding mill except tef. Remove the fiber manfully by sifting or winnowing

**Mixing**
Mix 3 parts of cereals and 1 part of legume

**Retain 15 % of germinated cereal (to be used in session 9-following session)**

**Milling**
Mixed cereals and legumes (roasted + germinated-from session 9) can be milled at the production centre or at a service mill

**Packing**
Pack the flour in polyethylene bags of 1, 2 or 5 kg at the production centre or in a suitable container at household level
SESSION 9: PROCESSING PROCEDURES BASED ON GERMINATION

Objectives: At the end of the lesson, the trainees will be able to:

- Describe germination as one food processing strategy to improve nutrient quality of foods

Time: 1 hour

Methodology: Demonstration

Materials:

- Cereal (15% from the previous session) and legume
- Cotton (abujede) 1 meter
- Clean Water
- Container

Activities:

- Ask volunteers to clean and wash the cereals and legumes
- Ask participants to soak and steep in an appropriate volume of water
- Explain to them this water will be drained after 24 hours and covered with a clean cloth and keep it for 36-48 hours until it germinate
- Show them what the product will be like after 48 hours of germination from product you already prepared before 4 days
- Mix proportionally the two products (product from the roasted session and product from the germination session) and mill them together
Handout 9: Processing based on germination

Cereals such as maize and sorghum can be germinated up to 36-48 hours and mixed with the rest of the formula before milling. The germination process that will be followed during the training is described in flow chart seen below (Figure 3).

Figure 3: Flow Chart of complementary foods production through germination

- Cleaning
  maize, sorghum, wheat

- Steeping/Soaking
  maize, sorghum, wheat

- Germination
  maize, sorghum, wheat

- Drying
  Germinated maize, sorghum, wheat

- Milling
  After proportional mix of germinated seed with the rest of the formula

- Cleaning
  Manual cleaning using sefed to remove impurities

- Steeping and Soaking
  Cleaned and washed cereals (15%) will be soaked in a volume of water 3 times the weight of seed for 24 hr

- Germination
  Drain soaking water and wash the grains
  Cover soaked seed with wet clean cloth and place in a basket for 36 hr at room temperature

- Drying and Milling

SESSION-10: KEY MESSAGES OF THE DAY: REVISITED

- The trainer summarize the key concepts of the day
DAY-2

RECAP

➢ The trainer ask participants to revise yesterdays activities and ask questions

SESSION-11: PREPARATION OF PORRIDGE

Objective: At the end of this session, participants will be able to:

♥ Prepare porridge with an appropriate mix

Time: Ø 40 minutes

Methodology: Demonstration

Materials

♠ Flour prepared from Day-1
♠ Stove and vessels, pans
♠ Clean water salt, sugar

Activity

• Demonstrate the preparation of thick porridge as described below:
  ➢ Measure 1 coffee cup of complementary mixture and put in a cooking pot
  ➢ Add 2 and a half coffee cup of water to the pot
  ➢ Add 1 soup spoon full of oil, Iodized salt and mix all together
  ➢ Cook the mixture for until it is well cooked and serve cool
SESSION 12: TEXTURE (THICKNESS/CONSISTENCY) OF COMPLEMENTARY FOODS

Introduction:
In this session, the importance of having appropriate texture (thickness/consistency) of complementary foods for different age groups of children, how to prepare the appropriate texture (thickness/consistency) and the key messages to be delivered to mothers or caregivers will be discussed.

Learning objectives:
At the end of this session, participants will be able to:

- Explain the appropriate texture (thickness/consistency) of complementary foods for different age groups.
- Review key message.

Time: 30 minutes

Methodology: Demonstration

Materials:
- Two plastic bowls
- 2 coffee cups of porridge made from local staple food (porridge must be thick enough to be fed by a spoon or with hand)
- Clean hot water to dilute porridge
- Two tablespoons
- Materials for cleaning and hand washing

Handout:
Handout 10: Texture (thickness/consistency) of complementary foods

Activities:
- Introduce the session.
- Explain to the participants that you are going to prepare a complementary food for an 8-month-old child.
- Divide the cooked porridge into two even portions. Put one portion of the porridge in one of the bowls and dilute it with one coffee cup of hot water.
- Ask: what do you see? “the porridge is thin and watery.”
Pass around the bowl with runny porridge to the participants and have them examine the consistency with a spoon.

Display the undiluted half of the porridge and tell the participants that this is the consistency of the porridge if the mother did not add extra water.

Pass around the bowl with thick porridge to the participants and have them examine the consistency with a spoon.

Ask: 1) Which porridge would you feed your 8-month old? Why? 2) Can an 8-month-old child eat all of the thin porridge at one time? 3) Will an 8-month-old child be able to eat the thick porridge? 4) Why do mothers add water to porridge?

Share hand out 12 and discuss
**Handout 10: Texture (thickness / consistency) of complementary foods**

To understand why the consistency or thickness of the porridge is important, explain to trainees that stomach of a young child is small using the figure below. At eight months of age the stomach can hold about 200 ml at one time. Thin foods and liquids fill it quickly.

- Families are usually afraid that thick foods are difficult for the baby to swallow and will choke the child or cause constipation. Thus extra liquid, mostly water, is added to complementary foods to make them easy for the child to eat.
- The consistency or thickness of foods is an important factor that determines whether complementary foods are nutrient dense or not.
- A porridge that is so thin that it can be fed from a feeding bottle or drunk from a cup, does not provide enough energy or nutrients a child needs to grow strong and healthy.
- Complementary foods should be thick enough to be fed by hand.
- Cooking porridges with less water makes them thicker and denser.
- For optimal child growth, thicken porridge given to a child as he or she grows older.
- At 6 months infants can eat pureed, mashed, and semi-solid foods. Beginning at 8 months they can also eat foods that they can hold in their hands, like a piece of fruit.
- And at 12 months, most children can eat family foods which are modified to meet their needs. Modification can be mashing or adding extra foods like mashed vegetables to the family foods.

| Age Range       | Description                                                                 |
|-----------------|                                                                            |
| 6 up to 9 months| Soft porridge, well mashed vegetable, meat, fruit                           |
| 9 up to 12 months| Soft thick porridge, mashed vegetables, finely chopped meat and fruit and foods the child can hold in his/ her hands |
| 12 up to 24 months| Family foods, chopped or mashed if necessary, enriched porridge             |

**Key Messages for mothers and fathers**

- The consistency of the porridge should be thick enough to be fed by hand or

  - Too thin
  - Just Right

- Cook porridges with less water to make them thicker and denser.

- Thicken porridge as the child grows older.

- Infants can eat pureed, mashed, and semi-solid foods from 6 months.

- Begin feeding foods the child can hold from 8 months.

- Modify family foods for children aged 12 months or older.
SESSION 13: FREQUENCY AND AMOUNT OF COMPLEMENTARY FOODS

Introduction:
In this session the recommended frequency and amount of complementary foods for children in different age groups and related key messages will be discussed.

Objectives:
At the end of this session, participants will be able to:

- Discuss the frequency of complementary foods for different age groups.
- Explain the amount of complementary foods for different age groups.
- Describe key messages pertaining to the amount and frequency of complementary foods.

Time: 30 minutes

Methodologies: Group discussion, Brainstorming

Materials:
- Flip charts and markers
- Illustration of size of baby's stomach (from handout 12)

Handouts:
Handout 11: Recommended complementary feeding practices

Activities
- Prepare flipchart with columns: Age, Variety, Texture (thickness/consistency), Frequency, and Amount, and Rows: 6 up to 9 months, 9 up to 12 months, and 12 up to 24 months.
- Ask participants to fill the flipchart content from their experience first and then fill in gaps
- Distribute Handout 13: Recommended complementary feeding and summarize
### Handout 11: Recommended complementary feeding frequency based on age

<table>
<thead>
<tr>
<th>Age</th>
<th>Texture</th>
<th>Frequency (per day)</th>
<th>Amount of food an average child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start complementary foods when baby reaches 6 months</td>
<td>Soft thick porridge</td>
<td>2 to 3 meals plus frequent breastfeeding</td>
<td>Start with 2 to 3 tablespoons Start with 'tastes' and gradually increase amount</td>
</tr>
<tr>
<td>From 6 to 9 months</td>
<td>Soft thick porridge</td>
<td>2 to 3 meals plus frequent breastfeeding</td>
<td>2 to 3 tablespoons per feed, increasing gradually to 2 full coffee cups</td>
</tr>
<tr>
<td>From 9 to 12 months</td>
<td>Soft thick porridge</td>
<td>3 to 4 meals plus breast feeding</td>
<td>2 full coffee cups</td>
</tr>
<tr>
<td>From 12 to 24 months</td>
<td>Soft thick porridge, if necessary enrich it</td>
<td>3 to 4 meals plus breast feeding</td>
<td>3 full coffee cups</td>
</tr>
</tbody>
</table>
Key Messages for Mothers and Fathers

- From 6 up to 9 months of age feed your baby soft thick porridge
- When available add a pinch of meat powder, beans or pea flour and minced kale to the soft porridge
- Feed the enriched thick soft porridge at least 2-3 times.

- From 9 up to 12 months of age, feed your child soft thick porridge enriched with dried meat powder, minced kale, pumpkin, etc at least 3-4 times a day along with 1-2 other solid foods (mekses) each day to ensure healthy growth.
- Continue breast feeding

- Start soft thick porridge when baby is exactly 6 months old (180 days).
- Start with "tastes"(2-3 table spoons) and gradually increase amount.
- Provide 2-3 meals plus frequent breast feeding

- When your child is 12 months of age, start to feed him or her family foods, chopped or mashed and if necessary, enriched porridge.
- Continue breast feeding

- From 12 up to 24 months of age, feed your child at least 3-4 times a day along with 1-2 other solid foods (mekses) each day to ensure healthy growth.

- As your baby grows older, feed more food at each meal in order to ensure that they are eating enough to maintain healthy growth.
SESSION-14: HYGIENE AND SAFETY OF COMPLEMENTARY FOOD PREPARATION

Introduction:
In this session, hygiene (cleanliness), the reasons why safe preparation and storage of complementary foods is needed, and the ways to keep complementary foods safe and clean will be discussed.

Objectives:
At the end of this session, participants will be able to:
- List good hygiene practices that help prevent illnesses.
- Describe safe preparation of complementary foods.
- Review key messages.

Time: ⌛ 30 minutes

Materials:
- Flip charts and markers
- Small cards

Handout
Handout 12: Hygiene and Safe preparation and storage of complementary foods

Methodologies: Brainstorming, Group discussion

Activities:
- Introduce the session.
- Ask participants to brainstorm good hygiene (cleanliness) practices and list on flipchart.
- Ask each group to write down on a separate card: a food preparation and/or storage practice in their community.
- Discuss and fill-in gaps.
- Share Handout 14
Handout 12: Hygiene and Safe preparation and storage of complementary foods

Hygiene (cleanliness)
- Feed your baby using a clean cup and spoon; never use a bottle as this is difficult to clean and may cause your baby to get diarrhoea.
- Wash your hands with soap and water before preparing food, before eating, and before feeding young children (see figure 1).
- Wash your child's hands with soap before he or she eats.
- Protect kitchen areas and food from insects, pests, and other animals.
- Wash your hands after going to the toilet
- Always cover the toilet opening after use

Safe preparation and storage of complementary foods
- After six months of age, as the intake of complementary foods increases the incidence of diarrheal diseases also increases.
- Contamination of complementary food along with children getting in contact with different things when they start crawling is known as a possible cause of diarrheal diseases in children 6 up to 12 months of age.
- Safe preparation and feeding of complementary foods are essential to reduce the risk of contamination and the illnesses.
- Some Ethiopian families use bottles with teats to feed liquid foods such as animal milk, gruel, tea with sugar, etc. The use of bottles is a harmful practice in increasing the risk of diarrheal diseases and should not be practiced at all.
- Thus, complementary foods need to be prepared in very small amounts to be served soon.

Keeping complementary foods safe and clean
The main points to remember for clean and safe preparation of foods are:

Clean hands
- Clean utensils
- Separate raw and cooked
- Safe water and food
- Safe storage
- Cook thoroughly
- Keep food at safe temperature

Safe Storage
- Store foods in covered containers (see figure 2)
- Don't store for a long period of time
- Cook small amounts to avoid long periods of storage and spoilage
Key Messages for mothers and fathers

😊 Feed your baby using a clean cup and spoon. Never use a bottle as this may cause your baby to get diarrhea.

😊 Wash your hands with soap and water before preparing food, before eating, and before feeding young children, to avoid diarrhea.

😊 Use safe water that comes from pipe, protected springs, or protected wells, or treat water by boiling or adding water guard to make drinking water safe.
SESSION 15: ACTIVE / RESPONSIVE FEEDING

Introduction:
In this session, how a child is fed in the participants' community and ways to encourage a child to eat and finish the recommended amount of food will be discussed.

Objectives:
At the end of this session, participants will be able:

- Explain ways to encourage young children to eat.

Time: 30 minutes

Materials: Flip charts and markers

Handout:
Handout 13: Active/responsive feeding

Methodology: Brainstorming, Interactive presentation

Activities:
- Introduce the session.
- On a flipchart draw 2 columns. Ask participants to share how a child is fed in their communities and record responses in 1st column.
- Ask participants to state how they think a child should be fed and record responses in 2nd column.
- Compare the 2 responses.
- Fill-in the gaps about active/responsive feeding.
- Review together Handout 15: Active/responsive feeding
Handout 13: Active/responsive feeding

Optimal complementary feeding depends not only on what is fed, but also on how, when, where, and by whom the child is fed. In active/responsive feeding, mothers and caregivers should encourage children to eat to increase dietary intake.

To practice active/responsive feeding:

- Mother or caregivers should feed infants and assist older children when they feed themselves, being sensitive to their hunger and fullness signs.
- Feed slowly and patiently, and encourage children to eat, but do not force them.
- If children refuse many foods, try out different food combinations, tastes, textures, and methods of encouragement.
- Minimize distractions during meals if the child loses interest easily.
- Remember that feeding times are periods of learning and love - talk to children and play with them during feeding, with eye to eye contact.
- When the child is old enough, offer foods that the child can take and hold, as children often want to feed themselves. Encourage them too, but make sure most of the food goes into his/her mouth.
- If the child refuses to eat, wait and offer again.
- Congratulate the child when he/she eats.
- Parents, family members (older children), child caregivers can participate in active/responsive feeding.
SESSION 16: ENRICHING COMPLEMENTARY FOODS

Introduction: In this session, how to enrich complementary foods and key messages on improvement of complementary foods will be discussed.

Objective: At the end of this lesson, the participants will be able to:

- Explain how complementary foods can be enriched
- Review the key messages.

Time: ☐ 1 hr

Methodology: Brainstorming, interactive presentation, group discussion,

Materials: Flip chart, markers

Handout 14: Enriching complementary foods

Activities:
- In a plenary, ask participants: what can mothers/caregivers add to baby's porridge to enrich it?
- Record responses in a flipchart
- Stress the need to consider the seasonality and availability of fruits and vegetables when counselling mothers.
- Discuss the key points from the Handout 16: Enriching complementary foods
- Summarize the session.
Hand out 14: Enriching complementary foods

Cereal and legume based complementary foods can be enriched by:

- Replacing water used for preparing porridges with milk.
- Adding butter/oil which will enrich the porridge and will also makes the thick porridge softer, easier to eat.
- Mixing legumes such as pea, chick pea or broad beans flour with the staple flour before cooking in a proportion (1/3 legume flour to 2/3 cereal flour).
- Adding finely chopped meat / eggs.
- Adding finely chopped kale or carrots.
- Adding mashed avocado, banana, or papaya
- Using iodized salt when preparing complementary foods.

Note: All of the above actions will improve the nutrient quality of complementary foods.

- Animal foods should be eaten as often as possible.
- Adding even small amounts of an animal food to the meal when available adds nutrients and is good for the child. Organ meats such as liver, heart, and kidney are often less expensive and have more iron than other meats.

Preparation of animal foods

- Animal foods such as flesh and organ meat can be mashed or chopped into small pieces to make them easy for the child to eat.

Fruits and vegetables

- Encourage families to feed orange and colored fruits and vegetables and dark green leafy vegetables and as often as possible when these foods are available, ideally every day.
- Availability of vegetables and fruits can be improved by.
  - Home gardens and planting fast growing vegetables such as kale, carrots, and tomato if a small plot of land near the home is available.
  - If families can afford to do so and if they are available, fruits and vegetables can be purchased from the local markets.
SESSION-17: MAKING COMMUNITY DECISIONS NEEDED FOR MONITORING AND SUSTAINABILITY

Objective: At the end of this session, trainees will be able to:

- Explain how they will raise the issue of improving complementary feeding in their community
- List ways of making this activity sustainable at community level
- Give their commitment by soul swearing in front of each other

Time: ⌚ 30 minutes

Methodology: Discussion

Materials: Flip Charts and markers

Activity

- Request the participants to mention their commitment in front of the audience they will continue to practice appropriate feeding

SESSION-18: KEY MESSAGES OF THE DAY: REVISITED

➢ The trainers summarize the key concepts and messages of the day

Time: ⌚ 30 minutes

SESSION-19: CONCLUSION AND WRAP-UP

➢ Closing remark from official person from the Woreda or Kebele

Time: ⌚ 30 minutes