Healthy Harvest

A training manual for community workers in growing, preparing and processing nutritious food

2nd Edition

Food & Nutrition Council
Every Zimbabwean Free from Hunger & Malnutrition

PRIMARY HEALTH CARE
A HEALTHY NATION
MINISTRY OF HEALTH AND CHILD CARE
ZIMBABWE

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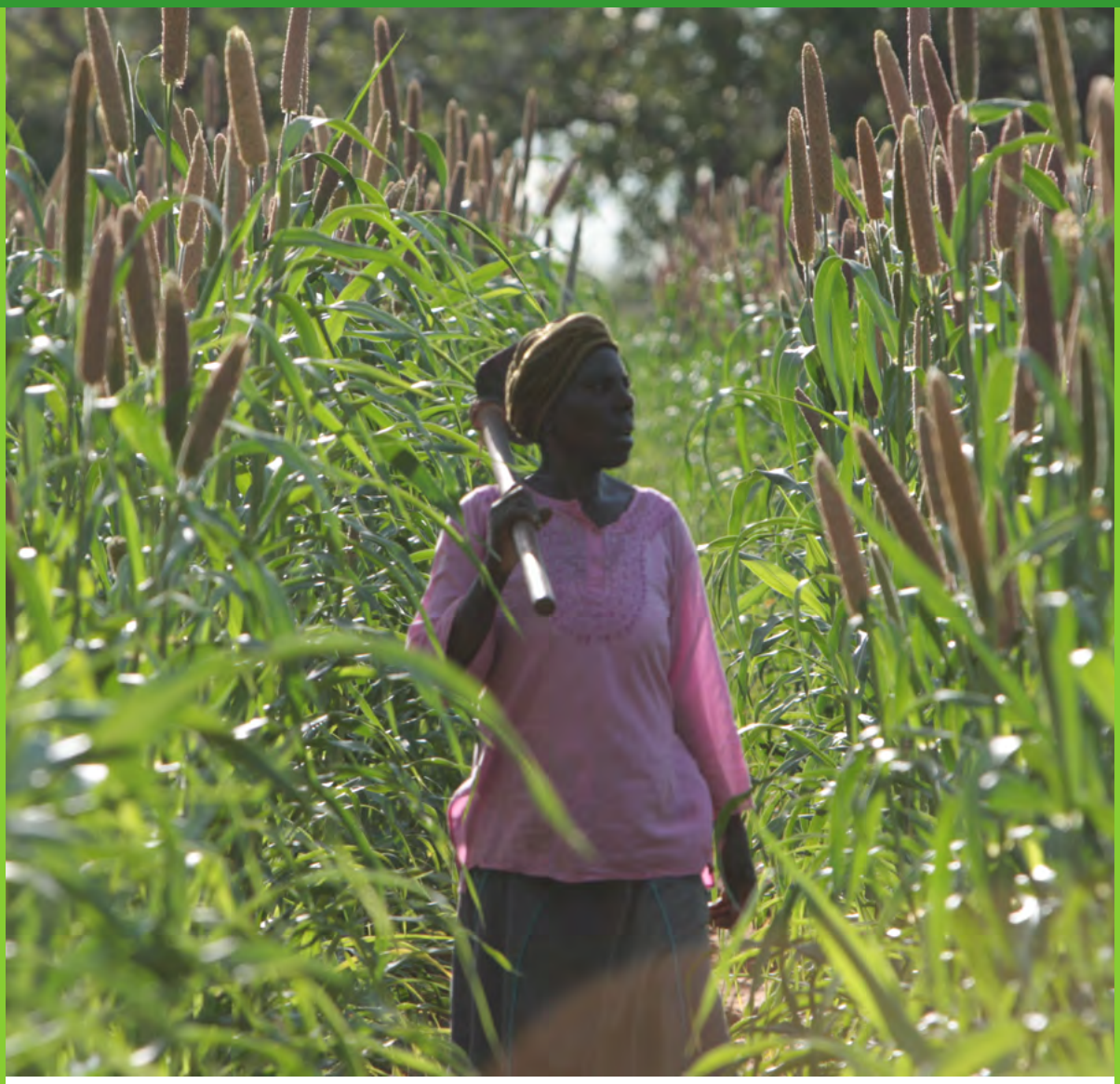

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Second Edition

A training manual for community workers in growing, preparing and processing nutritious food.

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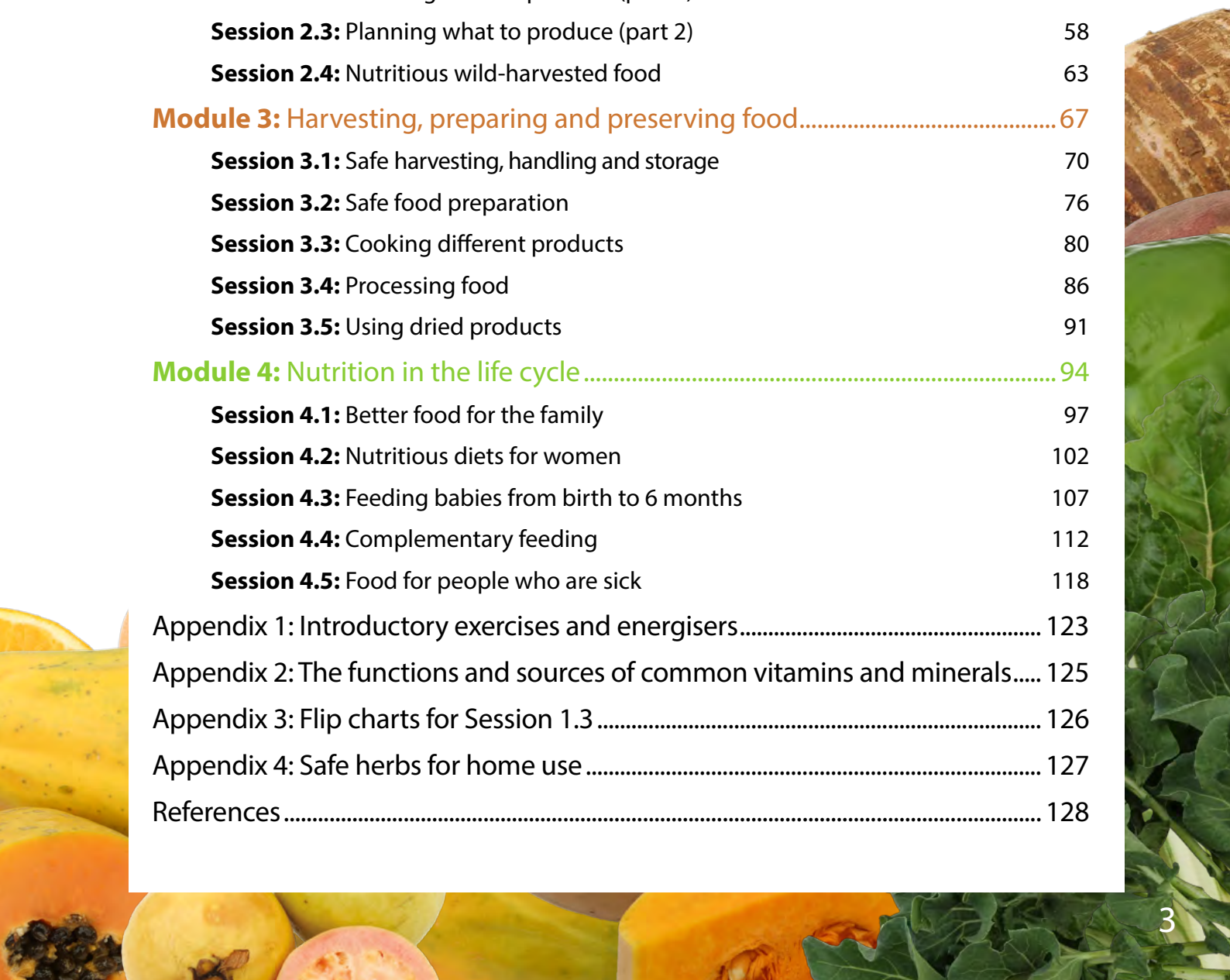
Contents



Acronyms

ADRA	Adventist Development and Relief Agency
AGRITEX	Department of Agriculture, Technical and Extension Services (AGRITEX) in the Ministry of Agriculture, Mechanisation and Irrigation Development
AIDS	Acquired Immune Deficiency Syndrome
ARVs	Anti-retroviral (medicine)
CADS	Cluster Agriculture Development Services
DFID	Department for International Development (United Kingdom)
EU	European Union
FAO	Food and Agriculture Organisation (of the United Nations)
FAO	Food and Agriculture Organisation
FNC	Food and Nutrition Council
g	gramme
GAP	Good Agricultural Practices
HIV	human immunodeficiency virus
IYCF	Infant and Young Child Feeding
KAP	knowledge, attitudes and practice
kg	kilogramme
LEARN	Leveraging Essential Nutrition Actions to Reduce Malnutrition
mm	millimetre
MOHCW	Ministry of Health and Child Welfare
MSG	monosodium glutamate
NR	Natural Region
OCHA	Office of Coordination of Humanitarian Affairs (UN)
PRP	Protracted Relief Programme
SAfAIDS	Southern Africa HIV/AIDS Information Dissemination Service
TB	tuberculosis
UNICEF	UN Children's Fund
UNICEF	United Nations Children's Fund
URC/CHS	University Research Center/Center for Human Services
ZCATF	Zimbabwe Conservation Agriculture Task Force
ZDHS	Zimbabwe Demographic and Health Survey
ZimASSET	Zimbabwe Agenda for Sustainable Socio-Economic Transformation
ZIMSTAT	Zimbabwe National Statistics Agency

Foreword

According the Committee on World Food Security in 2012, food and nutrition security exists when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate water and sanitation, health services and care, allowing for healthy and active life. In Zimbabwe, this is a major priority for the government and cabinet as evidenced by its inclusion in the *Zimbabwe Agenda for Sustainable Socio-Economic Transformation* (ZimASSET) as the first cluster. Food and nutrition security programming in Zimbabwe is guided by the *Food and Nutrition Security Policy*, which provides an overarching framework allowing for close collaboration across many sectors. While this is beneficial and ideal for addressing malnutrition which has multiple causes cutting across sectors, it calls for harmonisation of messages that are passed through the various platforms.

In 2006, the Food and Agriculture Organization of the United Nations (FAO), in close collaboration with the Food and Nutrition Council (FNC), the Nutrition Unit in the Ministry of Health and Child Care and AGRITEX in the Ministry of Agriculture, Mechanisation and Irrigation Development, developed the *Healthy Harvest* training manual as a tool for training community-based extension workers in good nutrition, the growing, preparing and processing of nutritious food. The manual has been used, since its publication, to train hundreds of government and NGO extension workers.

When the first edition was in use, it was noted that there was need to update the manual in line with current trends and developments in the food and nutrition security sector. A participatory evaluation was conducted in late 2011 to assess the impact of the manual, and to identify areas that needed strengthening. It is against this background that the FNC in collaboration with its partners began a process to revise and update the *Healthy Harvest* manual. Key stakeholders were engaged individually to ensure that their input and concerns were well addressed. A writers' workshop was held in which each module was reviewed critically. This second edition represents the outcome of the consultative process to produce an up-to-date, relevant manual that can be used to strengthen intersectoral collaboration for improved household food and nutrition security.

As with the first edition, the FNC is pleased to have been a part of the development of the second edition of the *Healthy Harvest* training manual as it is in line with our mandate of facilitating and promoting a cohesive multisectoral response to food and nutrition insecurity. We have no doubt that this manual will help promote good nutrition practices within Zimbabwean communities.

George Kembo

Director, Food and Nutrition Council

Why nutrition is important

Good nutrition is the foundation of good health. Good health leads to successful and productive families, communities and societies. Well-nourished children grow and develop properly, get less sick, less often, achieve more at school, earn more as adults and live longer. They have children who grow and develop properly.

The first 1000 days

Globally, undernutrition is the main cause of death in children under the age of five. From conception to two years (the first 1000 days of a person's life) is the most important time for good nutrition. Undernutrition at this time can lead to problems which cannot be reversed. Under-nourished children suffer from more diseases and are not able to perform well at school. They become less productive adults and have fewer employment opportunities meaning that they usually earn less money. Undernourished women tend to give birth to underweight babies which perpetuates the cycle of poor nutrition in a community. Thus undernutrition can cause economic loss not just to individuals but to households and whole communities.

Healthy mothers produce healthy babies, hence it is important that women have a healthy diet throughout their childbearing years, including before they get pregnant, as the first few weeks of pregnancy are critical for healthy baby development. In addition, mothers need to be healthy during pregnancy and breastfeeding to ensure that their infants are as healthy as possible.

Integrating nutrition into other projects

Healthy Harvest contributes to a global movement which acknowledges that nutrition plays a key role in development and promotes nutrition-sensitive programmes. Such interventions address the underlying causes of malnutrition which include food insecurity, inadequate caregiving practices, poor access to health services, and lack of a safe and hygienic environment.

Development agencies can integrate nutrition into a wide range of development programmes including those related to agriculture and food security; livelihoods; early child development; maternal health; women's empowerment; child protection; education; water, sanitation and hygiene; social safety nets; and health and family planning services.

Ways to integrate nutrition

Here are some examples of ways in which development programmes can integrate nutrition:

- Target households with pregnant women, breastfeeding women and children under two years, since they are the most nutritionally vulnerable.
- Increase the range, production and consumption of nutritious varieties of local foods by establishing home and school gardens.
- Incorporate basic nutrition and health and hygiene education, including cooking demonstrations.
- Encourage consumption of a wide range of nutritious foods which are produced or collected from forests and other natural areas.
- Improve market access to nutritious foods for which smallholders may have a comparative advantage.
- Improve food processing, preservation and storage to allow for access to nutritious foods year-round.
- Manage natural resources to improve agricultural productivity through soil, water and biodiversity conservation, making a wider range of diverse foods available to communities.
- Support agricultural activities performed by women to allow time for childcare.

- Introduce biofortified crops into agricultural research and technology dissemination programmes.
- Promote consumption of animal products through livestock interventions.
- Implement safety nets and social protection mechanisms that support and protect nutrition outcomes (such as using fresh food vouchers, cash transfers conditional on the use of health/nutrition services, and taking into account the cost of a nutritious diet when determining the amount of cash transfers).

Avoiding negative nutrition consequences

Sometimes development and agriculture projects may have unintended consequences which negatively impact on people's health, nutrition and the environment. Here are some guidelines to help reduce these negative consequences:

- Avoid increasing women's workload. Encourage less labour-intense activities for pregnant and breastfeeding women.
- Ensure that the timing of project does not compete with other important seasonal activities. Ensure that farmers know the risks of using certain agricultural chemicals and train them in ways to reduce the risks or use alternative methods.
- Provide basic hygiene training to livestock keepers to avoid the spread of diseases from animals to humans.
- Provide training in nutrition, especially regarding infant and young child feeding, to ensure livestock products such as animal milk do not replace breastmilk for babies under two years.
- Avoid promoting unhealthy food. Always provide healthy snacks and drinks at meetings and trainings in the community, such fruit, sweet potatoes, roasted maize, *mahewu* and clean water.

How to conduct Healthy Harvest trainings

How to use this book

The manual provides community workers with an effective training tool to communicate key nutrition messages at community level.

Healthy Harvest aims to bring the agriculture, health and nutrition sectors together to help solve nutrition challenges related to the production, harvesting, processing, purchasing, preparation and consumption of food.

The manual has been developed for community workers who want to carry out simple training programmes, awareness-raising or outreach activities in urban or rural communities. It does not aim to make trainers or trainees into nutrition or agriculture experts, but rather to give them simple, clear information in order to help improve knowledge, attitudes and practices. The manual is designed to for ensuring improve household food and nutrition security.

The book consists of four training modules which cover the principles of nutrition, food production, food processing and preservation, and preparing nutritious meals for adults and children.

Each module starts with key definitions, stated objectives and a summary. There is also a note to remind facilitators of important training tips when conducting sessions.

The modules are divided into training sessions. Each session has background information ("facilitator's notes") which must be read by the facilitator before s/he carries out the session. Each session begins with a discussion followed by an activity which aims to reinforce the ideas presented using participatory methods such as practical exercises, demonstrations and role-play. A list of materials needed and recommended time allowed for each activity and session is included. The training sessions are supported with Visual Aids. Each session ends with a "Wrap up" exercise, to review, reflect on and wrap up key learnings from the session.

The modules, sessions and activities can be used to design different types of training programmes, awareness raising and discussion sessions. Module 1 must be covered first while the other modules can be adapted by the facilitator according to the needs of the community, the resources and time available.

Module 1 describes the basic principles of nutrition: how our bodies use food, what kinds of food our bodies need in order to function properly and what happens when we don't get enough of the right kinds of food.

Module 2 discusses why we need to produce nutritious food in fields, gardens and using livestock as well as gathering naturally occurring food. The focus is on maximising diversity in the diet using minimum inputs and sustainable resource management techniques.

Module 3 describes effective and hygienic ways to harvest, store, prepare, preserve and process food. Participants discuss how families in different communities and situations can prepare nutritious meals that do not take too much time or money to prepare.

Module 4 gives participants opportunities to analyse the nutritional needs of family members of different ages as well as people who are sick, and plan suitable menus for the family based on affordable, locally-available ingredients.

Training in the community

Training in the community can take many forms. It could involve a short talk at a local school, a cooking demonstration in someone's garden, a tour at an irrigation project, a community awareness day at a rural clinic or a five-day training programme at a youth training centre.

A *Healthy Harvest* training programme must be based on topics which participants identify as being useful and relevant. During planning, trainers should visit potential participants to find out what information they need and which skills they want to acquire from nutrition training. During the visit you can also determine educational and literacy levels of the participants so you can design your training programme accordingly.

Planning the sessions

Using the suggestions in this manual you can plan which sessions you are going to include in your training programme. Most sessions should begin with a short (20 minute) introductory discussion. Rather than lecturing participants it is more effective to use a questioning approach to find out what participants know about a topic and then add information to ensure that they have a complete knowledge of the topic. The introduction should be followed by a practical activity, such as a group exercise, discussion or demonstration so that the theory is reinforced through real experience and to enable skills and confidence building. You can use the sessions presented in the manual or develop your own based on the background information.

Practical exercises and demonstrations

Demonstrations are an effective way to get information across to a large group. Before the session, make sure that you have all of the materials which you will require. If you are demonstrating a new technique, practice the technique ahead of the training to make sure that the demonstration runs smoothly when it is time to show the participants.

Using drama

Nutrition issues can be effectively expressed through a short play, a poem or a song. You should help groups to plan their performance by giving them a clear situation or topic to discuss.

Role play is a type of drama in which participants are given different roles to act out in a story. This helps participants to see other people's points of view and helps them to think about different situations. It is best to think of examples of the role play characters and situations before the training. Examples of role plays:

- An HIV positive person is losing weight because they have no appetite so they are helped by a family member to eat.
- A mother-in-law is discussing the care and feeding of her infant grandchild, recommending that the baby eats different foods before aged six months. The mother respectfully refuses and explains that the reason her other child is so healthy is because s/he was breastfeed exclusively for the first six months.
- An extension officer suggests ways for a family to process crops to improve nutrition during the lean season.

Starting a support group

Giving people knowledge is not enough to help people to change their attitudes and practices. In order to ensure that effective knowledge, attitudes and practices continue to be reinforced within the community after training, it is important to encourage community members to establish *Healthy Harvest* support groups.

A *Healthy Harvest* support group should be a safe environment of respect, trust, honesty and empathy. The group should allow participants to:

- share experiences and information and mutually support each other;
- strengthen or modify health-seeking attitudes and practices; and
- learn from each other.

The group helps members to reflect on their experience, doubts, difficulties, popular beliefs, myths, information, and infant feeding practices. In this safe environment, group participants develop the knowledge and confidence to be able to strengthen or modify their nutrition related practices.

Support groups are not lectures or classes. All participants play an active role. Groups need to choose a facilitator who can guide the discussion, but who will also be able to encourage talking among the participants.

Characteristics of a support group

- The group size should be no less than three and no more than 12.
- The group has an experienced facilitator such as a Village Health Worker or community mobiliser.
- The group is open to all interested people to attend, particularly: pregnant women, breastfeeding mothers, women with older children, fathers, farmers and caregivers.
- The facilitator and the participants decide the length of the meeting and frequency of the meetings (number per month).
- Confidentiality is a key principle of a support group, i.e., "what is said in the group stays in the group".
- Each meeting has a theme which group members agree upon.
- Participants sit in a circle. The sitting arrangement allows all participants to have eye-to-eye contact.

Measuring the impacts of training

The *Healthy Harvest* training aims to build capacity for community workers to communicate nutrition messages that will contribute to behaviour change and improvement in practices that enhance nutrition.

One way of measuring the effectiveness of this training is to assess the knowledge, attitudes and practices of communities with respect to food production, processing, purchasing, consumption and infant and young child feeding before and after the training. You can design tailor-made Knowledge, Attitudes and Practices (KAP) surveys to monitor the impact of the trainings.

Knowledge refers to individuals understanding of information and facts. For example:

- understanding the benefits of breastfeeding;
- knowledge of nutritious drought-resistant crops which can be planted; and
- understanding why to feed young children with thick porridge rather than watery porridge.

Attitudes refer to emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behaviour or practice of an individual. For example:

- belief in benefits of dietary diversity;
- readiness to wash one's hands before eating; and
- readiness to retain and dry vegetables for use during the dry season.

Practices refer to the observable actions of an individual that could affect his/her or others nutrition, such as eating, feeding, washing hands, cooking and selecting foods. For example:

- meal frequency among young children;
- eating a variety of nutritious foods (dietary diversity);
- consuming soft drinks;
- preparing meals hygienically; and
- the existence of hand-washing facilities close to a latrine and evidence of it being used.

KAP surveys can be used to find out what the needs of a community are by identifying knowledge gaps, negative attitudes and inadequate practices. They can be conducted as part of a baseline survey when implementation of a project has begun. KAP surveys can become part of regular monitoring and evaluation of a project in order to determine whether the outcomes of the project have succeeded in influencing KAP.

Module 1: The principles of nutrition

1

Objectives

By the end of this training module participants should be able to train others and pass on nutrition messages about:

* why our bodies need food and the various nutrients which food provides;
* the combinations and proportions of food for a balanced diet;
* the different nutritional needs of different family members and age groups;
* different types of malnutrition and their symptoms; and
* the main causes of malnutrition and some ways to address them.

Module overview

Session / Activity	Time (minutes)	Training aids required	Page
Session 1.1: Food groups and nutrients **Discussion:** Nutrients and the food groups **Activity:** The food group game **Wrap up**	75	**Visual Aid 1**, samples of food, small pieces of paper, a basket	14
Session 1.2: How much should we eat? **Discussion:** How much to eat **Activity:** Discussing junk food alternatives **Wrap up**	60	Flip chart, marker pens, several plates, 1kg maize flour, 1kg dried beans and 1kg chopped or cooked green vegetables, a teaspoon and a tablespoon, salt, sugar, a 500ml bottle of cooking oil. **Visual Aid 2**: a poorly balanced meal and a balanced meal; some tablespoons and teaspoons	20
Session 1.3: Buying nutritious food **Discussion:** Buying healthy food **Activity:** Shopping role play **Wrap up**	90	Flip chart, marker pens (at least three different colours), flip chart prepared before the session with **Table 4**, six prepared flip charts and some fake money for the shopping role play	27
Session 1.4: Malnutrition in the family **Discussion:** Signs of malnutrition **Activity:** Malnutrition drama **Wrap up**	100	Flip chart, marker pens, **Visual Aids 3, 4, 5 and 6** Four malnutrition drama ideas written on separate sheets of paper	32
Session 1.5: Malnutrition in the community **Discussion:** The causes of malnutrition in the community **Activity:** Malnutrition problem tree **Wrap up**	90	Flip chart, marker pens	39

Key definitions

Nutrition - the area of knowledge and practice concerned with "how food is produced, processed, handled, sold, prepared, shared, and eaten and what happens to food in the body - how it is digested, absorbed, and used." (King and Burgess, 1998).

Nutritious food - food which contains many nutrients and is thus good for our health. The term can refer to one food item such as a fruit or a combination of a number of foods such as *mutakura* (maize, groundnuts and cowpeas cooked together).

Nutrients - substances in food which the body uses for growing and functioning.

A **food group** - a collection of foods that contain high proportions of similar nutrients.

D**iet -** includes all of the food and drink which you consume including meals and snacks.

A healthy diet should be **balanced** (containing the right amounts of nutritious food in the right proportions), and **varied** (with different food eaten at each meal each day).

Meal - portions of food which you eat at one time to satisfy hunger.

Malnutrition can be due to:

- a person not getting enough nutrients for growth and maintenance of the body from their diet (undernutrition);
- illness causing the body to become unable to fully use the food which is eaten (undernutrition); or
- a person consuming too much food giving him/her more energy than needed by the body (overnutrition) (UNICEF, 2012).

Training tips for best practice

- This module gives the basic principles of nutrition and should be covered before any of the other modules in the manual.
- You can cover the sessions together or separately depending on the amount of time which you have.
- The sessions and activities are intended as a guide and you should adapt them to the needs and literacy level of the participants in the community where you are training.
- Use drawings in place of written flip charts when working with communities of low literacy levels.
- Always read the background sections before conducting the session.
- If the participants do not know each other well use introductory exercises before the session (see Appendix 1 for examples).
- Use energisers if the participants seem tired during a long session (see Appendix 1 for examples).
- Try to avoid talking too much. Keep the sessions fun and as active as possible.
- Make sure that you correct any opinions or information given by the participants which are incorrect.
- At the end of the session reflect on what has been learned and review the key messages.

1.1 SESSION 1.1: FOOD GROUPS AND NUTRIENTS

Start here

1 Please read pages 14 to 16

2 do the discussion and

3 do the activity.

Aim

To help participants know and be able to communicate the role of nutrients and identify the types of food which belong in each food group.

Facilitator's notes

Food is necessary for our body to function properly and for us to have good health. The taste of food gives us pleasure and makes us feel happy and contented. Eating brings families and friends together. Thus food is good for our body, our mind and our community.

There are many different nutrients and each has different functions in the body. Food contains different nutrients in different amounts. These are summarised in Table 1.

continued...

The Food Groups

Nutritionists have divided food into groups in order to make it easy to plan healthy meals (Table 2 and Figure 1).

A balanced diet

Your **diet** consists of everything you eat and drink, including meals, snacks and drinks. A **balanced diet** contains the right proportions of food from the different food groups. Not every meal must be balanced; generally the diet should be balanced over the course of a few days. Parents and caregivers should ensure as much variety as possible in the family diet.

We can use the food groups to make nutritious meals. When planning a meal begin by choosing from the staple (starchy) food group (such as *sadza*, rice, bread or potatoes) as the basis of the meal. Next choose from the animal product group (such as meat stew, grilled fish, or boiled eggs). If animal products are not available then you could substitute with food from the legume group (such as bean stew or mixed beans or *mitakura*). Food is usually cooked with fat or oil. Here are some examples of some balanced meals:

- Porridge with peanut butter and sour milk
- Brown bread with butter or margarine and a boiled egg
- Chicken stew, millet *sadza* (*zviyo*) and vegetable relish
- Bean stew cooked with vegetables (such as onion, tomato)
- Brown rice with peanut butter and cooked *choumolier*

Variety in the diet

Food contains a mixture of nutrients. For example peanut butter contains oil, vitamins and minerals and protein. Our bodies need many different nutrients in different quantities. The best way to get all of the nutrients which we need each day is to make sure that we have a **varied** diet.

A **varied diet** has foods from as many different food sources as possible from the various food groups each day. Studies have shown that on average the Zimbabwean diet consists of the same kinds of food being eaten every day. This could be one of the reasons why stunting rates have remained high and unchanged during the last thirty years.

Table 1 Nutrients and other important substances which we need in different amounts

Nutrient	Why we need it
Proteins	help to build body tissues, fluids and the immune system.
Carbohydrates (starches and sugars)	provide energy for the body to function, move and keep warm. Starch and sugar that is not used as energy is often stored as body fat.
Fats	provide concentrated sources of energy and substances needed for health and growth. They also help with the absorption of some vitamins such as Vitamin A.
Vitamins and minerals	help the body to function properly and protect us from diseases.
Vitamin A	helps prevent infection and keeps the immune system working properly, keeps skin, eyes and the gut and lungs healthy. Helps with night time vision.
B-group vitamins	help the body use other nutrients and the nervous system.
Folate	needed to make blood and helps with normal development of the baby.
Vitamin C	helps absorption of iron, destroys some harmful substances in the body and helps wound healing.
Iron	needed to make blood and helps brain function.
Iodine	essential for brain and nervous system development.
Zinc	needed for growth, development, reproduction and the functioning of the immune system.
Fibre	helps the digestive process and keeps the gut healthy. It absorbs harmful chemicals, slows digestion and improves the absorption of nutrients from food. It helps to prevent obesity.
Water	makes fluids and allows chemical processes in the body to take place.

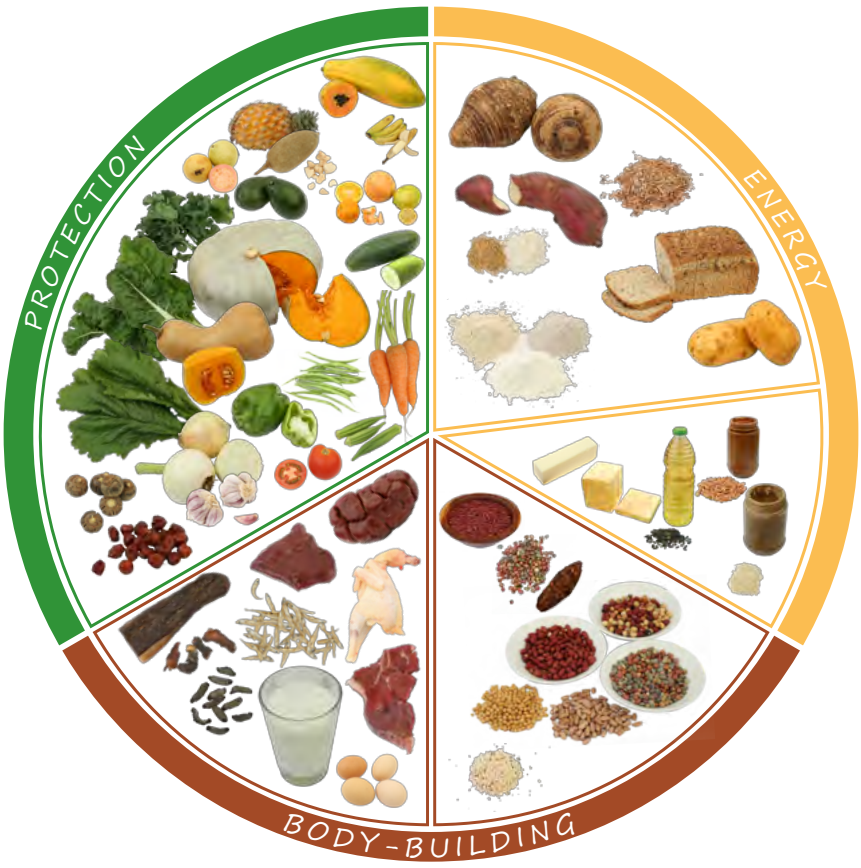
Adapted from: FAO, 2004

Table 2 The food groups and their nutritional benefits

Food groups	Examples of food in the group	Function and nutrients supplied
Staple (starchy) foods	**Grains**: maize, millet, sorghum, wheat, rice. **Roots and tubers**: sweet potatoes, yams, cassava, potatoes.	Good source of energy. This group also provides some protein, vitamins and minerals. Whole grain and unrefined staples are a good source of fibre.
Fats and oils	Vegetable oil, butter, margarine, animal fat, nuts and seeds (groundnuts, peanut butter, sunflower seeds, soybean, sesame, avocado).	Good source of energy.
Legumes	Cowpea, pigeon pea, sugar beans, lentils, kidney bean, bambara nut, groundnuts, peanut butter.	Good source of protein for building and repairing the body. This group also contains vitamins and minerals and fibre.
Animal products	Beef, goat, sheep, pork, chicken, duck, guinea fowl, insects (*madora*, *ishwa*) *kapenta*, bream. Milk and eggs.	Excellent source of protein for building and repairing the body. Also a good source of vitamins and minerals, fats and oils.
Vegetables and fruits	Wild-harvested fruit and vegetables, leafy vegetables, tomatoes, peppers, onions, carrots, pumpkins, exotic fruits.	Excellent sources of vitamins and minerals which help protect the body. Also a good source of fibre.

Adapted from: FAO, 2004

Figure 1 The food groups (Visual Aid 1)



Discussion: Nutrients and the food groups

Time: 30 minutes.

Materials: flip chart, marker pens, **Visual Aid 1**. Samples of food from the different food groups.

Steps

1. Start the session by explaining that you are going to talk about the function of food in the body and you are going to find out about a way of grouping food to make it easier to plan nutritious meals. Ask participants to explain what food is and why we need to eat.

Food

2. Write their responses on the flip chart and explain that: food contains nutrients which are important substances for the body. There are many different nutrients and each has different functions in the body. These nutrients provide:
   - **energy** and warmth;
   - **materials** for the body to grow and repair itself; and
   - **protection** from diseases.

   Food contains different nutrients in different amounts.

Food groups and nutrients

3. Ask participants if they can name any of the nutrients and say what their functions are. Use **Table 1** to help with the discussion.

   Note: You do not need to discuss the individual nutrients if the participants have not heard of them. Instead you could talk about energy-giving nutrients, protective nutrients and body-building nutrients.

The function of nutrients

4. Explain that in order to help us choose the most nutritious kinds of food to eat, we can divide food into different groups.
   - The staple group
   - The fats and oils group
   - The legumes group
   - The animal products group
   - The fruit and vegetables group

The food groups

5. Show the participants **Visual Aid 1** and discuss the different food groups and ask them to identify some of the foods in the different groups.

6. Hold up some samples of different foods and ask participants to say which food group they come from.

7. Ask which kinds of food shown on the picture are available in their community. Are they bought, grown or collected from the wild?

8. Explain that we can use the food groups to help us plan healthy balanced meals.

Balanced meals

9. Ask participants to discuss with the person next to them what a balanced meal is.

10. Give them five minutes to discuss, then ask volunteers to give their answers.

11. Discuss their answers and explain that a balanced meal contains nutritious food from the different food groups in the right quantities. Note that not every meal which we eat has to be balanced but it is important for people to have a balanced diet (with food eaten from the different food groups) over a few days.

12. Explain that in order to get all of the right nutrients, meals and snacks must be also be varied. It is not good to eat the same food each meal, each day. This is to ensure that we get the different nutrients we need to be healthy.

13. Ask participants to suggest ways in which they could vary different meals such as by including different staples (for examples brown rice or millet instead of maize *sadza*); different animal products; different legumes and different fruit and vegetables.

Variety in meals

playing the food group game

Activity: The food group game

Time: 45 minutes

Materials: flip chart paper and marker pens, tape, about 60 small pieces of paper (2 or more per participant) and a basket.

1. Give each participant two or more small pieces of blank paper and ask them to draw or write the name of a locally available ingredient which they often eat.
2. Explain that they should not write down foods that include many ingredients (e.g. beef stew) but they can write the ingredients of stew such as beef, onions and tomatoes on separate pieces of paper.
3. Collect all of the pieces of paper and mix them up together in a basket. Meanwhile write the names of the food groups on flip charts (one food group per flip chart).
4. Lay the flip chart on the floor or on three separate tables and ask each participant to take two small pieces of paper from the basket.
5. Ask participants to come up one by one and place their pieces of paper onto the food group flip chart to which they belong. Ask the rest of the group to say whether the papers have been correctly placed.
6. Now draw a circle on another flip chart to represent a plate. Explain that you want volunteers to come to the front of the room, chose ingredients from the food group flip charts to make a balanced meal, and place them on the plate.
7. You could ask participants to design different types of meals such as meals which would be suitable for the morning, evening or lunch.
8. Discuss how balanced and nutritious the different meals are. Talk about the importance of having variety in the diet – eating different types of food each day in order to get all the important nutrients which are needed.

Wrap up

1. Ask participants what they learned in the session and if they can recall the important messages given in the session. Make sure that they include the following:
   - The food we eat contains nutrients which help us grow, give us energy and protect us from diseases.
   - Food groups help us choose nutritious food and plan balanced meals.
   - For a nutritious diet we must have both balance and variety.
2. Discuss why it is useful to put food into different groups and how this helps people plan what food to buy or grow and how to make nutritious meals.
3. Ask them how they will use this information next time they plan a meal, shop for food or decide what to grow in their gardens.

1.2 SESSION 1.2: HOW MUCH SHOULD WE EAT?

Start here

1 Please read pages 20 to 24

2 do the discussion and

3 do the activity.

Aim

To enable participants to know how much food different people should eat and be able to recommend these amounts to others.

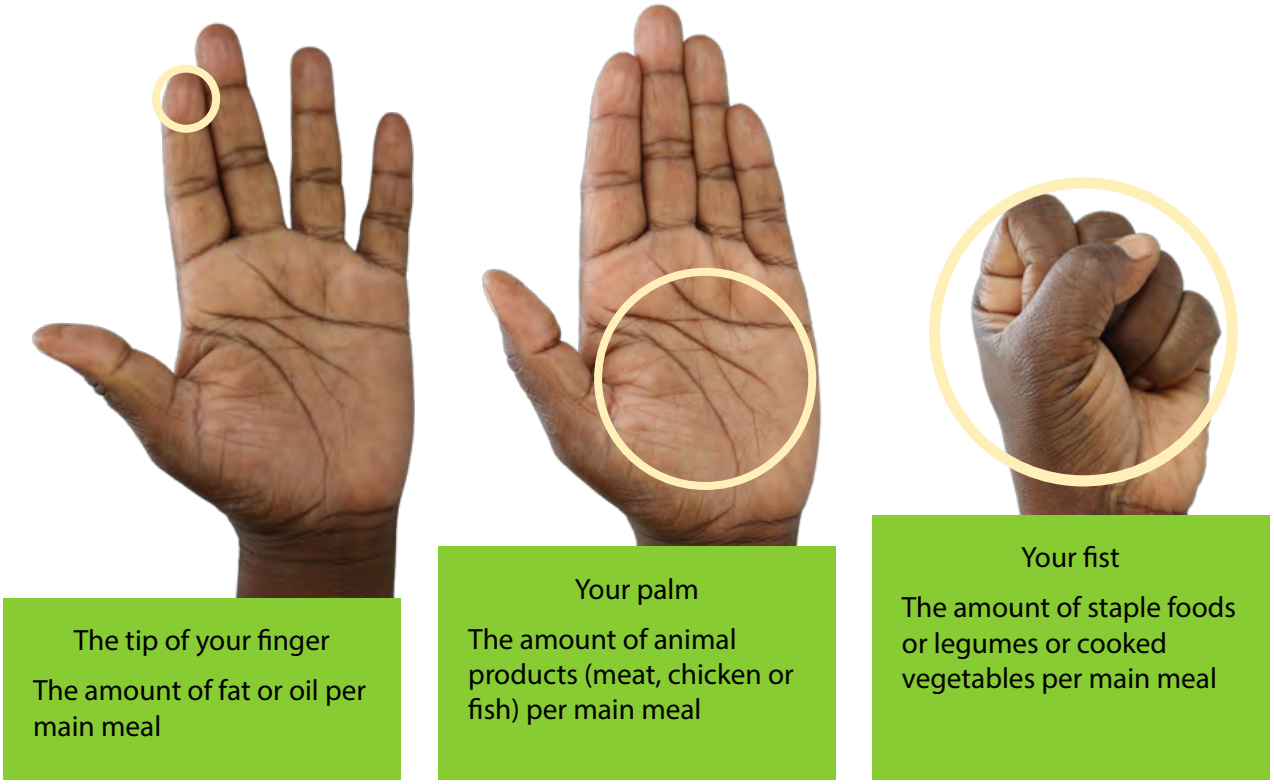
Facilitator's notes

In order to maintain good health we should try to eat food from all of the food groups regularly.

How much we should eat depends on how old we are, whether we are male or female, our health (such as whether we are pregnant, breastfeeding or sick) and how much physical exercise we get.

continued...

Figure 2 How much food we should eat in a meal



Adapted from: Department of Health (Republic of South Africa), 2013: National Nutrition Week powerpoint for professionals

Adults should eat three balanced meals per day

If an adult is a farmer, a road worker or does a lot of physical exercise, they need a lot more energy from staple food than someone who sits at a desk all day or works in an office. Generally men have higher energy needs than women and should eat slightly more energy-giving foods than women.

Children need plenty of energy and body-building food because they are growing and are physically active. They also need the protective nutrients from fruit and vegetables. Children need to eat more frequently than adults because they have small stomachs and they are growing rapidly. Children from the age of six months to five years should have three meals plus two nutritious snacks per day. Teenagers also need a lot of food because their bodies are growing quickly, however they should be discouraged from eating junk food.

Women need to eat healthy balanced meals to take care of their needs for growth, development, good health and repair of broken tissue. Women of child-bearing age need more iron than other people in the family. If a woman has a nutritious, balanced diet from the time her baby is conceived throughout her pregnancy and breastfeeding until the baby is aged two, her child is more likely to grow and develop properly and be healthy. If a woman is poorly nourished when she becomes pregnant or is lactating, she will get weaker as her body loses nutrients which go to protect the developing baby or her nursing infant.

The appropriate amounts and types of food for different family members are described in more detail in Module 4: Nutrition in the life cycle.

Proportions in a main meal

To help us make sure we get enough of the right kind of food for our age we can think of the proportions of the different food groups in a main meal and use the size of our hand to estimate the proportions.

Between one third to one half of a balanced meal should consist of staple foods (*sadza*, rice, potatoes, bread). If you are highly physically active (such as a farmer or a road labourer), half of your meal should be staple foods, if you are less active reduce this amount. A quarter of everyone's meals should be legumes or animal products (beans, meat, insects or eggs) and the rest should be vegetables. Use a small amount of oil in cooking.

Figure 3 A poorly balanced meal and a well-balanced meal (Visual Aid 2)

No body-building food. Too much staple. Not enough variety

A highly nutritious, balanced meal

We should eat more of these foods

Generally in Zimbabwe many people do not eat enough body-building food, fruit and vegetables or high fibre foods.

Body-building food

Protein helps to build and repair our body. Meat and other animal products contain the best quality protein as well as important vitamins and minerals (particularly highly absorbable iron). Ideally, food from the animal products group should be eaten at least every other day. It is recommended that adults should eat a handful of food from the animal products group in a main meal (such as lunch or dinner).

Legumes (beans, cowpeas, groundnuts) also contain protein and should be eaten regularly. Legumes and oilseeds also contain protein and a serving the size of your fist should be eaten in a main meal.

Chicken stew with vegetables

Fruits and vegetables

It is recommended that adults eat at least 1 cup (or the size of the fist) of cooked vegetables in each meal. Adults and children should aim to eat five different types of fruit and vegetable each day. These should include dark green leafy vegetables (rich in iron, calcium and B vitamins) and yellow/orange fruit and vegetables (rich in vitamin A). If we eat more fruit and vegetables we reduce our risk of getting diseases such as cancer, diabetes, obesity and heart disease.

Fibre

Most people, especially in urban areas, do not eat enough fibre. A diet which is high in fibre reduces the risk of many diseases including: heart disease, diabetes, some cancers and obesity. Fibre helps our digestive system to work properly and helps our body get rid of waste products. It also slows down digestion and release of nutrients in the blood, making us feel full for longer and thus reducing the risk of overeating. Lack of fibre in

Boiled cowpeas, rich in protein

the diet causes constipation and other health problems.

Most processed cereals which we buy such as refined maize meal, white rice and white bread are refined in order to make them taste and look better. During the refining process many of the nutrients and most of the fibre are lost. It is better for your health to eat unrefined staples such as brown rice, brown bread, brown flour, straight run or pounded maize. Fruit and vegetables also contain a lot of fibre – another good reason for eating more of them.

We should eat less of these foods

Most people tend to eat too much of the following types of food: staples, refined fats and oils, sugar, salt, and junk food.

Staples

Because staples are cheap, easy to grow and make you feel full, people tend to eat large amounts of them. The danger with this is that the body will not get enough body-building and protective nutrients from the other food groups. The excess energy from eating large amounts of staples can be stored as fat, leading to excess weight, obesity, heart disease, diabetes and some types of cancer. It is better to eat smaller amounts of unrefined staple foods and more food from the other food groups, especially if you do not lead an active lifestyle.

Refined fats and oils

Although fats and oils are an important part of the diet, they must be consumed in the correct quantities otherwise they can be harmful to health. In many rural communities fat intake is low and families, especially children, usually need to eat more fatty foods. However people are beginning to eat too much oil and fat in both rural and urban areas and this can lead to serious health problems including excess weight, obesity and heart disease.

Sugar

Sugar gives energy and improves the taste of food, but it is not necessary for good health. People who add sugar to their food or drinks or who eat sugary foods such as sweets, sugary snacks and fizzy sweet drinks, have a high chance of becoming overweight and developing diabetes and heart problems. Sugar also causes tooth decay. For good health it is important for everyone to reduce the amount of sugar which they eat (such as by having one less teaspoon of sugar in tea each week). Parents and teachers should discourage children from eating sugary foods and drinks, saving them for special occasions.

Salt

Eating too much salt can lead to high blood pressure, heart and kidney disease, poor vision and problems with brain function. Adults should eat no more than one teaspoon (5g) of salt per day and children should have even less. Most processed foods and snacks have added salt. Avoid using too much salt during cooking and always use iodised salt.

For good health we should try to reduce the amount of salt, sugar and oil which we eat

Junk food

Junk food is processed food and snacks bought in shops, restaurants and take-away outlets. It is often called fast food because it is quick to make, quick to eat and usually portable so that people can eat it while working or travelling. It contains a lot of fat, salt, sugar and chemicals such as preservatives, flavourings and colourings which can also be bad for our health. Fizzy, sugary drinks are particularly dangerous because they make you feel full even though they contain very few nutrients. Too much of this kind of food and drink can cause serious health problems.

Mabumbe, a nutritious traditional snack

Table 3 Junk food and nutritious snacks

Junk food	Nutritious snacks
Fried chicken	Fresh or dried fruit
Burgers	Boiled/ roasted sweet potatoes
Chips	Boiled/ roasted maize
Doughnuts	*Maputi*
Sweet buns	Roasted peanuts
Cakes	Boiled/roasted *mapudzi*, *madhumbe* and cassava
Sweets	Home-made chips with less oil and salt
Refined maize snacks (zapnacks)	*Mitakura*, *maputi*
Corn curls	Roasted pumpkin seeds,
Freezits	Termites and *madhora*/*amaximbi*
Sweet fizzy drinks/sodas	Home-made fruit juice
Processed meat such as polony and sausages	*Mahewu* and sour milk

children enjoying healthy snacks

Discussion: How much to eat

Time: 30 minutes.

Materials: flip chart, marker pens, **Visual Aid 2**, tablespoons and teaspoons.

Steps

1. Introduce the session and explain that you are going to talk about how much of the food from the different food groups should be eaten. You are also going to find out which food we should eat more of and which we should eat less of.

Eating the right amount of food

2. Ask participants to describe the kinds of food which they usually eat. Write them on the flip chart.
3. Draw a circle on the flip chart and explain that it represents a plate. Ask for volunteers to come and show how much of each food group (staples, legumes, meat and vegetables) they usually eat in a meal.
4. Discuss with the participants whether these are appropriate proportions for the person's age, sex and daily level of activity and whether some portions should be increased or decreased.
5. Discuss why children need different amounts of food from adults and why women of child-bearing age need a particularly good diet.
6. Show the participants **Visual Aid 2** of a poorly balanced meal and a well-balanced meal.

Healthy meal make-over

7. Ask participants to point out the differences between the two meals and to explain why the balanced meal is better for their health. Point out why it is not good to eat too much staple food and why it is better to eat more food from the other food groups.
8. Discuss the importance of eating food with more fibre, and ask participants for examples of such foods that are available in their community and that they can afford. List these high fibre foods on the flip chart.
9. Using your hand show the participants how much of the different food groups they should eat (refer to Figure 2).
10. Explain that this is a rough guide but it helps people see that they may be eating too much of certain food groups (such as staples and oil) and too little of others (such as animal products, legumes and vegetables and fruit).
11. Ask participants to estimate (using tablespoons) how much oil they use for cooking. Ask if they always cook with oil or whether peanut butter or margarine is sometimes used. Discuss whether it is healthy to use a lot of oil in cooking. Explain that it is better to use small amounts of oil because large amounts are bad for our health.
12. Ask about how much sugar and salt is eaten during the day in meals, snacks and drinks. Ask for volunteers to show how much salt or sugar they eat each day using teaspoons. Ask participants to suggest ways to reduce the amount of sugar which they consume.

Reducing oil, sugar and salt

13. Note that parents and teachers should discourage children from eating sugary foods and drinks every day. These should be kept for special occasions.

Activity: Discussing junk food alternatives

Time: 30 minutes.

Materials: flip chart, marker pens.

1. Ask participants to say what the term 'junk food' means and to give reasons why people eat junk/ fast food. Ask participants to give examples of junk food. Write them on the flip chart.
2. Divide the participants into small groups of not more than five. Give each group flip chart paper and a marker pen and ask them to list some nutritious snacks which could be eaten by adults and children instead of the junk food listed.
3. Give the groups 15 minutes to do the activity and 5 minutes per group to report back.
4. While the groups are reporting back, discuss whether the snacks which the different groups have presented are nutritious. Discuss whether there are any constraints to making nutritious snacks and why people don't eat them more often.

Wrap up

1. Ask participants what they have learned from the session. Make sure that they include:
   - We need to eat food from the different food groups in the correct proportions for our age, sex, time of life and level of activity.
   - It is particularly important the women of child-bearing age and children have a nutritious, balanced diet.
   - We should try to eat food containing animal products, legumes and fruit and vegetables regularly while moderating or reducing the amount of staples, sugar, salt and oil if they are excessive.
2. Discuss why it is important to know how much different people need to eat.
3. Ask them how they will use this information next time they plan a meal for their family or buy food.

1.3 SESSION 1.3: BUYING NUTRITIOUS FOOD

Start here

1 Please read pages 27 to 28

2 do the discussion and

3 do the activity.

Aim

To help participants understand the importance of making good choices when buying food.

Facilitator's notes

In urban areas people depend on buying food from shops and even in rural areas families spend a considerable amount of their income on food.

To save money many families cut down on meat, fruit and vegetables and bulk up on cheaper staples or junk food such as sausages, polony, street vended meats, corn puff snacks for children, sweetened drinks and breads. This practice can put the family's health at risk and lead to expensive medical bills in the future.

continued...

Urban diets and lifestyles

Urban diet choices and lifestyles can have negative health impacts. Compared to rural people, urban people tend to spend more money on junk food, consume more alcohol, are more likely to smoke and get less exercise. Urban eating habits as well as unhealthy lifestyles are leading to diseases that were uncommon in the past, such as cancers of the digestive system, diabetes, high blood pressure and heart disease.

Urban women tend to stop breastfeeding their babies at a younger age because they need to work and must leave their babies with other people. They also tend to feed babies and children less nutritious food than in rural areas because they are unaware of the low nutritional value of some processed foods. Urban women may get less advice from their mothers and other older women on how to care for their children.

Better choices

There are many factors, apart from cost, which should be considered when buying food in order to ensure that everyone in the family has a nutritious, balanced diet. Families should invest their income in nutrient-rich foods to supplement their home food production.

We will discuss more about food safety in Module 3.

When buying food:

- Choose food from the different food groups which contain many nutrients as well as fibre.
- Always buy fruit, vegetables and animal products which are fresh.
- Avoid vegetables or fruit which have had pesticides applied before harvesting and selling (within 1-2 weeks of application, depending on the chemical). When possible, try to choose organic food (which means no chemicals have been used in its production).
- Avoid meat, eggs or milk taken from animals which have recently been treated with medicines or vaccines. Ask the person selling the food if they know if this has happened.
- Only buy livestock products which have been kept cool and protected from flies.
- Do not buy dried legumes or grains which look as if they are damaged by insects or contaminated by mould.
- Avoid any food that is past its expiration date, damaged, dirty, old, mouldy, or smells bad.
- Avoid junk food, processed food or food containing many additives (such as flavourings, colouring, salt, sugar or monosodium glutamate - MSG).
- Avoid buying milk formula – it is better to breastfeed your baby.

Adapted from: FAO, 2004

Discussion: Buying healthy food

Time: 30 minutes

Materials: flip chart, marker pens (at least three different colours), flip chart prepared before the session with Table 4.

Steps

1. Introduce the session and explain that you are going to talk about ways to save money and make better choices about the kinds of food to buy.
2. Ask participants to think of the types of food and drink which they usually buy in the different food groups.
3. Call out the list in terms of the categories shown in Table 4, and each time a food is mentioned put a tick in the appropriate place on the table which you prepared on the flip chart before the session.

4. Discuss which of these foods are the cheapest and which are the most expensive. Ask participants which of the foods they usually spend the most money on.
5. Ask for volunteers to come and identify which foods they feel are the most nutritious and which are the least nutritious. (Use different coloured marker pens to show the most and least nutritious foods).
6. Discuss which foods they should spend more money on for improved nutrition and which they can spend less on. Explain that it is always good to buy meat, fish, milk, eggs, dark green leafy vegetables, yellow and orange fruits and vegetables. Highlight the danger of spending all your money on junk food.

7. When buying salt, make sure it is iodized, as this is healthier than uniodized salt.
8. Explain that you are going to do a role play to help the participants make the best choices when they are buying food.

Table 4 Food expenditure categories

Foods which are usually bought
Staple foods: maize meal, millet, sorghum, rice, wheat flour/ bread, pasta, noodles, potatoes, sweet potato, *madhumbe*, cassava
Fats and oils: cooking oil, margarine, peanut butter
Animal products: meat, poultry, fish, offal, milk, eggs
Legumes: sugar beans, cowpeas, roundnuts, groundnuts
Fruit: mangoes, pawpaw, oranges, apples, bananas
Vegetables: leafy vegetables (rape, *covo*, *choumolier*, cabbage), tomatoes, pumpkin, squash, onions, garlic
Other food: sugar, cakes, sweets, sweet or salty snacks, sodas, condensed milk, tea, coffee, alcohol

Activity: Shopping role play

Time: about 1 hour

Materials: Flip chart, marker pens.

Preparation: Before the session, prepare six flip chart papers as shown in Appendix 3. You can include foods which are most likely to be available in the community where you are working. Cut up small pieces of paper to make some fake money. Choose an amount of money which is realistic for the average family in the community where you are working. For example, use $20 in the following denominations: 10 x $1 notes and 2 x $5 notes.

Brainstorm: things to consider when buying food

1. Ask participants to break into six small groups. Give each group a piece of flip chart paper and a marker pen and ask them to brainstorm which factors they should consider when buying food. Give them 10 minutes to do this and five minutes per group to report back.
2. During the report backs include and discuss the points listed in the box (page 28) on factors to consider when buying food.
3. Note that sometimes more expensive foods give better value for money because they contain more nutrients.

Shopping role play

1. Ask for two volunteers to be the main actors in a role play. They will play the part of shoppers in a market. Place the other participants back into the six groups.
2. Explain that each group is going to set up a pretend market stall selling different products and will act out a story about a young mother who is shopping with her aunt. The aunt will advise the mother on the best way to spend her money in order to get the most nutritious food possible. The mother and aunt should decide what food they already have at home or growing in their fields or garden.
3. Give each group a prepared flip chart paper with the following headings:
   - Fruit stall
   - Vegetable stall
   - Dried legumes stall
   - Dried grain stall
   - Meat and eggs
   - Cooking oil and snacks
4. Ask the groups with flip charts to fill in realistic prices for the items which they are selling. They can also add extra items to the charts. Each group should choose one person to be the stall owner. The rest of the group are the audience.
5. Meanwhile give the shoppers the fake money and explain that they should go to each stall in turn and decide what to buy.
6. Explain that they can pretend to examine the food in the stalls and say whether it looks fresh and clean or old, dirty, damaged by insects, blemished or mouldy. They can ask the stall keepers where the food comes from and how fresh it is and whether the vegetables or fruit have recently had pesticides sprayed on them.
7. Arrange the stall owners at the front of the training room as if they were in a row in a market. Ask them to hold up their flip chart to the shoppers. Ask the audience to sit in such a way that they can watch the role play.
8. Explain that the stall owners can sell their products by explaining why their products are good to buy. The audience should advise shoppers what to buy based on value for money, nutrient value, quality, hygiene and freshness.
9. Begin the role play.
10. After the shoppers have spent all their money, begin a discussion with all of the participants about whether they have made good choices or whether they could have bought other, more nutritious foods.
11. If you have time you can repeat the activity with different volunteers.

Wrap up

1. Ask participants what they have learned from the session. Make sure they (or you) mention:
   - Families should avoid wasting money on food which is not nutritious.
   - Buying nutritious food keeps the family healthy and reduces medical bills.
   - Try to buy vegetables, fruit and animal products which are fresh, clean and uncontaminated by chemicals or germs.
   - Buy animal products which have been kept cool and protected from insects.
   - Buy dried goods which are clean, dry and free from insects or mould.
2. Discuss why it is important to think carefully about what you are buying when shopping for food.
3. Ask participants how they will use this information when they are shopping in future.

1.4 SESSION 1.4: MALNUTRITION IN THE FAMILY

Aims

To help participants understand why people become malnourished; which family members are most at risk from malnutrition; and the types and symptoms of undernutrition and overnutrition.

Start here

1 Please read pages 32 to 35

2 do the discussion and

3 do the activity.

Facilitator's notes

Malnutrition means not getting the right kind of diet for the needs of our body. It can lead to poor growth and development in children, education problems, health problems, lack of employment opportunities and lower incomes in adults.

Malnutrition can be due to:

* not getting enough nutrients from food for growth and maintenance of the body, (undernutrition);
* illness causing the body to become unable to use the food which is eaten (undernutrition); or
* consuming too much food (overnutrition).

continued...

Who is most affected?

Children tend to be more commonly and seriously affected by undernutrition than adults. This is because they need many nutrients in order to grow and develop properly. In addition they have small stomachs and so they cannot take in large amounts of food at one time. If a child is malnourished, one of the most common signs is that they do not grow properly either in terms of height or in terms of putting on weight. For this reason children below the age of five are measured in order to monitor malnutrition in a population. In Zimbabwe approximately 12,000 children die due to undernutrition each year (ZIMSTAT and ICF International, 2012). If children are not treated for malnutrition under the age of 24 months (during their first 1000 days) the effects can be irreversible.

Wasting and stunting

Wasting and stunting are preventable if children under five-years old are given a nutritious, balanced diet.

Wasting happens when children do not get enough energy-rich food. Wasting can be caused by a short-term problem such as drought and famine or infections such as tuberculosis, chronic diarrhoea and HIV. In Zimbabwe 3.3% of children under five suffer from wasting (ZIMSTAT, 2014). Wasting is a very serious, life threatening condition.

Stunting is seen when a child is too short for his or her age due to not getting nutritious food over a long period of time and/or long-term illness. Children who are born with low birth weight are often stunted. Children who become stunted before birth or during the first two years of their lives, often suffer from learning problems at school because their brains have not developed properly. Stunted children and adults are also more susceptible to diseases and disabilities than non-stunted people. Stunted people often grow up to become less productive as adults and earn lower incomes than non-stunted people.

In Zimbabwe 27.6% of children under the age of five are stunted (ZIMSTAT, 2014).

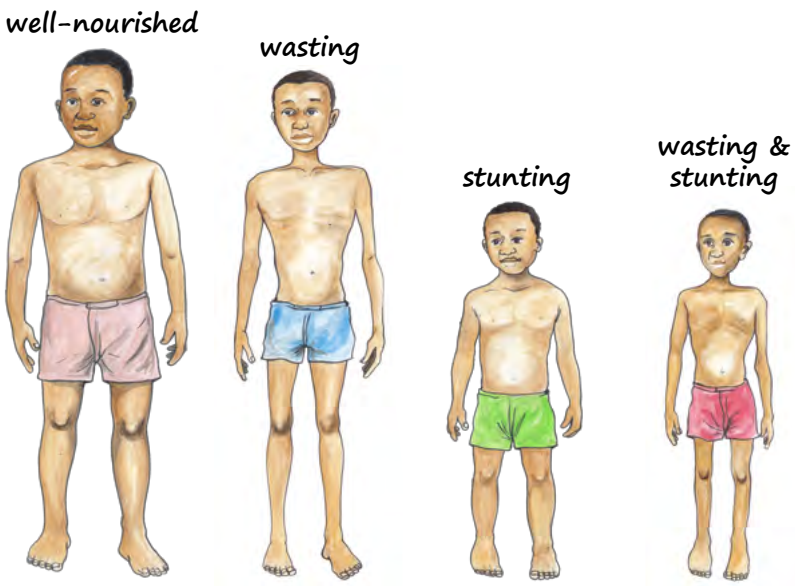
This means that their mothers were probably undernourished. In Zimbabwe there is also an increase in stunting from 6 months which is probably due to poor child feeding and care practices. Children in rural areas are more likely to be stunted and underweight than urban children.

Poor nutrition for mothers and babies

The first 1000 days of a baby's life (from the time of conception until the child is two years old), is when good nutrition is most important. If a woman has a poor diet when she becomes pregnant, it can affect the nutrition, growth and health of her baby. In Zimbabwe 10% of children have low birth weights (under 2.5 kg), probably due to poor nutrition of their mothers during pregnancy.

Low birth weight is one of the main causes of infants becoming sick and dying. If a pregnant woman gets a nutritious diet and is not psychologically stressed, her baby is more likely to have a good birth weight. If the mother has a good diet while she is breastfeeding and if she breastfeeds exclusively for at least six

Figure 4 The effects of wasting and stunting (Visual Aid 3)



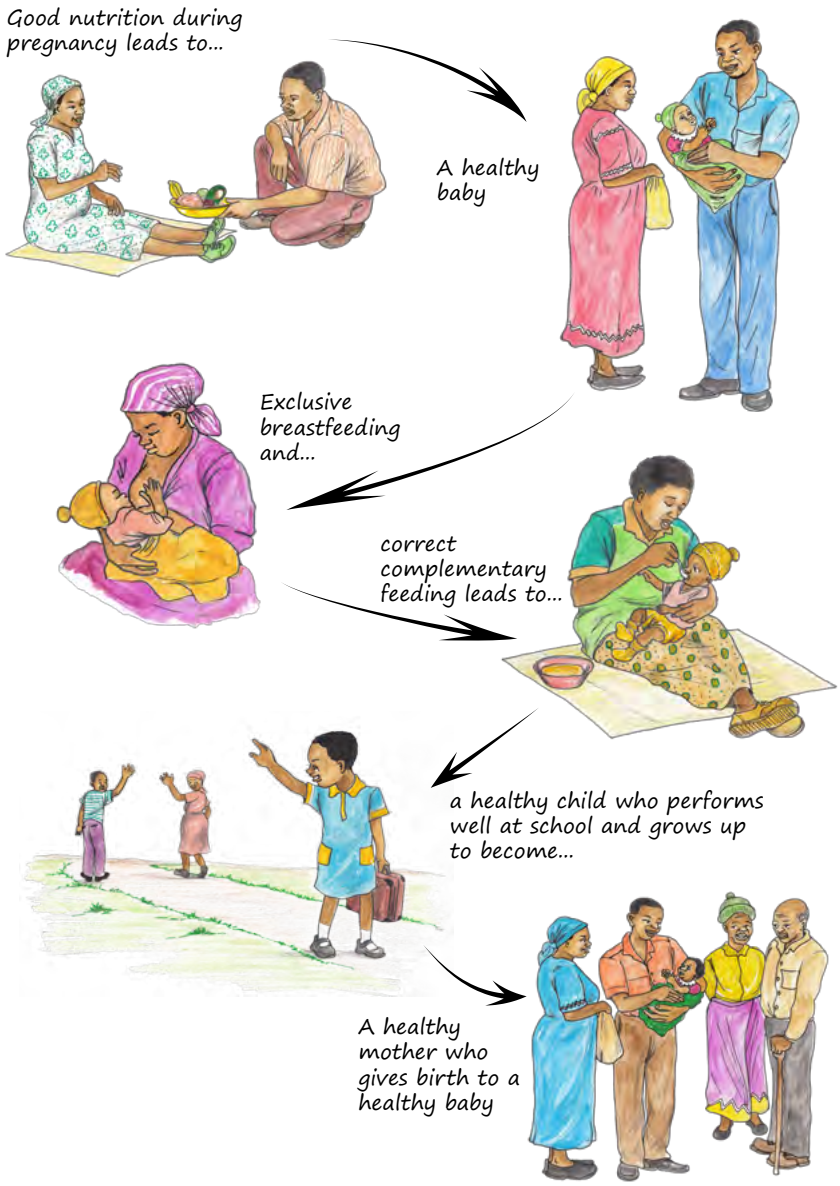
months, she will improve the baby's chances of growing and developing properly. We will look at nutrition for mothers, infants and young children in Module 4.

Mothers must monitor their baby's growth from birth by taking them to the local clinic monthly until they are over five years old. The children must be weighed and have their growth plotted on a growth chart. This helps families and health workers to make sure that the baby is growing properly.

Malnutrition and illness

Many illnesses, including diarrhoea, malaria, measles, TB and HIV, can make the effects of malnutrition worse. In addition, malnutrition can increase the chances of a person, especially a child, becoming ill. Many diseases affect nutrient absorption and use by the body and often increase the body's need for more nutrients. Infections with worms, especially roundworm and hookworm, can cause poor appetite, poor digestion, poor absorption and utilization of nutrients. This may result in stunting, Vitamin A, and iron deficiency and many other problems.

Figure 5 Good nutrition is passed through generations (Visual Aid 4)



Vitamin and mineral deficiencies

In Zimbabwe, vitamin A deficiency affects about one in five pregnant women and one in five children aged 6 - 59 months (ZIMSTAT, 2014). Lack of vitamin A in the diet can cause damage to the eyes leading to night blindness complete loss of sight and even death. It also causes reduced immunity and retarded growth in children.

Iron deficiency also affects more than half of pregnant women in Zimbabwe leading to iron deficiency anaemia. Iron deficiency can cause problems for a mother and baby during pregnancy such as miscarriage, increased risk of the baby being born prematurely, delivery complications and birth defects. Almost one in three children aged 6-59 months is anaemic in Zimbabwe.

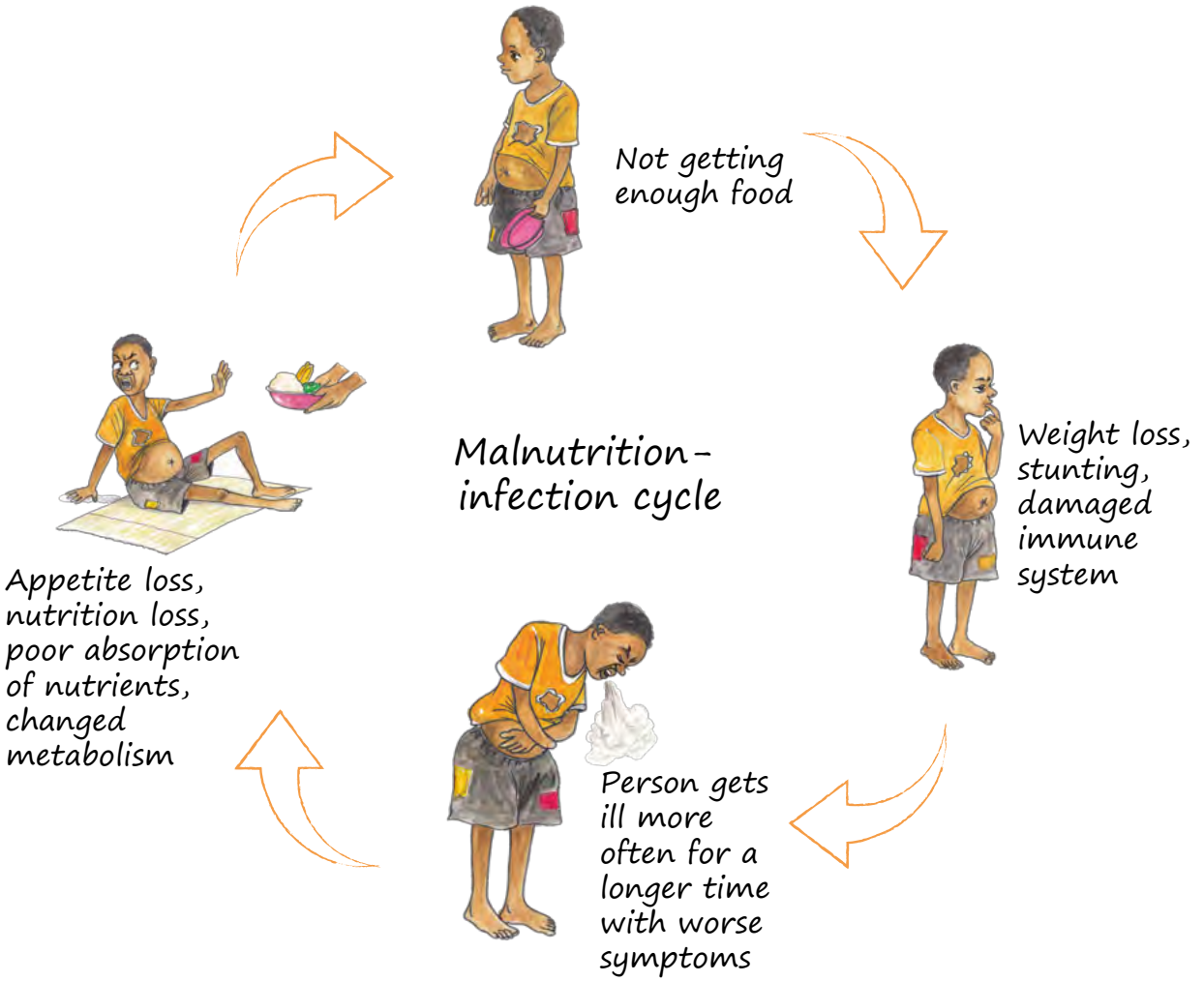
In older children, iron deficiency leads to reduced learning ability and in adults to reduced productivity and working capacity.

Iodine deficiency can affect children and adults. In children it leads to growth problems and learning difficulties. In Zimbabwe, iodine deficiency rates are low due to a legal requirement for salt to be iodized.

Overweight and obesity

These conditions describe unhealthy fat accumulation in the body that can lead to heart disease, diabetes and high blood pressure. Obesity is measured by comparing a person's weight to his or her height. This problem is increasing all over the world: in Zimbabwe more than one person in ten is obese.

Figure 6 The malnutrition-infection cycle (Visual Aid 5)



Overweight and obesity can affect all family members but women seem to be more likely to be affected than men. In Zimbabwe two out of every five urban women are overweight or obese, compared with two out of every ten rural women (ZIMSTAT and ICF International, 2012).

Overweight and obese women can suffer complications during pregnancy and birth putting themselves and their babies at risk. Babies of overweight or obese mothers have an increased risk of birth defects, stillbirth, prematurity, and future obesity.

Excess weight and obesity are also increasing among children, especially those of school age. In Zimbabwe children in urban areas are more likely to be overweight than those in rural areas. Children who are overweight are at risk of obesity, premature death and disability in adulthood.

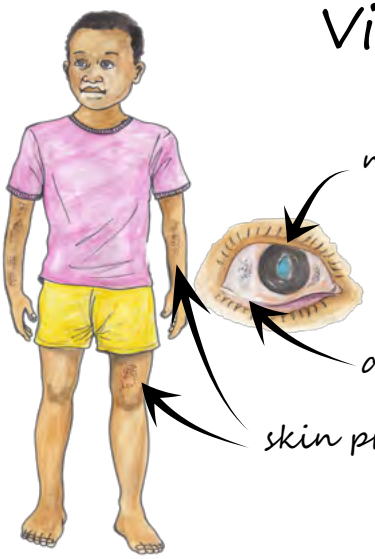
Preventing malnutrition in children

Malnutrition in children can be prevented by making sure that:

- Pregnant mothers get adequate nutrition, rest and psychological support.
- Babies are exclusively breastfed from birth until six months of age and breastfeeding is continued up to 24 months or beyond.
- Babies are introduced to appropriate complementary foods at six months.
- Young children are given healthy, balanced, varied diets consisting of three meals and two snacks each day until at least the age of five.
- Children are vaccinated against childhood diseases.
- Children are treated for intestinal worms and other illnesses.
- Children aged 6 - 59 months receive vitamin supplementation every six months.
- There is improved hygiene around the home and during food preparation and consumption.

Figure 7 The effects of deficiencies in vitamin A, iron and iodine (Visual Aid 6)

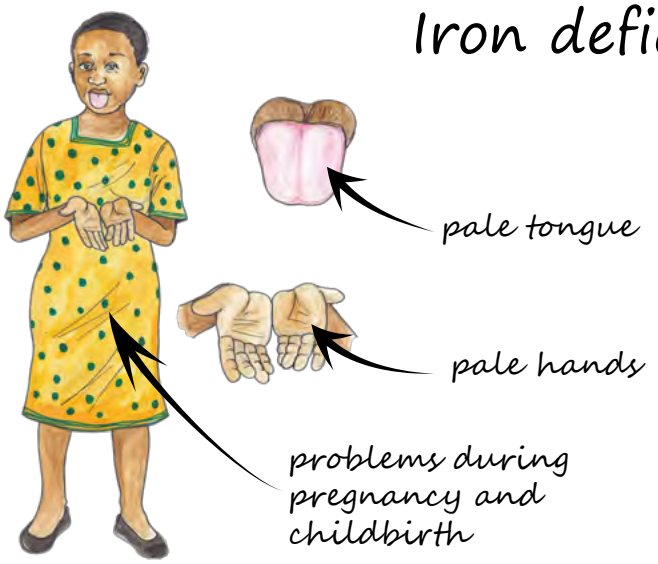
Vitamin A deficiency



Also:
increased risk of infections and in severe cases, death.

Good sources of vitamin A are yellow and orange fruit and vegetables and dark green leafy vegetables.

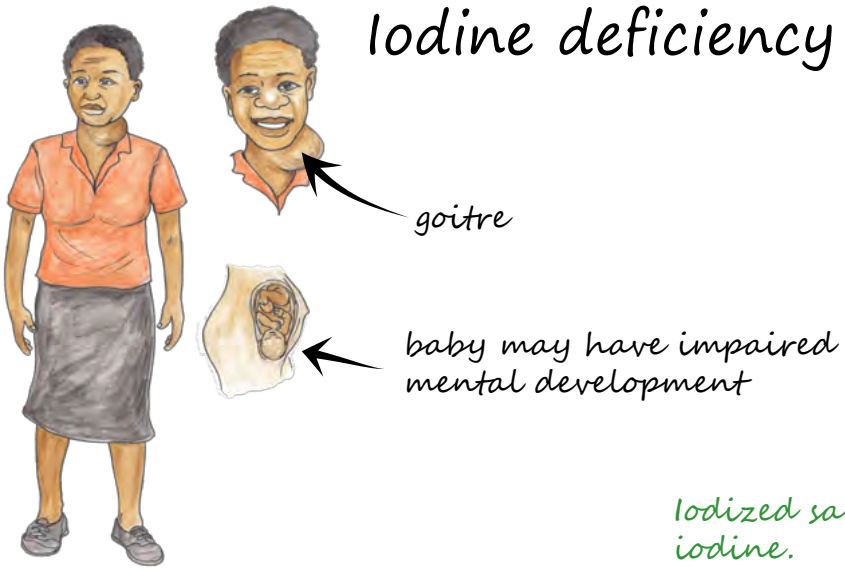
Iron deficiency



Also:
weakness and tiredness; increased infections; and poor child growth and development.

Good sources of iron are meat and legumes.

Iodine deficiency



Iodized salt is a good source of iodine.

Discussion: Signs of malnutrition

Time: 40 minutes

Materials: flip chart, marker pens, **Visual Aids 3, 4, 5** and **6**

Steps

Malnutrition

1. Explain that you are going to talk about the signs and symptoms of some different kinds of malnutrition. Ask participants what malnutrition means. Discuss their responses and give them the definition at the beginning of this section. Explain that malnutrition can mean undernutrition or overnutrition.

2. Ask participants how we can tell when someone in the community is undernourished. What are the signs of undernutrition? Write their responses on the flip chart, discuss what they have said, and make sure you include the following signs of undernutrition:
   - Feeling weak and dizzy
   - Having pale lips, pale skin
   - Being too thin
   - Children are too short for their age
   - Getting sick easier and more severely than others
   - Having night blindness

Wasting and stunting

3. Ask which people in the community are most susceptible to and most affected by malnutrition. List the responses and discuss why children are particularly vulnerable.

4. Ask participants how they think children become wasted or stunted. Highlight that stunting is common in Zimbabwe due to children not getting enough nutrition for a long time. Show the participants **Visual Aid 3** of a normal, wasted, and stunted child and ask them if there are any children in their community who show the signs in the picture. Discuss the different symptoms.

5. Discuss how this could happen using **Visual Aid 4**. Explain how undernourished mothers can have low birthweight babies. Explain that poor infant feeding from birth until two years can limit growth, development, and health in babies. Undernourished children may suffer learning difficulties and become less productive adults.

6. Ask participants to suggest better feeding practices for women of childbearing age and babies for the first 1000 days of their lives. (This is covered in Module 4.)

Vitamin and mineral deficiencies

7. Show the participants **Visual Aid 5** and talk about the role of illness in causing malnutrition and malnutrition in increasing the risk of illness.

8. Ask what measures can be put in place to reduce the risk of children becoming ill (including eating a balanced diet, vaccinations, and good hygiene).

9. Ask participants if they can describe any problems which can be caused by people not getting enough vitamins or minerals in their diet. Show them **Visual Aid 6** and discuss the symptoms associated with deficiencies in vitamin A, iron and iodine. Discuss how these deficiencies are particularly dangerous for pregnant and breastfeeding women.

Overweight and obesity

10. Ask participants what happens if too much food is eaten. Ask them whether they know anyone who is overweight or obese. What health problems do they have? Overweight or obese women may suffer complications during pregnancy and childbirth.

Activity: Malnutrition drama

Time: about one hour

Materials: Four malnutrition drama ideas written on separate sheets of paper such as:

- **Group 1:** the story of two pregnant women one who is poorly nourished and one who is well-nourished. What happens when the babies are born and grow up?
- **Group 2:** the story of a person who hates eating fruit and vegetables and how they begin to show the signs of vitamin and mineral deficiencies and how they are helped by friends.
- **Group 3:** The story of teachers who spot a malnourished school child and what they decide to do to help the pupil.
- **Group 4:** The story of a mother who has an overweight child and the advice she is given by her sister on how to improve the child's health.

1. Ask participants to divide into four groups and ask each group to come up with a five minute drama. Give each group a piece of paper with a suggested idea for their drama such as those above.
2. Give them 15 minutes to practice their drama.
3. After each play is performed, discuss with the other participants the messages presented and correct or clarify any information where necessary.

Wrap up

1. Ask participants what they have learned from the session. Make sure they include these key messages:
   - Malnutrition can be due to not getting enough food or not getting the right type of food.
   - Malnutrition in children can be seen when they do not grow properly
   - Wasting is seen when a child is too thin for his or her age.
   - Stunting is seen when a child is too short for his or her age.
   - Young children and pregnant and breastfeeding women are particularly vulnerable to malnutrition and need a nutritious balanced diet.
   - Illness can worsen the effects of malnutrition and malnutrition can cause illness.
   - Vitamin and mineral deficiencies and excess weight and obesity can cause disabilities and serious health problems.
2. Discuss why it is important to know some of the common signs of malnutrition. How does this help to prevent malnutrition in the family?
3. Ask participants how they will use the information from the session.

1.5 SESSION 1.5: MALNUTRITION IN THE COMMUNITY

Start here

1 Please read pages 39 to 41

2 do the discussion and

3 do the activity.

Aims

To help participants:

examine the immediate, underlying and basic causes of malnutrition;

analyse the causes and effects of malnutrition in their community; and

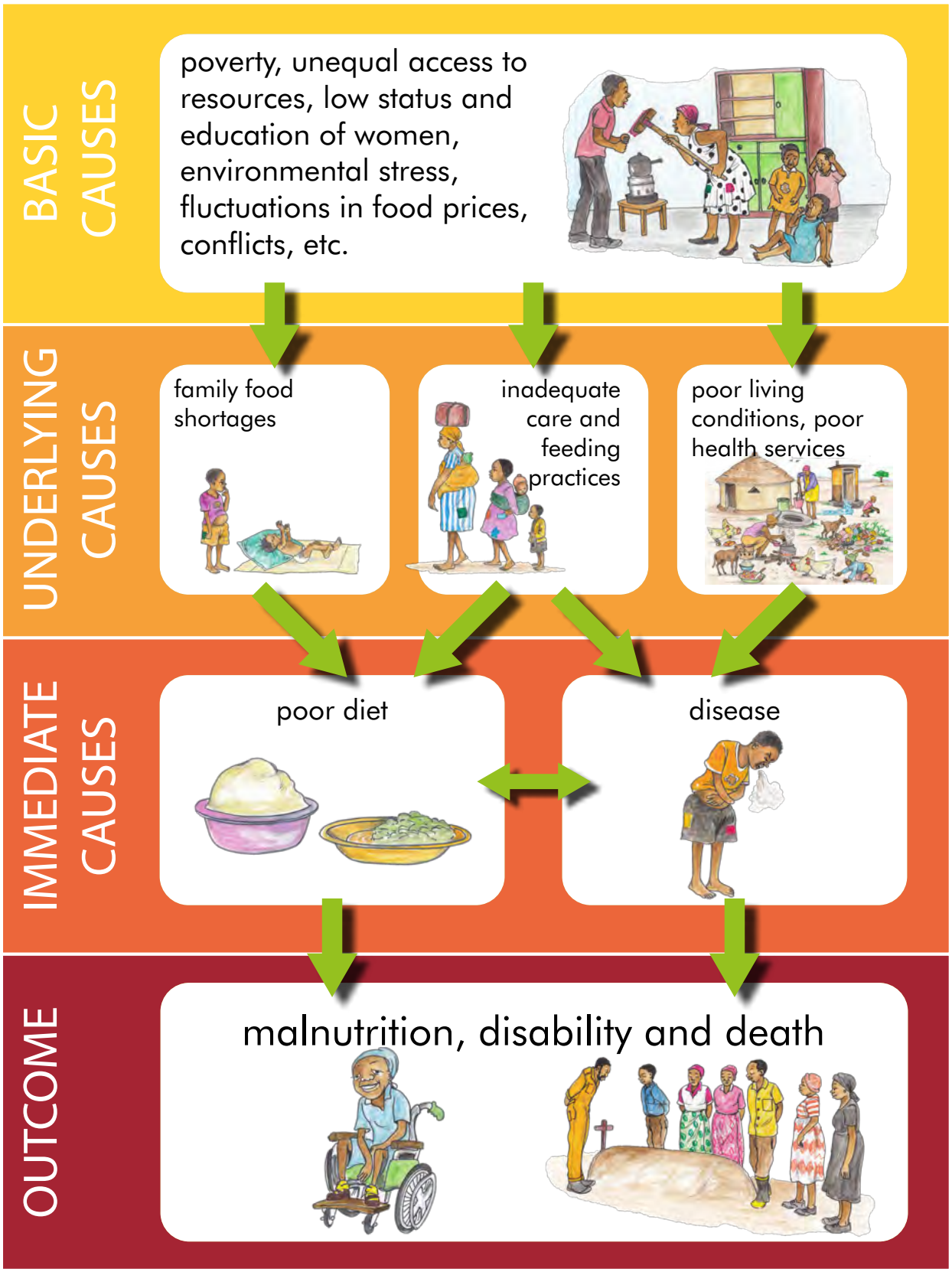
explore the ways of dealing with some of the problems in their community.

Facilitator's notes

Malnutrition is a complex problem which can have many causes. Nutritionists use a diagram called the "malnutrition conceptual framework" to explain the relationships between the different causes of malnutrition and its effects. A simplified version of this framework is given in Figure 8 overleaf, with arrows showing the relationship between the different levels of causes and the effects.

continued...

Figure 8 Malnutrition conceptual framework



Adapted from: FAO, 2004

Immediate causes

The immediate causes of malnutrition (poor diet and disease) occur at individual or household level.

Family members can have a poor diet due to caregivers:

- not knowing how to, not being able to, or not wanting to breastfeed her baby properly;
- giving children small infrequent meals;
- not giving children enough variety in their diet; and/or
- not feeding children enough to meet the needs of their growth and development.

Disease can cause undernutrition because:

- sick people may have poor appetite or not want to eat much;
- illness reduces the body's ability to absorb nutrients;
- illness makes the body lose nutrients (diarrhoea and vomiting); and/or
- illness makes the body use up nutrients more quickly.

Underlying causes

The underlying causes occur at household and community level and include family food shortages, inadequate care and feeding practices, poor living conditions and poor health services.

Family food shortages may be due to:

- lack of money;
- poor food production;
- poor storage and preservation; and/or
- poor choices and budgeting.

Inadequate care and feeding practices can be due to:

- poor ways of feeding young children, pregnant and breastfeeding women, the elderly and the sick;
- poor, unhygienic food preparation methods;
- inadequate methods for preventing and treating illness at home; and/or
- not using health facilities.

Poor living conditions can be due to:

- overcrowding;
- lack of access to clean water;
- poor sanitation; and/or
- poor health services (shortages of medicines and qualified staff).

Basic causes

The basic causes of undernutrition occur at community and national level and can include:

- poverty;
- lack of employment;
- fluctuating global food prices;
- unequal distribution of resources such as land, water and housing;
- low status and education level of women;
- overpopulation;
- environmental damage;
- climate change;
- political unrest and conflict;
- poor health and education services; and
- discrimination.

Supporting women prevents malnutrition

It is important to note that women play a key role in family nutrition since they get pregnant and breastfeed, and are responsible for childcare, food production, food purchases and food preparation. Women need to be included in decision-making about what food can be grown or bought and how the family can be fed. If women have a heavy workload and are not given adequate support from men and other family members, the nutrition of the whole family can be negatively affected.

Discussion: The causes of malnutrition in the community

Time: 30 minutes

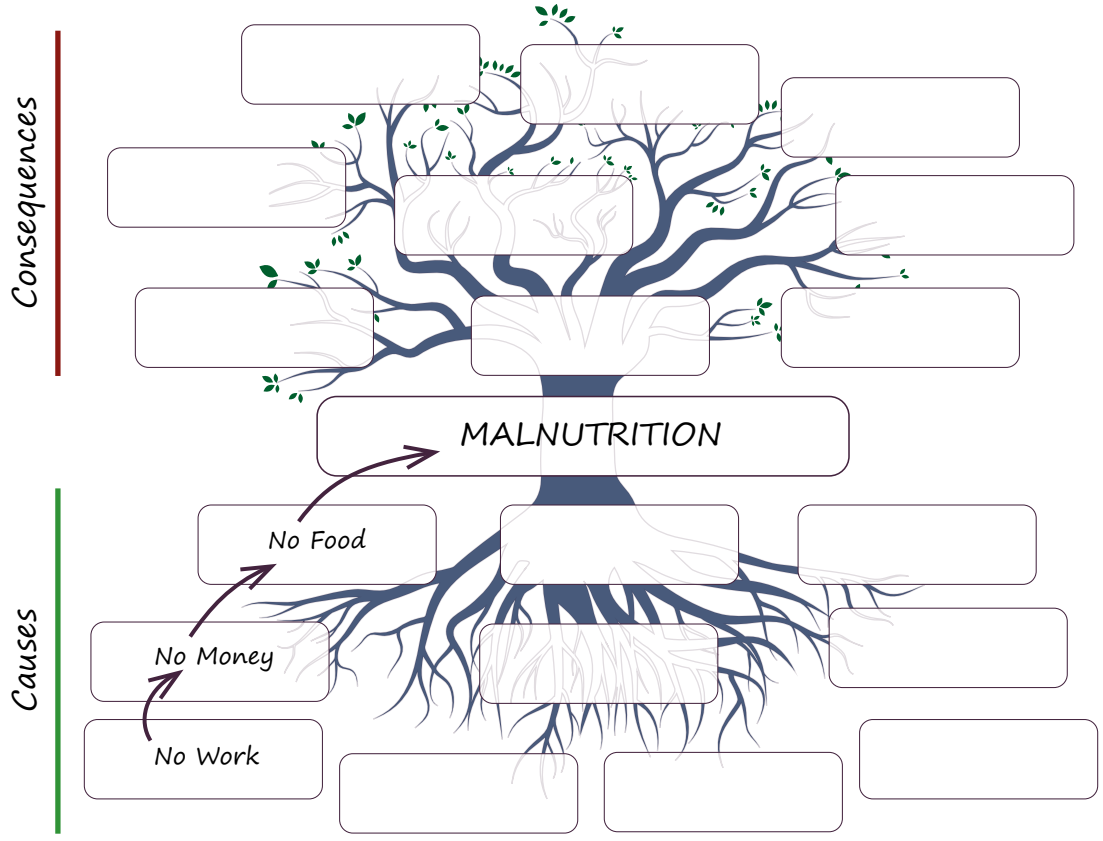
Materials: Flip chart, marker pens

Steps

Introduce the idea of the problem tree

1. Introduce the session and explain that you are going to discuss the causes of malnutrition in the community. Malnutrition is a complex problem and has many causes and consequences which are linked to one another at different levels.
2. Note that in the previous session we looked at some of the causes at an individual and family level. Now we are going to think about causes at the community and national levels as well.
3. Explain that in order to be able to understand the causes of malnutrition you are going to use the problem tree activity.
4. Drawing a large, simple outline of a tree on the flip chart showing the roots, trunk and branches. Write the word malnutrition in the centre of the trunk of the tree. Explain that you are going to use the symbol of a tree to think about the causes and consequences of malnutrition. The roots of the tree represent the causes of malnutrition while the branches of the tree represent the consequences.
5. Show the participants the example given in Figure 9). Explain that "no work" leads to "no money" which causes "no food" which leads to malnutrition. Now we are going to do an activity which shows the causes of malnutrition in the community.

Figure 9 Problem tree: the causes and consequences of malnutrition



Activity: Malnutrition problem tree

Time: about 1 hour

Materials: Flip chart, marker pens, about 100 small pieces of paper, tape or sticky stuff.

- Divide the participants into small groups of no more than five people. Give each group a piece of flip chart paper and some markers.
- Ask each group to draw a simple picture of a tree with the word "malnutrition" written on the trunk.
- Give about 20 small pieces of paper to each group. Ask the groups to discuss the causes of malnutrition in their community and write them down on separate small pieces of paper. Emphasize that they should write one cause per piece of paper and place them at the root level of their tree diagram.
- Explain that they should write as many causes as they can think of or have time for and should discuss how to arrange the causes.
- Once they have agreed on the positioning of the pieces of paper they can stick them down with the tape. They can show the relationships between the causes by joining the pieces of paper with arrows as shown in Figure 9. Give the groups 20 minutes to work on the causes. You may need to go around and help the groups to position the causes correctly.
- Repeat the same exercise for the consequences of malnutrition in their community. The consequences should be placed on the branches of the tree. Give the groups 10 minutes to complete this, helping if necessary.
- Give each group five minutes to present their problem tree giving time for questions and discussion and explanations.
- After all the groups have presented discuss the similarities and differences between the problem trees.
- Discuss the role of women in addressing malnutrition. Ask participants why women play such an important role and ask them to identify ways in which women can be supported to address malnutrition.

Wrap up

1. Ask participants what they have learned from the session. Make sure they (or you) recap the key messages:
   - Malnutrition has many causes and consequences which are related to each other.
   - The basic causes of malnutrition can include poverty, poor access to resources, environmental stress and other factors at community or national level.
   - Women play an important role in making sure that a family is well-nourished and they need to be supported by all family members and the wider community.
2. Discuss why it is useful to identify the causes of malnutrition in the community. Explain that in future sessions you will be looking at ways to address some of these problems.

wrapping up a healthy harvest training session

Module 2: Growing and collecting nutritious food

2

Objectives

By the end of this module participants should be able to train others and share nutrition messages to:

* understand the links between agriculture, food and nutrition security;
* integrate livestock production in order to increase access to a wider range of nutritious animal products in the diet;
* make a crop and livestock plan in order to increase the availability of nutritious products all year round;
* collect foods from natural areas (such as forests) sustainably; and
* practise appropriate food production in urban areas.

Module overview

Session/Activity	Time (minutes)	Training aids required	Page
Session 2.1: Better agriculture for better nutrition **Discussion:** Nutrition and food security **Activity:** Food security and Good Agricultural Practices **Wrap up**	80	**Visual Aid 1** and **Visual Aid 7**	48
Session 2.2: Planning what to produce (part 1) **Discussion:** Crops and livestock for better nutrition **Activity:** Which nutrients do they contain? **Wrap up**	60	Food cards[1], Copy left column of Table 7 onto a flip chart (leave right column blank)	54
Session 2.3: Planning what to produce (part 2) **Discussion:** Knowing the conditions in your Natural Region **Activity:** Making a crop and livestock plan **Wrap up**	70		58
Session 2.4: Nutritious wild-harvested food **Discussion:** Wild-harvested produce **Activity:** Developing a wild-harvested produce calendar **Wrap up**	50	Samples of wild-harvested foods	63

1 Laminated cards with photographs of different food products on them.

Key definitions

Food and nutrition security - exists when all people at all times have access to sufficient safe nutritious food, which is affordable and acceptable to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life.

Food safety - all measures taken during food production, processing, transport and handling, cooking, consumption and disposal which limit the risks of food-borne illness.

Good Agricultural Practices – a set of principles which farmers can follow in order to contribute to the production of nutritious food and family incomes while not damaging human health or the environment on which people and agriculture depend.

Value addition - increase the selling price or nutritional content of the food by adding something to it.

Crop rotation – the practice of growing different crops in succession on the same land to improve soil fertility and reduce the buildup of pests and diseases.

Intercropping – the practice of growing two or more crops next to each other on the same piece of land.

Adapted from: Committee for World Food Security, July 2012

Training tips for best practice

- Before you facilitate the sessions in this module the participants must have covered the content from Module 1.
- You can cover the sessions together or separately depending on the amount of time which you have.
- The sessions and activities are intended as a guide and you should adapt them to the needs and literacy level of the participants in the community where you are training.
- Use drawings in place of written flip charts when working with communities of low literacy levels.
- Always read the background sections before conducting the session.
- If the participants do not know each other well use introductory exercises before the session (see Appendix 1 for examples).
- Use energisers if the participants seem tired during a long session (see Appendix 1 for examples).
- Try to avoid talking too much. Keep the sessions fun and as active as possible.
- Make sure that you correct any incorrect opinions or information given by the participants.
- At the end of the session reflect on what has been learned and review the key messages.

2.1 SESSION 2.1: BETTER AGRICULTURE FOR BETTER NUTRITION

Start here

1 Please read pages 48 to 50

2 do the discussion and

3 do the activity.

Aim

To help participants to understand and communicate:

the relationship between agriculture, food and nutrition security, and

concepts of food safety and Good Agricultural Practices (GAP).

Facilitator's notes

In order to have energy, grow and stay healthy, families need to be food and nutrition secure. They need:

* access to sufficient safe and nutritious food throughout the year so that all members can meet their nutrient needs with foods they like or prefer for an active and healthy life; and

* a healthy environment with adequate access to safe clean water and improved sanitation facilities.

continued...

Agriculture can play an important role in enhancing family food and nutrition security by providing nutritious food grown on the farm. Good Agricultural Practices (GAP) are a set of principles which contribute to the production of safe, nutritious food and income while not damaging human health or the environment on which people and agriculture depend.

This module will look at ways to increase access to sufficient safe, nutritious food all year round through Good Agricultural Practices and sustainable collection of wild-harvested food from natural areas. Module 3 will look in more detail at food safety, water and sanitation in harvesting, processing and preparing food.

Access to sufficient food

Access to sufficient amounts of diverse foods all year round depends on three things:

Availability: Can food be grown, collected from forests or other natural areas or bought in the community in sufficient quantities all year round?

Affordability: Is the price of the food reasonable enough for people to be able or prepared to purchase it or buy the needed inputs to produce it?

Acceptability: Are people willing to prepare and eat the food?

Agriculture and food safety

Precautions must be taken during production, processing, transport and handling, cooking, consumption and disposal of food to avoid contamination by poisonous chemicals or disease-causing organisms. Eating contaminated food can cause serious illness which can reduce nutrient absorption. Infants, children and people living with chronic illnesses such as HIV are particularly affected by poor food safety.

Food can be contaminated by germs as a result of poor or unhygienic methods of production, harvesting, handling, processing, storage, preparation and consumption. Food can become contaminated with dangerous chemicals as a result of:

- Improper use of chemicals (pesticides, herbicides, fertilisers and veterinary drugs) in producing or processing food;
- Use of contaminated water to irrigate or process food;
- Use of contaminated soil for growing food; and/or
- Use of improper processing additives and/or packaging materials.

Figure 10 (**Visual Aid 7**) shows the different stages of the food production process when food can become contaminated (orange arrows) or when nutrients can be lost (red arrows).

Figure 10 Stages of food production showing where food can be contaminated or lose nutrients (Visual Aid 7)

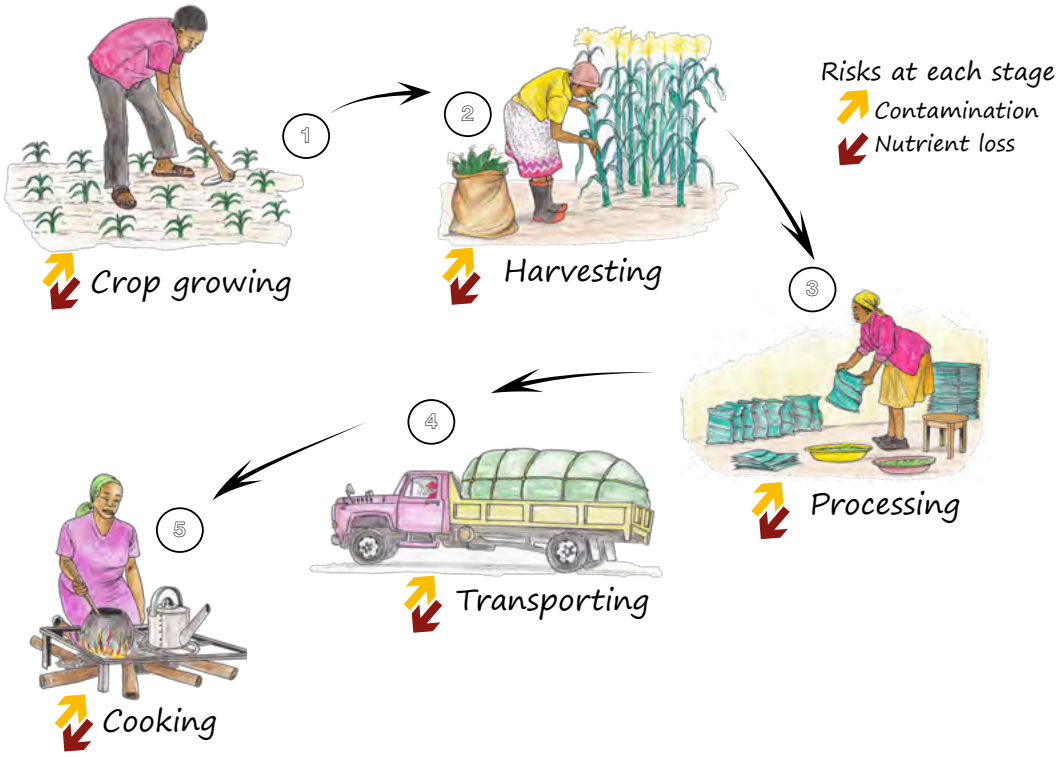


Table 5 Potential causes of nutrient loss and food contamination during food production

Process	Nutrient loss and food contamination can be caused by:
Crop and livestock production	• Poor agricultural practices leading to low yields and low-nutrient crops or livestock. • Inappropriate use of agricultural chemicals and veterinary drugs and poor hygiene leading to contamination.
Harvesting handling and storage	• Not harvesting crops at maturity. • Damage to produce caused by poor handling. • Poor hygiene, exposure to moisture, pests and diseases leading to contamination.
Processing, value addition, packaging, transport and marketing	• Damage to produce caused by poor handling. • Poor hygiene, exposure to moisture, pests and diseases leading to contamination. • Improper processing and storage before consumption leading to nutrient loss and increased contamination. • Unnecessary additives (salt, sugar, monosodium glutamate (MSG), colourants, preservatives, flavourants) can lead to health problems.
Food preparation and feeding practices	• Poor choice of meals (lack of diversity and incorrect amounts for different family members). • Poor hygiene in food preparation and during feeding/ eating. • Lack of protection from contamination and spoilage. • Overcooking and other poor cooking methods.

Cash crops and nutrition security

While agriculture can contribute to food and nutrition security, some agricultural practices can reduce food and nutrition security. For example when farmers grow only a few cash crops (such as cotton, tobacco, tea, coffee, maize, wheat and soya) instead of a wide range of food crops, then family nutrition can suffer.

Similarly while many families keep livestock they are often reluctant to kill their animals for eating. More often the livestock is kept for sale during times when the family needs extra money. This can mean that families do not get enough body-building foods.

While cash crops and livestock provide important income, unless some of that money is spent on nutritious food, or other crops or livestock are used to feed the family, there is a danger that family nutrition will suffer. This leads to even more problems since people who do not have a healthy diet often become sick and weak and are less able to do agricultural work. They produce even less nutritious food and become increasingly worse off in terms of income, nutrition and health.

Agriculture and the environment

Food production depends on natural resources including water, soil and beneficial plants and animals (biodiversity). Some agricultural practices - such as irrigation, ploughing, burning, land clearing and using agricultural chemicals - can damage natural resources by polluting soil and water, causing soil erosion, reducing long term soil fertility and structure, and killing beneficial plants and animals.

Many cash crops are not adapted to local conditions and require expensive inputs. Growing crops which are not adapted to an area using methods which can damage natural resources increases the chance of crop failure especially during periods of low rainfall. Climate change is likely to make droughts and floods more common and rainfall patterns unpredictable, leading to a higher chance of crop failure especially using unsustainable methods.

To achieve food and nutrition security, farming families should try to use Good Agricultural Practices which improve soil and water resources, increase plant and animal diversity and encourage locally adapted crops and livestock breeds.

Discussion: Nutrition and food security

Time: 30 minutes.

Materials: flip chart, marker pens, **Visual Aid 1**, **Visual Aid 7.**

Steps

Access to nutritious food

1. Explain that in order to stay healthy we must have access to a wide range of nutritious food all year round. Say this means that food must be:
   - available (grown, collected or bought in sufficient quantities all year round),
   - affordable (the price is reasonable enough for people to purchase it or buy needed inputs to produce it), and
   - acceptable (people are willing to prepare and eat the food).
2. Ask participants where their food comes from. How much of the food they eat is produced on the family farm, how much is collected from natural areas such as forests and how much do they buy?

Nutrition security

3. Discuss whether families could save money and improve their family nutrition by growing, collecting, buying or consuming more nutritious food. (Note: if people become malnourished and suffer sickness and poor health there are a number of "hidden costs" as well as medical bills. Sick people are less productive than healthy people. Sick people often can't do as much work in the fields or earn as much money.)
4. Use **Visual Aid 7** to show how nutrients can be lost or food contaminated at different stages between agricultural production and consumption. Ask participants to describe what they see in the Visual Aid. Point out the different stages and explain any terms which the participants may not understand.

Nutrient losses

5. Ask participants how poor practices can cause nutrients to be lost or food to be contaminated in the food production process (in **Visual Aid 7**). Write their answers on the flip chart and use the information in Table 5 to add any points which may have been missed.
6. Discuss the points raised.

Activity: Food security and Good Agricultural Practices

Time: 50 minutes.

Materials: flip chart, marker pens

1. Explain that in this activity we are looking at Good Agricultural Practices that can improve access to nutritious food.
2. Divide the participants into five groups (of no more than five people) and give each group a piece of flip chart paper.
3. Ask the groups to write down examples of farming methods which:
   - **increase** the diversity, quality and quantity of nutritious food which is available to the family;
   - **conserve** or improve natural resources (such as soil and water) since these increase agricultural production in the long term; and
   - **reduce** contamination of food through exposure to germs, pests and diseases and harmful chemicals.
4. After 15-20 minutes, bring the groups back together to report back. Ask one group to present their comments, and discuss these with all the participants. Then ask the other groups to read out any additional points which they came up with. Write these on the flip chart and discuss them. You can supplement discussion points with the information in Table 6.

Table 6 Good agricultural practices that enhance food and nutrition security

Good agricultural practices	Impact
• Grow a wide range of nutritious, locally adapted food crops and livestock not just cash crops and commercial livestock. • Retain and plant seed varieties from the local community because they are better adapted to the local environment. • Introduce new nutritious crops and livestock breeds such as orange-fleshed sweet potatoes.	Increases the diversity, quality and quantity of available nutritious food.
• Avoid burning - clear fields by hand. • Use crop residue for animal fodder, compost or mulch. • Avoid annual ploughing. Practice conservation agriculture. • Practice crop rotation and intercropping. • Use compost, manure, mulch and liquid fertilisers.	Conserves water and soil fertility, which increases long term agricultural production.
• Check crops regularly in order to correctly identify a pest or disease. • Plant at the correct time of year. • Use ash or home-made sprays from plants. • Follow the safety and application instructions for all chemicals used. • Practice good hygiene when handling crops and livestock.	Reduces contamination of food through exposure to germs, pests and diseases and harmful chemicals. This means better health for us, our families and communities


conservation agriculture

Wrap up

1. Ask participants what they have learned from the session. Make sure they cover:
   - Good agricultural practices help families access safe, nutritious food, all year.
   - Good agricultural practices generate income which families can use to buy better food and pay for better health and hygiene.
   - Good agriculture practices can lead to increased production of good quality, diverse, safe food.
2. Discuss why it is useful to know about Good Agricultural Practices. How does this contribute to improved nutrition?
3. Ask them how they will use this information.

2.2 SESSION 2.2: PLANNING WHAT TO PRODUCE (PART 1)

Start here

1 Please read pages 54 to 55

2 do the discussion and

3 do the activity.

Aim

To help participants choose suitable nutritious crops and livestock for their area.

Facilitator's notes

When planning which crops and livestock to produce, farmers need to consider which crops and animal products are the most nutritious, in order to support food security and nutrition.

continued...

Choosing nutritious crops and livestock

In Module 1 we found out that we need to eat more body-building foods such as animal products and legumes as well as more foods which are rich in vitamins and minerals. In Zimbabwe it is especially important to eat more foods containing vitamin A and iron. We also need to eat plenty of food containing vitamin C which helps our absorption of iron from plant food sources.

Table 7 gives examples of foods which help build the body and those which contain vitamin A and iron. Note that most foods contain a number of different nutrients.

Small grains, legumes, animal products and fruit and vegetables are all important sources of nutrients. These foods are not eaten often enough in Zimbabwe, because:

- Traditional fruit and vegetables, legumes and small grains are seen as inferior to foods which are bought in shops, or exotic crops.
- Legumes and small grains require a lot of labour to grow, process and cook thus putting an extra burden on women.
- Families are reluctant to slaughter their livestock for food as they are valuable assets which can be sold during times of hardship.
- Some cultural practices restrict certain family members (such as women and children) from eating some animal products (such as offal and eggs).

Discuss these issues with participants and come up with ways to ensure that family members get the nutrients which they need.

Table 7 Examples of foods which are rich in various nutrients

	Food examples
Vitamin A-rich foods	• Orange or yellow fruit: mango, pawpaw but not oranges • Orange or yellow vegetables: carrots, pumpkin, butternut and orange-fleshed sweet potatoes • Red peppers • Dark green leafy vegetables: pumpkin leaves, spinach, amaranth, *covo*, rape, *tsunga* • Animal products: liver, eggs, cow's milk, chicken, fish
Vitamin C-rich foods	• Citrus fruits: oranges, lemons, *nartjees*, grapefruit • Baobab, guava • Cabbage, leafy vegetables • Tomatoes, potatoes • *Madhumbe* (yams)
Iron-rich foods	• Whole grain cereals, especially millet and sorghum • Legumes: cowpeas, groundnuts, roundnuts, sugar beans • Dark green leafy vegetables: pumpkin leaves, spinach, amaranth, *covo*, rape, *tsunga* • Animal products: beef, insects, liver, fish • Seeds: pumpkin, sesame
Body-building foods	• Legumes: cowpeas, groundnuts, roundnuts, sugar beans • All meat including insects • Eggs • Milk and dairy products

Discussion: Crops and livestock for better nutrition

Time: 30 minutes

Materials: flip chart, marker pens

Steps

1. Introduce the session by explaining that in order to help us choose the most nutritious crops to grow and livestock to keep, we need to know the main nutrients which they contain.

Recap of nutritious foods

2. Remind the participants that the food group system can help us to understand which foods contain body-building nutrients, energy and protective nutrients.

3. Remind them that in Module 1 we found out that we need to eat more body-building foods (such as animal products and legumes), food which is high in fibre (such as brown rice and small grains) and food which is rich in vitamins and minerals (such as fruit and vegetables). In particular we need to eat food containing vitamin A and iron. Eating food rich in vitamin C help us absorb iron from other food.

Why don't we eat enough nutritious crops?

4. Ask participants to explain why people in Zimbabwe do not eat as many legumes, small grains and fruits and vegetables as they did in the past. Write their responses on the flip chart and discuss ways in which people could be encouraged to grow and eat more of these things.

5. Ask them which livestock they keep and which products are obtained from them. Ask which animal products (such as meat, milk, eggs) they usually buy, and how often they buy them and eat them. Are animal products consumed more regularly from small livestock or large livestock? Why?

6. Discuss any cultural or religious reasons which stop people from eating some livestock products. Are any members of the family restricted from eating certain livestock products such as eggs? Why?

Why don't we eat enough nutritious animal products?

7. Suggest ways in which livestock products could be consumed more frequently (such as by keeping small livestock).

Activity: Which nutrients do they contain?

Time: 30 minutes

Materials: flip chart, marker pens, food cards (photographs of different types of food). Before the session draw the outline of Table 7 on a large flip chart but leave the second column blank.

1. Explain that to avoid malnutrition we should grow a wide range of crops and keep livestock. To help us choose the crops we should grow we are going to play a card game.
2. Place the flip chart table which you prepared before the session onto the floor in front of the participants and ask them to gather around it. Hand the food cards to the participants and ask them to come up, one by one, and guess which nutrient is contained in the food by placing it in the correct position on the table. Explain that some cards may be placed in several different positions since (as we found out in Module 1) some food contains many different nutrients.
3. Each time a volunteer places a card on the table ask the other participants whether this position is correct or not.
4. Ask participants whether they currently grow this crop or keep the animals that produce this nutrient and if not, whether they would consider introducing them onto the family farm.

Wrap up

1. Ask participants what they have learned from the session. Make sure that they include the following:
   - Many nutritious foods can be produced on the family farm.
   - Foods which should be grown more widely include fruit and vegetables, small grains and indigenous rice and legumes.
   - Farmers should integrate livestock into their systems for increased nutrition from animal products.
2. Discuss why it is useful to know which crops and livestock products contain different nutrients.
3. Ask them how they will use this information.

2.3 SESSION 2.3: PLANNING WHAT TO PRODUCE (PART 2)

Aim

To enable participants to choose nutritious crops and livestock which are best adapted to their Natural Region.

Start here

1 Please read pages 58 to 60

2 do the discussion and

3 do the activity.

Facilitator's notes

When planning what crops to grow or livestock to keep, farmers need to think about those which are best adapted to their region. This will depend on the soil type, temperature, irrigation water availability and rainfall in the area.

Zimbabwe is divided into Natural Regions shown in Figure 11. The Natural Regions are based on the temperatures, rainfall, soil type and vegetation type found in the different areas.

continued...

Characteristics of the Natural Regions (NR)

NR I: High rainfall (over 1000mm per year), low temperatures and steep slopes

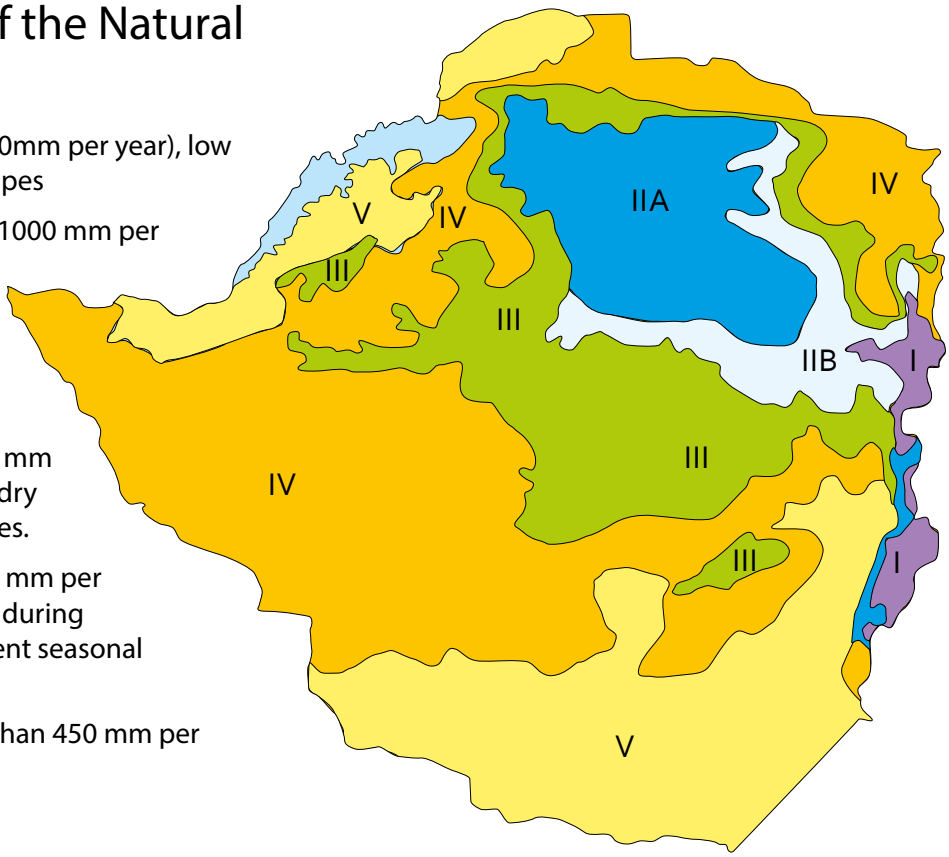
NR II: Medium rainfall (750-1000 mm per year) from November to March or April. Temperatures are not too extreme and soils are generally good.

NR III: Low rainfall (650-800 mm per year), with mid-season dry spells and high temperatures.

NR IV: Low rainfall (450-650 mm per year) with severe dry spells during the rainy season and frequent seasonal droughts.

NR V very low rainfall (less than 450 mm per year) and highly erratic.

Figure 11 The Natural Regions of Zimbabwe



Source: ZCATF, 2012

The following should be considered when planning which crops to grow and livestock to keep.

- Fruit, vegetables, herbs and mushrooms can be grown throughout Zimbabwe if water is available for irrigation. However, high temperatures and pest problems in regions IV and V may limit the growth of some vegetables and fruits in these areas.
- Due to frequent droughts, farmers in Natural Regions III to V should plant nutritious, drought-tolerant crops such as millet, sorghum, cassava, groundnuts, cowpeas and pigeon peas (Malawi peas).
- Frost can affect some fruit and vegetable crops at cool times of the year in some areas.
- Flooding and waterlogging can be a problem in low lying areas all over the country. Water-loving crops such as yams (*madhumbe*), rice, bananas and sweet potato can be grown in wet areas.
- Some crops grow better during the cool dry season while others grow better during the hot wet season.
- Small livestock such as chickens, ducks, guinea fowl, rabbits and guinea pigs, bees and fish can be kept throughout Zimbabwe if sufficient space, water, feed and shelter are available.
- Apart from farmed food, many nutritious products can be harvested from natural forest, grassland and wetland areas. These include wild-harvested vegetables, herbs, tubers, fruit, grains, mushrooms, edible insects and small animals such as mice and birds.

Table 8 shows different crops and livestock which can be grown in different Natural Regions and the best times of year for planting.

Table 8 Crops and livestock suitable for different Natural Regions

Food group and crops	Natural Region	Time of year to grow
Grain staples		
Maize	NR I-III in loam/clay soils in frost-free areas	Rainy season
Millets and sorghum	NR III-V in sand soils	Rainy season
Rice	All areas in waterlogged soils	Rainy season
Wheat	NR I-III in loam soils with irrigation	Cold season
Tubers and root staples		
Potatoes	NR I-II in loam/clay soils with irrigation	Best in the cold season
Sweet potatoes	NR II-V in clay soils	Rainy season
Yams	NR I-III in clay soils	Rainy season
Cassava	NR I- V in loam or sand soils	
Legumes and oil seeds		
Groundnuts, roundnuts, cowpeas, sugar beans	NR II-IV in sandy loam soils	Rainy season
Soybeans	NR II-III in loam soils	Rainy season
Vegetables		
Leafy vegetables (cabbage, *tsunga*, rape, *covo*, spinach, amaranth, *cleome/nyeve*)	NR I-V with irrigation in sandy loam or clay soils	Rainy season
Tomatoes, onions, garlic, leeks, carrots	NR I-V with irrigation in sandy loam soils	Rainy season
Pumpkins, squash, cucumbers	NR I-V with irrigation in sandy loam or clay soils	Rainy season

Food group and crops	Natural region
Fruit	
Temperate fruit (apple, peach, plum, nectarine, pear)	NR I-III with irrigation in sandy loam soils
Tropical fruit (banana, citrus, pawpaw, guava, mango, litchi, avocado)	NR II-V in frost-free areas preferably with irrigation in sandy loam soils
Livestock	
Dairy cows, pigs	NR I-III
Sheep	NR I-V (different breeds for different regions)
Beef cattle, goats, game	NR II-V
Small livestock (poultry, rabbits, guinea pigs, fish, bees)	All areas

Discussion: Knowing the conditions in your Natural Region

Time: 30 minutes

Materials: flip chart, marker pens

Steps

1. Please review the food groups with participants before this session using **Visual Aid 1**.
2. Introduce the session by explaining that you are going to find about the climate, rainfall, soils and other agricultural conditions in the local area. This will help you to choose the most appropriate crops and livestock for the area.
3. Now discuss the following with the participants and write their responses on the flip chart.
4. Which Natural Region do you live in? How much rainfall can you expect each year? During which months does this rain fall? Do you ever have dry spells or droughts?
5. Do you have any other sources of water in your community which can be used for crops and or livestock? What are they?
6. What are the temperatures like in your area? Does it ever get very hot or very cold? How does this affect the types of crops or livestock which you keep?
7. What are the soils like in your area? Are they fertile or not? How about the texture? Is it sand, clay or loam?
8. Is the land flat or sloping in your area? What problems can be caused by growing crops on sloping land?
9. Do you have any pests or diseases which affect crops and livestock in your area? What are the most common ones?

Review food groups

Climate, rainfall, water and soil in your region

Pests and diseases

Activity: Making a crop and livestock plan

Time: 40 minutes

Materials: For each group: flip chart paper, marker pens

1. Ask participants to list what they need to think about when planning which nutritious crops to grow or livestock to keep in their area. Make sure the following are included:
   - Nutrient content of the different crops/ livestock products
   - Types of crops/livestock which suit our area
   - The time of year when crops should be planted
   - The soil requirements of different crops
   - The sun/shade requirements of different crops
   - The water requirements (are they drought-tolerant or water-loving?)
   - What types of food, housing and fencing do the livestock require?
   - Where the crop should be grown for good management (in vegetable garden, orchard or fields).
2. Divide the participants into five small groups and allocate each a different food group. Ask each group to make a crop plan (using the template given in Table 9) to show what they could produce to supply a family in their area with enough nutritious food (from their food group) all year round. They will need to note the time of year when the crop can be planted. Encourage the participants to list as many different types of crops and livestock as possible but note that they should be realistic in their plan in terms of what they can produce in their area.
3. Give them 20-30 minutes to complete their plan.
4. Bring the participants together and ask each group to present their work. Discuss how realistic the plans are for the Natural Region.

Table 9 Blank crop plan for completion by participants

Food group	Crop/livestock	Time of year
Staples		
Fats/oils		
Legumes		
Animal products		
Fruits and vegetables		

Wrap up

1. Ask participants what they have learned from the session. Make sure they cover:
   - It is important to know the requirements of crops and livestock before trying to produce them in your area.
   - Farmers should try to produce a wide range of different crop and livestock products to improve the nutrition of their families.
   - Farmers should aim to produce nutritious food for their families all year.
2. Discuss why it is useful to develop a crop and livestock plan for improved nutrition and why it is important to know which crops and livestock can be produced in a particular area.
3. Ask them how they will use this information.

2.4 SESSION 2.4: NUTRITIOUS WILD-HARVESTED FOOD

Start here

1 Please read pages 63 to 64

2 do the discussion and

3 do the activity.

Aim

To help participants understand the nutritional value of wild-harvested food.

Facilitator's notes

Apart from those which can be produced on the family farm, many nutritious foods can be collected from natural areas such as forests and wetlands.

continued...

Wild-harvested produce includes honey, fruit and vegetables, roots and tubers, tree leaves and pods, herbs, mushrooms, insects and small animals (see Table 10 for some common ones). Many people do not know the value of these foods and consider them to be inferior to food which is bought or cultivated. In fact these foods can provide as many if not more nutrients than most exotic crops. For instance, edible insects are a very good source of fat, protein, vitamins, minerals (including calcium, iron and zinc) and fibre, while many wild fruits and vegetables are rich in vitamins and minerals.

The main advantage of wild-harvested produce is that it is better adapted to the local environment than most agricultural crops and livestock. Wild plants are usually drought-tolerant, tolerate poor soils and resist pest and disease attack. They are free to produce or collect and families can save money by using them to supplement their diet. Hence wild-harvested produce provides an important contribution to food and nutrition security.

Natural habitats where these nutritious plants grow wild are often under threat from agriculture, burning, deforestation and overgrazing. In many communities there are traditional rules about collecting natural resources, in order to conserve them. To ensure that wild-harvested produce continues to make an important contribution to food security, we should encourage people to collect it in moderation. It is important to protect and conserve wild habitats, so as not to exhaust the supply of natural resources.

Table 10 Common wild-harvested foods with their names in English, Shona and Ndebele

Type	Examples
Insects	caterpillars (*madora*, *amaximbi*), termites (*ishwa*, *amahlabusi*), locusts (*zwiwiza*, *intethe*), beetles (*ndere*, *marupwa*)
Other small animal products	birds, mice, fish
Fruit	baobab (*muuyu*, *umkhomo*), buffalo thorn (*masau*, *umpafa*), monkey orange (*mutamba*, *umkemeswane*), snot apple (*mutohwe*, *uxakuxaku*)
Leafy vegetables	blackjack (*muuwu, tsine, ucucuza*), amaranth (*bononGwe, mowa, imbuya*), spider flower (*nyevhe, ulude*)
Tubers and roots	wild potato (*tsenza*)
Mushrooms	field mushroom (*chikunguwo, ubudzuge*), apricot mushroom (*maphunha, vufirifiri*), termite fungi (*nhedzi, makhowa*)

Sources: Gomez, M.,1988; Tredgold, M., 1986

Discussion: Wild-harvested produce

Time: 20 minutes

Materials: flip chart, marker pens, samples of wild-harvested foods

Steps

1. Introduce the session by saying that you are going to talk about the nutritional benefits of collecting wild-harvested foods.
2. Show the participants the different samples of wild-harvested foods and ask them which wild-harvested foods they like to eat. Where do these foods come from?
3. Discuss reasons for these foods not being eaten more often and note that they are very good sources of nutrients.
4. Ask whether there are any cultural or traditional restrictions in their community on ownership, harvesting and selling wild-harvested produce. Discuss what would happen if people collected too much of it.
5. What other threats are there to the availability of wild-harvested produce (ie agriculture, burning, deforestation, overgrazing)? Discuss how natural areas can be protected to encourage sustainable collection of wild-harvested produce.

Wild-harvested foods & where they come from

High nutritional value

Sustainable harvesting and habitat conservation

Activity: Developing a wild-harvested produce calendar

Time: 30 minutes

Materials: flip chart, marker pens

1. Divide the participants into small groups according to different categories of wild-harvested produce, such as fruit, vegetables, animals/insects and mushrooms.
2. Ask each group to make a calendar showing the different times of year when the wild-harvested produce in their community is available for consumption. Ask them to identify which main nutrients can be found in the food type.
3. During report backs encourage participants to share their knowledge on the different methods for cooking and preserving wild-harvested produce.
4. Discuss the dangers of wrongly identifying wild-harvested produce, especially mushrooms.

Wrap up

1. Ask participants what they have learned from the session. Make sure they include:
   - Many nutritious wild-harvested products can be found in natural areas in the community.
   - Natural areas should be protected to increase access to and conservation of wild-harvested produce.
2. Discuss why it is good to eat wild-harvested produce.
3. Ask them how they will use this information.

Module 3: Harvesting, preparing and preserving food

3

Objectives

After completing this module participants will understand and be able to communicate information about:

* precautions needed when harvesting and handling food;
* selecting good quality nutritious food for buying, cooking and processing;
* safe ways to prepare and cook food that conserves as many nutrients as possible;
* safe and effective ways to store, process and preserve food; and
* ways to use some dried products.

Module overview

Session/Activity	Time (minutes)	Training aids required	Page
Session 3.1: Safe harvesting, handling and storage **Discussion:** Harvesting, handling and storage **Activity:** Harvesting, handling and storage tips **Wrap up**	75	Glass jar, salt, grain, **Visual Aid 7**	70
Session 3.2: Safe food preparation **Discussion:** Food preparation hygiene **Activity:** Making a food hygiene poster **Wrap up**	90	**Visual Aid 5**, **Visual Aid 8**	76
Session 3.3: Cooking different products **Discussion:** Nutritious cooking methods **Activity:** Steaming and stir fry demonstration **Activity:** Cooking beans in a hot box cooker **Wrap up**	120	Materials and ingredients for hot box demonstration, Materials for steaming vegetables demonstration	80
Session 3.4: Processing food **Discussion:** Better drying methods **Activity:** Drying different crops **Wrap up**	100	Agricultural produce and drying equipment	86
Session 3.5: Using dried products **Discussion:** Using dried products **Activity:** How to cook mixed grain porridge **Wrap up**	60	Ingredients and materials for cooking mixed grain porridge	91

Key definitions

Hygiene - the practice of cleanliness to avoid the spread of disease.

Food Processing – the changing or transformation of raw ingredients into food or changing food into other forms or types of food for marketing or preservation and storage.

Shelf life – the length of time which a product can be stored without spoiling.

Training tips for best practice

- Before you facilitate the sessions in this module, the participants must have completed Module 1 and Session 2.1 of Module 2.
- You can cover the sessions together or separately depending on the amount of time available.
- The sessions and activities are intended as a guide and can be adapted to the needs and literacy level of the participants in your training.
- Use drawings in place of written flip charts when working with communities with low literacy levels.
- Always read the background sections before conducting the session.
- If the participants do not know each other well use introductory exercises before the session (see Appendix 1 for examples).
- Use energisers if the participants seem tired during a long session (see Appendix 1 for examples).
- Try to avoid talking too much. Keep the sessions fun and as active as possible.
- Make sure to correct any misinformation given by the participants.
- At the end of the session reflect on what has been learned and review the key messages.

3.1 SESSION 3.1: SAFE HARVESTING, HANDLING AND STORAGE

Start here

1 Please read pages 70 to 73

2 do the discussion and

3 do the activity.

Aim

To help participants understand and be able to communicate safe harvesting and handling methods for different types of produce.

Facilitator's notes

As we learned in Module 2, nutrients can be lost from food at every stage between production and consumption. If food safety measures are not practiced then food can also become contaminated.

continued...

Farmers should be careful to harvest only mature produce since under-ripe produce contains fewer vitamins and minerals and may be hard for the body to digest. Overripe crops can be rotten, infested by insects or damaged by handling and humidity. You can tell how mature the crop is by looking at it: fruit crops generally change colour when they are ripe, cereals and legumes are ready for harvest when they are dry, and roots and tubers when they reach the desired size.

Below are some guidelines for harvesting, handling and storage of different types of produce.

Harvesting cereals

1. Indigenous rice (*mupunga*) should be harvested when the grains are hard and are turning yellow/brown. Cut the heads from the stem and place them in upright piles for drying before threshing.
2. Maize should be harvested when the cobs are dry with hard and glassy kernels. The cobs must not be left to dry in fields but should be spread on a clean cement floor or dried in a crib.
3. Millet (finger/pearl) should be harvested when the seed heads are dry. They should be dried on a crib, drying platform or frame.
4. Sorghum should be harvested when the stems and leaves of the plant have dried. When mature, the grains cannot be marked when scratched with a thumbnail.
5. Cereals should be stored in clean, dry containers and kept in a cool, dark, dry, well-ventilated place, protected from rats, mice and insects.

Harvesting legumes and oil seeds

1. Cowpeas and groundnuts should be harvested when the pods are yellow and dry and the skins of kernels are easily detached. Groundnut plants should be dug up and the excess soil removed. They should then be hung on drying frames for 3-4 weeks. Once completely cured, the groundnuts should be shelled and then carefully sorted to remove any mouldy or shrivelled nuts.
2. Roundnuts may be harvested fresh or dried in their shells. They are mature when brown patches start to appear on the pods.
3. Ripe soybean pods appear yellow and dry, and the skins of kernels are easily detached.

General harvesting, handling and storage tips

- Wear clean clothes and wash hands and tools before harvesting.
- Use clean, dry containers.
- Choose the coolest time of day during a period of dry weather.
- Eating produce which has been recently sprayed with chemicals can be bad for your health. If you spray or apply chemicals to your crops, make sure you follow the instructions on the container to allow enough time between spraying and harvesting.
- Avoid damaging dry produce (such as grain) or allowing it to come into contact with water.
- Dig up crops such as potatoes, cassava and yams (*madhumbes*) carefully to avoid breaking the skin.
- During packaging for storage or transport, produce should be cleaned and sorted so that any damaged produce is discarded. Do not put unripe fruit with ripe fruit.
- Pack produce in clean, dry containers. Store the containers in a cool, dark, dry, well-ventilated place, protected from rats, mice and insects.

Aflatoxins

All grains, especially groundnuts, can be contaminated with aflatoxin through poor production, harvesting, processing and storage. Aflatoxin is a poisonous chemical produced by a mould. If people eat produce contaminated by this toxin they can suffer irreversible damage to the liver. Aflatoxin can also damage the gut, reducing absorption of nutrients. This may be one of the causes of malnutrition, including stunting, underweight, learning difficulties, suppression of the immune system and death in children. Cooking or processing grains (such as making peanut butter) does not remove aflatoxins. Livestock must not be fed mouldy grain as they can become sick and their meat, milk or eggs may become contaminated.

Source: International Institute of Tropical Agriculture

Storing and harvesting cereals and legumes

1. Dried cereals and legumes must be threshed, winnowed and cleaned as soon as possible (removing any damaged, rotten or infested seeds or remains of leaves or pods).
2. Before storage, the grain should be tested for moisture content. An extension officer can do this for you using a moisture meter. Alternatively you can use the salt test (see below).
3. Cereals and legumes should be stored as unprocessed, whole grains in dry, insect-free, air-tight containers. Once they are milled into flour, they will have a shorter shelf life.

The salt test for grain moisture content

- Since dry salt absorbs moisture from grain you can eaily determine the moisture content of a grain sample. It should be below 15%.
- Place a sample of grain in a completely dry glass bottle or jar with a tight fitting lid.
- Add a teaspoon of dry salt. Shake the grain in the jar with the dry salt. If the salt sticks to the walls of the jar, the grain is too moist for storage.
- Farmers will learn by experience how to test whether their grain is dry enough for storage.
- Grain becomes harder as it gets drier so experienced farmers can tell by biting or pinching it, or by the different sound it makes when pouring or rattling it.

Grain storage methods

1. Insects and other pests can damage stored grain reducing its shelf life, exposing it to contamination, and reducing its nutrient value. By improving grain storage, families can store grain for many months, improving their food security and enabling them to sell surplus grain when prices are better. They can also keep seed for replanting, thus saving money.
2. Chemicals to protect stored grain are available from farmer supply shops. Some chemicals can be harmful to people's health so it is important to ensure that you use the right product and carefully follow instructions for use. Here are some effective traditional grain storage methods which do not require the use of bought chemicals:
    - Surround grain storage containers with wood ash to repel pests.
    - Cover grain in a very thin layer of vegetable oil to preserve it.
    - Place dried lavender leaves in storage containers.
    - Line storage containers with crushed Mexican marigold plants or sprinkle Mexican marigold powder between layers of stored grain.
    - Line storage containers with a 3-5 cm layer of leafy *zumbani* branches.
    - Take smoking branches into the grain store and allow the smoke to fill the room to kill pests.

- If pests have been seen in the granary, spread the grain out on a raised platform in full sunlight for a few hours and the weevils will run away.

Root and tuber crops

1. Root and tuber crops should be harvested when they reach the desired size.
2. They do not store well and are easily damaged, but they can be dried and made into chips which can be milled for flour.
3. Sweet potatoes and yams (*madhumbe*) do not store well but can be kept in pits for a few weeks or can be dried and made into chips.
4. Irish potatoes may be stored in pits or kept in boxes or trays lined with straw or in dry sacks.

Fruit and vegetables

1. Most fruit is mature when it reaches the desired size and changes colour. For the best flavour and most nutrients, leave the fruit to ripen on the plant.
2. Fruit should be cut from the stem of the plant leaving a small stalk.
3. Fruit should be handled carefully to avoid damaging the skin.
4. Soft fruit and fresh vegetables, especially leafy vegetables, do not store well so should be dried for long term storage.
5. Cassava can be dried and made into chips which can be milled for flour.
6. Sort fruit carefully before storage. Do not store ripe fruit (including tomatoes) with unripe fruit.
7. Fruit should be packed in clean, dry grass or newspaper.
8. Produce must be thoroughly dry before being stored in a dark, well-aired place.
9. Pumpkins and squash can be stored for several months, and should be turned every week to prevent mould.

Animal products

1. Strict hygiene is very important when handling animal products as contamination (from the environment, abattoir workers, pests and chemicals) can be extremely dangerous to health.
2. Meat and milk should be consumed as soon as possible or refrigerated or processed for storage.
3. Animals should be slaughtered in a clean, dry, dust-free area with a source of clean water and a cool, dry fly-proof hanging area. Clean protective clothing must be worn and hands and all implements must be thoroughly washed.
4. Animals should be killed as quickly and humanely as possible then hung up to bleed. The carcass should be skinned or plucked. The intestines and internal organs must be removed and examined for any deformities, parasites, unusual colouration, marks or swellings. Any carcass which has unhealthy organs must be discarded. The carcass must be washed before butchering.
5. All unprocessed meat must be stored in a refrigerator or freezer.
6. Milk should be collected in sterilised containers and stored in clean, glass containers in a refrigerator or freezer.
7. Eggs should be collected each day, wiped with a damp cloth (not soaked in water), and stored in a cool dark place.

Discussion: Harvesting, handling and storage

Time needed: 15 minutes

Materials: flip chart, marker pens, **Visual Aid 7**

Steps

1. Introduce the session by explaining that you are going to talk about safe ways to harvest, process, prepare and store food in order to maintain its nutritional value. Show participants **Visual Aid 7** and ask them to identify the different points when nutrient loss and contamination can occur. Make sure to review the key points given in the Facilitators notes for Session 3.1.
2. Ask participants to describe any problems they have had with harvesting, handling or storing crops or animal products.
3. Explain that you are going to carry out a group activity to develop some harvesting, handling and storage tips.

Activity: Harvesting, handling and storage tips

Time needed: 60 minutes

Materials: flip chart paper, marker pens, glass jar, fine grain salt, grain sample, e.g. maize

1. Divide participants into four groups. Ask each group to prepare a five minute presentation on harvesting and handling of one of the following:

   Group 1: roots and tubers, plus fruit and vegetables,

   Group 2: cereals,

   Group 3: legumes,

   Group 4: animal products.
2. Give them 15 minutes to prepare their presentation.
3. Give each group five minutes to present their work and discuss the points which they raise, adding any additional points from other participants and any information which may have been missed.
4. Use the Facilitator's notes to help you with the discussions.
5. Ensure that you highlight the dangers of aflatoxin.
6. Demonstrate the salt test for grain moisture content.
7. Ask participants to list which kinds of insects attack stored grains and which traditional and non-traditional methods are used to protect grains from insects.
8. Discuss some traditional methods of storing grain such as in granaries (*hozi*), clay storage bins, pots, metal and plastic drums, and baskets.
9. Talk about ways to improve granary designs such as using bricks and cement or metal granaries.
10. Discuss the pros and cons of community versus individual grain storage methods.
11. Discuss the dangers to people's health of using pesticides in grain storage.

Wrap up

1. Ask participants what they have learned from the session Make sure they include:
   - Poor hygiene and other practices when harvesting, handling, processing and storing food can lead to nutrient loss and contamination from germs and chemicals.
   - Particular care must be taken when harvesting, handling and storing grain to avoid contamination with aflatoxin and damage by pests.
2. Particular care and strict hygiene must be employed when handing animal products. Why is it useful to know about good harvesting, handling and storage practices, and how do they contribute to improved nutrition?
3. Ask them how they will use this information.

3.2 SESSION 3.2: SAFE FOOD PREPARATION

Start here

1 Please read pages 76 to 78

2 do the discussion and

3 do the activity.

Aim

To enable participants to understand and demonstrate safe, healthy ways to prepare food.

Facilitator's notes

Food which has been contaminated, damaged or exposed to air or moisture has reduced nutritional value, reduced shelf life, and can cause illness. If you want to sell fresh, cooked or processed produce then strict hygiene rules must be followed. It's important to prepare food safely to avoid illness and malnutrition, which can be caused by illness (see Session 1.4 for an overview of the link between illness and malnutrition).

continued...

Figure 12 Unhygienic household scene (Visual Aid 8)

Household hygiene and sanitation tips

- All family members should use clean, properly constructed toilets and children's faeces should be deposited in the toilet.
- All family members should wash their hands properly after using the toilet, cleaning nappies or looking after a sick person, as well as before and after preparing food and eating meals.
- All household rubbish should be safely disposed of in rubbish pits or bins which are covered to protect from flies and animals.
- Organic waste and livestock manure should be cleared up regularly and made into compost.
- Domestic animals must be kept away from food.
- Food should be stored off the ground and away from agricultural or other chemicals.

Personal hygiene tips for preparing food

- Clean clothes must be worn.
- Long hair or extensions must be tied back/ covered with a clean hat or scarf.
- Hands must be washed with soap (or ash) and warm water and dried with a clean towel.
- Finger nails must be kept short and cleaned with soap.
- Any wounds or sores must be covered with a clean bandage.

Avoid the following when preparing food:

- Drinking, smoking or eating while preparing food.
- Handling food if you are ill, sneezing or coughing on food.
- Scratching the skin when cooking.
- Wearing jewellery, false nails or other items which may fall into the food.

Food preparation hygiene tips

- All surfaces, cloths and utensils (knives, boards, cloths, plates, and pots) must be cleaned with soap and water.
- Any equipment used to prepare raw meat, offal, poultry and fish must be thoroughly washed with hot water and soap.
- Only safe, clean water can be used for drinking, washing produce and cooking. Water should be treated using chlorine or by being boiled vigorously for at least one minute. Water should always be stored in clean, covered containers.
- Fruit and vegetables should be washed in clean water before preparing. Cut off any blemished or damaged parts.
- Keep cut produce covered to avoid exposure to air, dust and flies.
- Eat food as soon as possible after cooking and avoid reheating it.

Hygiene tips when eating or drinking

- All family members should wash their hands properly before and after eating.
- Children should be taught how to wash their hands properly.
- Wash the hands of babies and caregivers before feeding babies.

Correct hand washing method

1. Pour clean water into the hands.
2. Rub the hands with soap or ash including the palms, the back of the hands, the fingers, in between the fingers, the nails, the finger tips, and the wrists.
3. Rinse the hands with clean water.

Discussion: Food preparation hygiene

Time needed: 30 minutes

Materials: flip chart paper, marker pens, **Visual Aid 5**, **Visual Aid 8**

Steps

1. Introduce the session by explaining that you are going to discuss some hygienic ways to prepare food to avoid contamination. Show the participants **Visual Aid 5** (the malnutrition / infection cycle) and review how malnutrition can lead to illness and how illness can in turn cause malnutrition.
2. Next show the participants **Visual Aid 8**.
3. Ask participants to point out high-risk practices shown in the picture. What could be improved in the household? Write their responses on the flip chart.
4. Note that in order to prevent disease and get the most nutrients from our food we should have a clean, hygienic home environment. What other hygiene measures should we take when preparing and eating food?

Food hygiene prevents illness

Poor and improved hygiene practices

Activity: Making a food hygiene poster

Time needed: 60 minutes

Materials: flip chart paper, marker pens

1. Explain that you are going to divide into groups and each group is going to make a poster to raise awareness about safe food preparation and eating practices. Divide participants into five groups as follows:
   - **Group 1:** good household hygiene
   - **Group 2:** good personal hygiene
   - **Group 3:** good hygiene when cooking
   - **Group 4:** good hygiene when eating
2. Give each group some pens and flip chart paper and ask them to develop an awareness-raising poster to communicate safe, healthy tips on food preparation aimed at people in their community. Explain that they should use pictures and words to communicate the information.
3. Give the participants 30 minutes to develop their posters and then present them to the larger group and discuss the effectiveness of the posters.
4. Give each group five minutes to present their group work. Add any extra information which may have been missed from the posters using the facilitator's notes.
5. Discuss the posters and ask participants to say what was effective about them and what could have been improved.

Wrap up

1. Ask participants what they have learned from the session. Make sure they include:
   - Food must be prepared in a hygienic way in a clean environment to avoid contamination.
   - Strict personal hygiene must be followed when preparing and eating food.
2. Ask them why is it useful to know about good hygiene when preparing and eating food.
3. Ask them how good food hygiene contributes to improved nutrition and health.
4. Ask participants how they will use this information.

3.3

SESSION 3.3: COOKING DIFFERENT PRODUCTS

Aim

To enable participants to demonstrate ways of cooking different products

Start here

1 Please read pages 80 to 82

2 do the discussion and

3 do the activities.

Facilitator's notes

Cooking food helps to kill harmful germs and parasites. It also makes some food more digestible. Unfortunately cooking can also damage the vitamins and minerals in food making it less nutritious. For this reason we need to be careful how we cook different products. Not all food has to be cooked. All fruit and some vegetables (e.g. carrots, peas, cucumber, and tomatoes) can be eaten raw. Different products need to be cooked in different ways to make the most of the nutrients which they offer.

continued...

Cooking Cereals

Unrefined cereals contain more nutrients and fibre than refined cereals. Cereals (including maize, millet, sorghum, rice and wheat) can be eaten whole but must be cooked before consumption. Dry, whole grain cereals are usually boiled or roasted such as when making *samp* (boiled cracked maize), *mangai* (boiled whole grain maize) or *mupunga* (brown rice). Cereals are usually processed into meal, which is boiled with water (*sadza*). Cereal flour may be used to make baked products such as bread, cakes and biscuits which have a longer shelf life than other cooked cereal products. Cereals can also be made into nutritious drinks including *mahewu* and traditional beer.

Cooking root and tuber crops

Potatoes, sweet potatoes, yams (*madumbe*) and cassava can be eaten boiled, baked, roasted or fried. Many of the nutrients in food are contained close to the skin. If the skin of sweet potatoes or potatoes is not too thick or dirty, it can be scrubbed, left on the food during cooking and eaten.

Note that cassava comes in bitter and sweet varieties. Both contain toxic cyanide but the sweet varieties contain lower levels. Peeling and processing cassava reduces the cyanide levels making it safe to eat. Before cooking or processing cassava the thick outer skin must be peeled off to remove toxins. It can then be cooked in the same way as potatoes or dried into chips and milled into flour.

Cooking Legumes

Legumes are an affordable and nutritious source of protein, fibre, vitamins and minerals.

Encouraging people to eat more legumes

Many people do not eat legumes because:

- they may taste dull;
- they cause gas and bloating when eaten;
- they take a long time to cook;
- they use a lot of fuel to cook.

These problems can be overcome by:

- cooking beans with other vegetables, herbs and spices to improve flavour;
- soaking beans overnight before cooking to make them quicker to cook, and reduce gas and bloating;
- skimming off the foam produced by the beans with a spoon during cooking to reduce gas and bloating;
- using a hot box cooker to cook the beans. This saves fuel and reduces cooking time.

Legumes can be cooked with mixtures of whole grain or cracked cereals to make very nutritious dishes such as *mutakura* and *rupiza*. The ingredients for these dishes can be pre-cooked until they are tender and then dried completely and stored for sale or for later use. To cook *mutakura* the ingredients can be combined and boiled for 30 minutes.

Soybeans

Some legumes contain toxic substances which must be removed by soaking and cooking. Soybeans must be soaked for at least 6 hours, boiled for 20-30 minutes and then dehulled (skins removed) before cooking to remove chemicals which reduce their nutritional content, digestibility and flavour. The hulls, which contain protein, can be fed to livestock.

Cooking with fats and oils

As we found in Module 1, fats and oils are an important part of our diet but if we eat too much they can be bad for our health. We usually add fats and oils during cooking, and most fats come from animal products including meat and dairy products (milk, cheese and butter). Most oils come from plant seeds including sunflower seeds, groundnuts, sesame and soybeans. Margarine is a refined version of cooking oil. Peanut butter (*dovi*) and sesame butter (*runinga*) are very nutritious sources of oil which contain protein, vitamins and minerals.

Cooking animal products

Meat and eggs can be boiled, roasted or fried. Insects can be fried with a little oil. When roasting or frying it is important not to burn (*gocha*) animal products, since they can harm your health. It is also important not to use too much oil or salt when cooking animal products.

Cooking vegetables

In Module 1 we learned that for improved health we should try to eat five different servings of fruit and vegetables each day. Most fruit can be eaten raw while vegetables can be eaten raw or cooked. The term vegetables includes: leafy vegetables (such as spinach, cabbage, rape and *covo*); those which we eat as fruit (such as tomatoes, peppers, cucumbers and pumpkins) and those which we eat as roots (such as beetroot, onions and carrots).

Wild-harvested vegetables (such as amaranth and blackjack) if cooked correctly can be as nutritious or more so than exotic vegetables. The leaves of some field crops (including cowpea leaves, young cassava leaves and young sweet potato leaves) may be cooked and eaten as vegetables. Tomatoes, onions, carrots, okra, pumpkin and green beans can be added to relish, soups and stews for extra flavour and nutrients.

- The skin of vegetables such as carrots, cucumber and butternut is highly nutritious, and may be eaten as long as it is clean and not too thick.
- With leafy vegetables, tearing the leaves into small pieces is better than cutting as less Vitamin C is lost.
- Do not use baking soda or bicarbonate of soda when cooking vegetables as this destroys nutrients.
- Avoid overcooking vegetables as this damages some vitamins and minerals. Cook vegetables in a small amount of water or a little oil until they are just tender (stir frying) or steam them.
- Some vitamins and minerals can dissolve in water. When boiling vegetables keep the water and add it to soups, meat or bean stews and relishes. Add vegetables to stews and relishes about ten minutes before the end of cooking time.
- Avoid adding large amounts of salt during cooking.

Discussion: Nutritious cooking methods

Time needed: 60 minutes

Materials: flip chart paper, marker pens, some samples of cooked cereal dishes and baked products, cooked root and tuber crops, cooked legumes, peanut butter, sesame (*runinga*), cooked vegetable dishes and cooked animal products.

Note to facilitator: If you have time, demonstrate better ways to prepare different types of food. Alternatively before the training session, arrange for some of the participants to demonstrate some of their own nutritious recipes with different ingredients, but ensure that they are promoting methods which improve the nutrient content of the food and demonstrate good hygiene.

Food hygiene

1. Introduce the session by explaining that you are going to talk about some ways to cook different products which will help to conserve or improve their nutrient value. Use the facilitator's notes to help you with this discussion.
2. Review some of the food preparation hygiene tips.
3. Say that you will first talk about cooking cereals. Ask participants which dishes contain whole cereals (*samp*, *mangai*, *mupunga*). Say that these are very nutritious.
4. Note that cereals are often processed into flour. Ask participants who can explain why it is better to eat unrefined cereals (roller meal, millet, sorghum, brown rice, brown flour) than refined cereals (white bread, super refined maize meal).
5. Ask participants to share any nutritious recipes for baked products (such as bread, cakes or biscuits) using unrefined cereal flour.

Conserving nutrients in cooking

6. Ask participants to describe their favourite methods for cooking root and tuber crops. Talk about the advantage of leaving the skin on during cooking and eating.
7. Next talk about ways to cook legumes. Ask why people do not eat legumes more often. Discuss the reasons and talk about how they can be overcome. Ask participants to share some nutritious legume recipes (such as *rupiza* and *mutakura*).
8. Discuss the use of fats and oils in cooking and why it is important not to use too much cooking oil or margarine in food. Note that mixing *dovi* and *runinga* to food is a very good way to add energy-giving, body-building and protective nutrients).
9. Talk about different ways to cook meat, eggs and insects. Note that eating burnt animal products or those cooked with too much fat or oil can be bad for the health.
10. Ask participants to list the different fruit and vegetables which they like to eat. Encourage them to mention a wide range of fruit, leafy and root vegetables as well as wild-harvested vegetables.
11. Discuss ways to prepare vegetables which retain nutrients such as keeping the skin on and tearing leaves rather than cutting.
12. Ask if they know of any cooking methods that can damage the nutrients in vegetables. Discuss alternatives to overcooking (cooking for a short time), using baking soda (use ash) and boiling vegetables in large amounts of water which is thrown away (steaming vegetables, stir frying or adding them to soups, stews and relishes).

Activity

Activity: Steaming and stir fry demonstration

Time needed: 20 minutes

Materials: cooking pot, frying pan, sieve, fork, green leafy vegetables, clean water, cooking oil, a heat source such as a fire or gas plate.

1. Demonstrate how to clean and prepare the leaves, removing all damaged or blemished parts and tearing them rather than cutting them.
2. Steam some of the vegetables in a sieve over a pot of boiling water using a fork to turn the vegetables to help them to cook completely.
3. Stir fry the rest of the vegetables in the frying pan using a small amount of oil and a little water.

Wrap up

1. Ask participants what they have learned from the session. Make sure that they recall the correct methods that should be followed for cooking different products to ensure that food is prepared to be as nutritious as possible.
2. Discuss why it is useful to know about better ways to cook different types of food. How does this contribute to improved nutrition?
3. Ask them how they will use this information.

Activity: Cooking beans in a hot box cooker

Time needed: 40 minutes

Materials: A large basket (*dengu*) or a large strong box, dried banana leaves, dry grass or old sacks or old blankets, two old cloths or soft hessian sacks, a cooking pot with short handles and a tightly-fitting lid, beans which have been soaked overnight, vegetables, herbs and spices if desired, clean water for cooking, heat source.

Tip for facilitator: ensure that you practice this demonstration before the session so that you are confident that you can effectively conduct the demonstration.

1. Explain that you are going to demonstrate a simple method for cooking and keeping food warm using very little firewood, called the hot box cooker. Any type of food which needs to be boiled such as beans, rice, meat stew, soups, pumpkins or potatoes can be cooked in a hot box. This is a particularly good method for cooking legumes.
2. The food is first boiled in a pot on a fire for 15-30 minutes until it is bubbling vigorously. You then place the pot in the hotbox where the heat in the food continues the cooking process. The food will be ready within a few hours, and will stay warm for about eight hours. The hot box method saves fire wood and reduces the amount of time you have to spend watching food cook. You can start cooking in the morning, place the food in the hot box while you go to work, and when you come home the food will be cooked and still hot – and it cannot burn!

Making the hot box

1. Show the participants the different materials which are used to make a hot box.
2. Line the container with the sack. Fill the container with the dry leaves, grass, cloths or blankets. Pack them in tightly leaving a space in the middle for the cooking pot.
3. Take an old cloth or an old hessian sack and use it to make a cushion by filling it with leaves/ grass/ cloths or blankets.

Demonstrate cooking with the hot box

1. Take the pot of beans. Explain that it has been soaking overnight. Soaking reduces cooking time. Drain off the soaking water and add clean water. Explain that draining off the soaking water removes some of the chemicals in the beans which cause bloating and gas.
2. Place the pot on the fire and bring it to the boil.
3. Boil the beans vigorously for 15 minutes (20-30 minutes for large beans such as roundnuts).
4. Keeping the lid tightly closed, remove the pot from the heat and quickly place it in the hotbox.
5. Cover the top of the pot with the cushion. Tell them that the pot must be left in the cooker for several hours, without removing the lid which will stop the food from cooking. If the lid is mistakenly removed, simply re-boil the food for about five minutes and replace in the hot box.
6. Explain that the cooking time varies depending on what you are cooking and the materials that you have used to make the cooker, so you will need to test your own cooker to find out exactly how much time it takes to cook different foods.
7. Note that most beans will be cooked after five hours. Other food such as rice, vegetables or meat stew takes less time. Explain that you can make the dish more tasty and nutritious by adding vegetables such as chopped onions, tomatoes, carrots, okra, green beans, herbs and spices.
8. Show the participants some beans which have been cooked in the hot box and give them a sample to taste.

3.4 SESSION 3.4: PROCESSING FOOD

Aim

To help participants learn and demonstrate effective methods for processing food.

Start here

1 Please read pages 86 to 88

2 do the discussion and

3 do the activity.

Facilitator's notes

While we have said that we should try not to eat processed foods, some food (such as cereals, legumes and cassava) must be processed to a certain extent for better nutrition and digestion.

continued...

Some processed food such as jams and baked products contain unhealthy amounts of sugar. Dried fish or meat may contain too much salt. Families should discuss the pros and cons before deciding to process food and must always ensure that they have enough nutritious food to last them throughout the year before selling surplus.

The advantages of processing food are:

- surplus crops can be preserved instead of having to be sold for a low price or thrown away when they go bad;
- nutritious food is available for consumption or sale throughout the year;
- the shelf life of food is increased for storage, transport and marketing
- it increases the range of products which can be eaten or sold;
- the weight and bulk of food are reduced making it easier to store and transport;
- the digestibility of some food (especially cassava, cereals and legumes) is improved, while some anti-nutritional substances are removed; and
- the nutritional value of food can be increased since nutrients are concentrated when water is removed.

Processing must be done correctly otherwise it can cause the food to become contaminated with germs or toxins which can lead to illness.

A wide range of foods can be processed as shown in Table 11.

Table 11 Common processed foods and their sources

Source	Processed products
Cereals	Germinated, fermented grains (*mahewu* and traditional beer), cracked whole grains (*samp*, cracked wheat), flours, flour mixes, baked products, fried and boiled products
Root and tuber crops	Fried chips, fried crisps, sweet potato jam and drink, dried chips, flour, baked products
Legumes	Parboiled *mitakura* mixes, legume flours, baked products, peanut butter
Fruit	Fruit leathers, dried fruit chips, jams, jellies, drinks
Vegetables/ herbs	Dried vegetables, dried herbs, herb teas, vegetable powders, bottled vegetables, pickles, vinegars
Meat/ fish	Dried meat/ fish
Milk	Cheese, butter, fermented milk products such as sour milk, sour cream and yoghurt
Wild-harvested products	Dried mushrooms, insects, fruit and vegetables

Drying produce

The cheapest, simplest and most effective method for preserving food in southern Africa is drying. Food which is dried properly tends to have a higher concentration of nutrients than fresh food. Dried products can be added directly to cooking or reconstituted by soaking in water before cooking. They can also be made into powders used for fortifying food to make it more nutritious. Drying makes products easier to store, package and transport, and preserves food by removing the water that helps germs to grow.

Most fruit, vegetables and root crops can be dried. Produce that is commonly dried includes bananas, mango, pawpaw, guava, okra, tomato, onion, pepper, pumpkin and squash, sweet potato, cassava and all green vegetables. Root and tuber crops, meat, fish and insects, mushrooms, pumpkin seeds, beans and grains can all be dried.

Drying tips

- Drying is best done during the dry season.
- Crops must be placed in a drier within 48 hours of harvesting.
- Sort produce into groups of similar ripeness.
- Wash in cool, clean water and remove any blemished or damaged sections.

- Peel, cut, slice or shred the produce into pieces of similar size so that they take the same amount of time to dry.
- Green vegetables should be blanched before you dry them to keep their colour and flavour and improve the shelf life.
- Avoid sun-drying. Drying in the shade reduces loss of nutrients.
- Dip fruit slices such as mangoes, guava or banana in lemon juice before drying.
- Dry produce as quickly as possible – preferably in one day.
- Place the produce on trays or racks in a warm place with moving air.
- Use a raised frame protected with gauze to keep out dust and insects.
- Store the dried produce in clean, dry, dark, airtight containers in well-ventilated places to avoid mould.
- Dried bananas, sweet potatoes, cassava and pumpkins can also be made into flour for storage.

Blanching

Blanching involves immersing the vegetables in hot water for a very short time. This quickly kills any germs and preserves the colour and flavour of the vegetables before drying. It shortens the drying time and the time taken to soften the dried produce before cooking. Blanching can be done by steaming or by dipping the leaves in salted boiling water for a few minutes,but cannot be used for okra, onions, garlic or chillies.

The solar drier

Direct sunlight destroys some vitamins. For this reason many people use solar driers to dry produce. Solar driers use warm air heated by the sun, which is then passed over the produce arranged on trays. In the solar drier, the direct sun does not touch the produce. The drier also protects the produce from dust and insects.

Root and tuber flour

Potatoes, sweet potatoes, cassava and yams (*madhumbe*) can be processed into dried chips to preserve them. After washing and peeling, slice or grate the roots or tubers into very thin, small chips less than 5mm thick. Squeeze the water out of the chips by rolling them in a cloth, wringing them out and placing them on a sheet of clean, dry black plastic in the drying frame or solar drier. The dried chips can be stored for 6-12 months. They

a simple solar drier

may be milled to produce flour for baking. About 50kg of fresh root/tuber crops makes about 9kg of flour. After milling, the flour should be sieved and then it can be used for baking or added to *sadza* during cooking to improve the nutrient content. The flour should be stored in clean, air-tight containers in a cool place.

Drying meat

Drying should be done in the dry season in a clean place which has warm dry air circulating through it and which is protected from insects and animals.

- All equipment must be very clean, and the person preparing the meat must follow strict hygiene rules.
- Only use freshly slaughtered meat.
- Remove the bones, fat, nerves, tendons, blood vessels and dirty spots or blemishes.
- Cut the meat into long thin strips of equal size (20-30cm long).
- Dip the strips in a 14% salt water solution (810g salt to 5 litres water) for five minutes.
- Hang the strips so that they can do not touch each other and air can circulate around them.
- Enclose the drying frames in insect-proof screens.
- The meat will take 4-5 days to dry. Drying must be gradual so that the outer meat surfaces do not become too dry while the inside is still wet.
- Store the dried meat in clean, dry paper, plastic or foil coverings. It can be stored for up to 6 months.

Discussion: Better drying methods

Time needed: 40 minutes

Materials: flip chart paper, marker pens, samples of processed food, green leafy vegetables, pot, clean water, heat source, sieve, chopping board, knife, samples of different produce for drying.

Steps

1. Explain that you are going to talk about ways to improve drying methods in order to conserve nutrients and reduce contamination.
2. Ask participants why we process food. List their responses on the flip chart and add other advantages mentioned in the Facilitator's notes.
3. Ask participants to brainstorm products which can be made from processed fruit and vegetables. Encourage them to describe any processing methods which they know.
4. Ask participants which produce they dry and which methods they recommend. Ask participants if they ever dry meat.
5. Write the names of products on the flip chart and ask participants whether they have come across any problems when drying food such as mould, dust or insect infestation.
6. Show the participants samples of different dried products and discuss tips to improve drying methods of crops and meat. Use the Facilitator's notes to help with this discussion.
7. Explain what blanching means.
8. Talk about different driers and describe a solar drier to the participants and explain its advantages.

Recap: why process foods?

What products are processed, and what are dried?

What are the challenges when drying food?

Activity: Drying different crops

Time needed: 60 minutes

Materials: a selection of fruit such as bananas, mango, guava, pawpaw, vegetables such as cowpea leaves, sweet potato leaves, amaranth, spinach, tomatoes, carrots, pumpkin, squash, *moringa*, and root crops such as yam (*madhumbe*), sweet potato and cassava. Chopping board, sharp knife, peeler, grater, cooking pot, clean water, sieve and heat source, mutton cloth, containers for different products, drying trays, a drying frame or solar drier.

1. Show the participants how to select and clean the produce by washing in cool water. Remove and damaged or blemished pieces.
2. Slice, tear or grate into pieces no larger than 1 cm depending on the product.
3. For green vegetables demonstrate how to blanch by steaming the vegetables in a sieve over boiling water or dipping the leaves in boiling water for 3 minutes.
4. For root and tuber chips place the grated pieces in a piece of mutton cloth and demonstrate how to squeeze the liquid out before spreading out the grated pieces to dry.
5. For fruit demonstrate how to dip the slices into lemon juice before drying.
6. Place the produce on mats or trays in the drier.
7. Explain that the produce must be turned each day until completely dry.

Wrap up

1. Ask participants what they have learned from the session. Make sure they discuss:
   - Food processing can help families have access to nutritious food all year round.
   - Different products can be processed in different ways but drying is the most practical method for most families.
2. Discuss why it is useful to know about better ways to dry different types of food. How does this contribute to improved nutrition?
3. Ask them how they will use this information.

3.5 SESSION 3.5: USING DRIED PRODUCTS

Start here

1 Please read pages 91 to 92

2 do the discussion and

3 do the activity.

Aim

To help participants understand and demonstrate how to use dried products.

Facilitator's notes

Once products have been dried they can be stored for later use or sold. One way to use dried products is to grind them into powder. Different powders can be mixed together to form nutritious blends which can be added to porridge, soups, stews and relish to improve the nutrient content. Dried fruit powders can be stored and made into fruit drinks by adding water.

continued...

Some nutritious powders include:

- Mixed vegetable powder
- Baobab powder
- Fish powder
- Groundnut powder
- Mango powder
- Guava powder

Flour blends

Explain that although maize is the main staple in Zimbabwe it does not contain as many nutrients and fibre as some of the small grains. Unfortunately some people find the more nutritious small grains (millet and sorghum) less palatable than maize. To overcome this problem we can make *sadza* and porridge from grain blends.

Both dried legumes and cereals can be milled into flour. Legume flour can be made by roasting cleaned dried peas or beans, de-hulling them if necessary, pounding or grinding, and then sieving the flour. Flour mixes can be made by combining cereal, legume and dried root and tuber crops to make them more nutritious. Powders such as those described above can also be added. The flour can then be used for making *sadza*, porridges or for baking.

Dried food powders and grain blends are ideal for adding to porridge and other food for babies under two years old. We will talk more about how to use them in Module 4.

Discussion: Using dried products

Time needed: 30 minutes

Materials: flip chart paper, marker pens

1. Introduce the session by explaining that you are going to talk about ways to use dried products in cooking in order to increase the nutrient content of food.
2. Ask participants if they ever eat dried products and get them to describe how they usually cook them.
3. Note that a convenient way to use dried products is to make them into powders which can be added to stews, soups and relishes.
4. Describe how to make and use some different powders.
5. Talk about flour blends made from cereal, legume and root and tuber flour. Note that blends can be used to make nutritious *sadza* or porridge. Describe how maize flour (which is less nutritious,) can be mixed with millet or sorghum flour (which contain more nutrients). Note that this is a good way to encourage people to eat more nutritious *sadza* and porridge.
6. Explain that you are going to do an activity to make some nutritious porridge out of grain blends.

Using powders

Flour blends

Activity: How to cook mixed grain porridge

Time needed: 30 minutes

Materials: cooking pot, heat source, clean water, metal tablespoon, wooden spoon. One of the following:

- 2 tablespoons bean flour, 1 tablespoon sorghum flour and 1 tablespoon groundnut powder; or
- 3 tablespoons pearl millet flour and 2 tablespoons groundnut powder; or
- 1 tablespoon of each of the following flours: pearl millet, sorghum, sugar beans, roundnuts and cowpeas.

You can increase the quantities depending on the number of participants so that everyone can try some of the porridge when it is cooked.

1. Show the participants how to mix all of the ingredients in a pot.
2. Add cold water to make a paste.
3. Add a cup of hot water or more if you have increased the amounts of ingredients.
4. Stir until the porridge starts to boil.
5. Simmer for 10 minutes. Add sugar and salt as desired.

Wrap up

1. Ask participants what they have learned from the session. Make sure they mention that dried food can be made into powders, flours and blends for preparation of nutritious dishes
2. Discuss why it is useful to know how to cook with dried powders and flour blends. How does this contribute to improved nutrition?
3. Ask them how they will use this information.

4 Module 4: Nutrition in the life cycle

Objectives

By the end of this module participants will be able to train others to understand and communicate the different nutritional requirements for different family members particularly:

* pregnant and breastfeeding women,
* children aged 0 – 6 months (exclusive breastfeeding),
* children aged 6 – 24 months (complementary feeding),
* children aged two to five years, and
* people who are sick.

Module overview

Session/Activity	Time (minutes)	Training aids required	Page
Session 4.1: Better food for the family **Discussion:** Nutritious meals for the family **Activity:** Planning better meals **Wrap up**	70		97
Session 4.2: Nutritious diets for women **Discussion:** Better food for mothers **Activity:** Maternal nutrition role play **Wrap up**	80	**Visual Aid 4**, Role play scripts	102
Session 4.3: Feeding babies from birth to 6 months **Discussion:** Feeding babies under 6 months **Activity:** Breastfeeding quiz **Wrap up**	60	Samples of family health cards	107
Session 4.4: Complementary feeding **Discussion:** Complementary feeding guidelines **Activity:** Preparing complementary foods **Wrap up**	90	**Visual Aid 9**, ingredients, cooking equipment	112
Session 4.5: Food for people who are sick **Discussion:** Feeding people who are sick **Activity:** Role play - feeding people who are sick **Wrap up**	90	**Visual Aid 5**, copies of **Appendix 4**	118

Key definitions

Exclusive breastfeeding - feeding the baby only breastmilk (no other foods or liquids) from birth until 6 months of age. To be successful, breastfeeding should be initiated within the first hour of birth (this is called early initiation of breastfeeding).

First milk (colostrum) - the thick yellowish milk which is produced from the breast soon after a baby is born. This milk is nutritious and contains important substances which help protect the baby from illness.

Complementary feeding - starts when infants are 6 months old and breastmilk or infant formula alone is no longer enough to meet their nutritional requirements. WHO and UNICEF recommend introducing nutritionally-adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to two years of age or beyond.

Complementary foods - any food which is a suitable complement to breastmilk when it becomes insufficient to satisfy the nutritional requirements of the infant.

Source: WHO, UNICEF 2009

Training tips for best practice

- Before you facilitate the sessions in this module, the participants must have covered the content from Module 1 and Module 3.
- You can cover the sessions together or separately depending on the amount of time which you have.
- The sessions and activities are intended as a guide and you should adapt them to the needs and literacy level of the participants in the community where you are training.
- Use drawings in place of written flip charts when working with communities with low literacy levels.
- Always read the background sections before conducting the session.
- If the participants do not know each other well use introductory exercises before the session (see Appendix 1 for examples).
- Use energisers if the participants seem tired during a long session (see Appendix 1 for examples).
- Try to avoid talking too much. Keep the sessions fun and as active as possible.
- Make sure that you correct any opinions or information given by the participants which are incorrect.
- At the end of each session reflect on what has been learned and review the key messages.

Note: *Most of the information from this module is adapted from the UNICEF and URC/CHS (2012) Infant and Young Child Feeding (IYCF) training modules. See: http://www.unicef.org/nutrition/index_58362.html for the complete training package, including a facilitator's guide, training aids, counselling cards and participant materials.*

4.1 SESSION 4.1: BETTER FOOD FOR THE FAMILY

Start here

1 Please read pages 97 to 99

2 do the discussion and

3 do the activity.

Aim

To enable participants to understand and communicate how to make nutritious meals for the whole family.

Facilitator's notes

As we learned in Module 1, it is important for all family members to have a nutritious, varied and balanced diet containing food from the different food groups in the right proportions. This ensures that everyone gets the nutrients which they need. The amount of food people need depends on their age, sex and how active they are.

continued...

Children

Children need frequent meals because they are growing and developing and have small stomachs which cannot take in a lot of food at a time - they need to eat small amounts often. They need enough food to help their bodies and brains develop properly, to give them energy, and to help their immune systems to fight diseases.

We will look at food for children aged 0-24 months in Sessions 4.3 and 4.4.

Many unhealthy foods including salty snacks, sweets and fizzy drinks, are marketed directly at children and young people, and made attractive with sweet or salty flavours, bright colours and packaging. Parents are often tempted to give these foods to children because they are convenient and seem to fill them up. However this type of food puts children at risk from obesity. Parents and teachers should discourage children from eating these foods, explaining the health dangers, and encouraging them to eat as much fresh fruit and vegetables as possible and get regular exercise to keep them healthy.

Teenagers

As boys and girls reach puberty their energy needs increase and they need to eat more. Girls in particular need to eat well as they become women. Their need for iron almost doubles when they begin to menstruate. Caregivers should enrich stews by adding a variety of different coloured vegetables such as pumpkin or butternut, carrots, tomatoes, onions and green beans. Peanut butter, fruit and vegetable powders and legume flour can be added to enrich soups, stews, relish, porridge or *sadza*.

Women

It is particularly important for women of child-bearing age – especially those who are pregnant or breastfeeding – to have sufficient nutritious food. Session 4.2 covers this in more detail.

Food for elderly people

Older people tend to be less active than younger people and usually have lower energy needs but they still need healthy balanced diets with the same amounts of protein and micronutrients. Old people do not usually like to eat large quantities of food so it is important that it is nutritious. Older people may not get enough to eat because they may:

- have few teeth or sore gums,
- have poor appetites because they are depressed or lonely,
- be sick or disabled,
- not have people to look after them properly, and
- care for many children and have little money.

Some old people may become overweight or obese because they are not able to be active.

Elderly people should be encouraged by family or community members to get a varied, nutritious diet and to eat with other family or community members rather than on their own. They need to exercise regularly and lead a healthy lifestyle (avoiding tobacco, drugs and alcohol). They should eat five to six small, non-fatty meals a day composed of nutritious foods from all of the food groups including meat, poultry, offal, eggs, fruits and vegetables, unrefined cereals and root and tuber crops. They should drink plenty of clean water each day.

Everyone can contribute to a healthy diet

Where men are the sole providers, they should ensure their family is well-nourished by providing enough money for the family to eat well. They should also grow food crops on the family farm for home consumption, not just cash crops. Income from the sale of cash crops can be used to buy nutritious and healthy foods, and ensure access to clean, safe water and proper sanitation as well as medical

and health care. Husbands can help to look after their wives when they are pregnant and breastfeeding, ensuring that they have sufficient nutritious food, a reduced workload and regular visits to the clinic for check-ups. Men should support their family members in order to reduce psychological stress on their wives and children, as this also affects their children's health, and growth and development.

Children can help with household chores and meal preparation. Mothers can teach them how to prepare nutritious meals and children can show mothers what they learn at school about nutrition and healthy eating.

Fathers and grandparents can help mothers to feed their babies well by supporting their decision to breastfeed exclusively for the first 6 months of the baby's life and by encouraging mothers to feed babies a wide range of nutritious complementary foods after the age of six months.

Planning healthy meals

A healthy diet is composed of meals, drinks and snacks. It is usually recommended that adults eat three main meals per day while children should have two nutritious snacks in between main meals. Meals do not need to contain food from all of the food groups, but family members should eat something from all the food groups over a day or two.

Planning nutritious meals for the family involves making sure that nutritious ingredients are available and that there is enough time to prepare them. Cooking also requires clean water and fuel. Meals and snacks also have to be organised for school children who are away at lunch time and those who work away from home. Women are usually responsible for planning and organising meals but they need support from their family members to ensure that the whole family has a healthy diet. Table 12 includes examples of nutritious meals and snacks.

Table 12 Nutritious meals and snacks

Morning meals	Mid day meals	Healthy snacks	Evening meals
Porridge (made from maize, millet or sorghum) mixed with peanut butter, or margarine or sour milk An egg, homemade brown bread and fruit Boiled beans	*Mutakura* and a banana Peanut butter on homemade bread Avocado and bread Boiled or roasted maize (*chibage*) a boiled egg and some fruit	Boiled or roasted sweet potatoes, cassava or *madhumbe* Pumpkin or squash (*mapudzi*) Popcorn (*maputi*) Roasted or boiled maize Roasted peanuts or pumpkin seeds Fresh fruit (mangos, bananas, pawpaw) Insects (*madora*, *ishwa*) *Mahewu* Homemade bread or biscuits, sweet potato biscuits	*Sadza* (maize, millet or sorghum) or brown rice with meat, chicken or fish stew or bean stew and leafy vegetables

Discussion: Nutritious meals for the family

Time needed: 30 minutes
Materials: flip charts, marker pens

Steps

1. Introduce the session by explaining that you are going to talk about planning nutritious meals for the whole family.
2. Ask which family members need nutritious food. Talk about the specific needs of babies, children, teenagers, women and the elderly. Use the Facilitator's notes to help you. Say that everyone in the family needs a nutritious, balanced, varied diet.
3. Ask participants who usually makes the decisions about what food is eaten in their family and who organises and prepares the meals. What factors determine what is eaten by family members?
4. Ask who usually provides the food for the family (the mother, father or someone else)?
5. Ask what factors go into planning meals (such as making the right foods available through buying, harvesting or collection, the time available to cook, fuel and availability of clean water).
6. Discuss people who eat outside the home (such as school children and people at work). Who makes sure that they have nutritious meals?
7. Discuss why some people have meals which are not nutritious. Include a discussion about junk food and how it is marketed at children. What can families do to make sure that everyone has a nutritious diet?
8. Note that it is usually women who are responsible for meal preparation in addition to all of their other work. Explain that organising and making nutritious meals can be hard work and needs support from all family members. Discuss ways in which other family members can help to organise and prepare meals.

Nutritional needs for different family members

Who is responsible for family well-being?

Planning nutritious meals

How family members can help ensure good family nutrition

Activity: Planning better meals

Time needed: 40 minutes

Materials: flip charts, marker pens

1. Explain that you are going to do a group activity to plan some nutritious family meals.
2. Divide the participants into four small groups and give each group a piece of flip chart paper and a marker pen.
3. Ask the groups to write down or draw some ideas for different meals for their family as follows:
   - Group 1: morning meals
   - Group 2: midday meals
   - Group 3: evening meals
   - Group 4: nutritious snacks
   - Group 5: meals for people to take to work or school.

   Give them fifteen minutes to do this.
4. Ask each group to present their work in five minutes. Identify which food groups are in the meals presented and discuss how realistic it is for people in their communities to access these types of foods.

Wrap up

1. Ask participants what they have learned from the session. Make sure they include:
   - Family diets should be nutritious and balanced, with a variety of different foods eaten each day.
   - Different family members (especially children, women, the elderly and the sick) need help to have a nutritious diet.
   - Fathers can play an important role in helping their families to have a nutritious diet.
2. Discuss why it is important and useful to know how to make nutritious, balanced family meals.
3. Ask participants to say how they will use this information to improve the diet of their families.

4.2 SESSION 4.2: NUTRITIOUS DIETS FOR WOMEN

Start here

1 Please read pages 102 to 103

2 do the discussion and

3 do the activity.

Aim

To enable participants to understand and communicate the nutritional needs of women at different stages in their lives.

Facilitator's notes

Even though women are often in charge of buying or growing food, planning and preparing meals, they often do not get a nutritious diet themselves. This is a serious problem as the health of the family depends on women being healthy and well, especially when they are pregnant and breastfeeding.

continued...

Women face many difficulties in planning and preparing meals for the family. These include:

- lack of time (because of many other chores including looking after children, cooking, cleaning, fetching fire wood and water, growing crops or other work);
- lack of money to buy nutritious ingredients;
- lack of knowledge about nutritious food;
- lack of fuel for cooking;
- cultural beliefs about diet during pregnancy and breastfeeding;
- lack of involvement in decision-making about food in the family; and
- lack of control of household income.

Undernourished women

If women do not get a nutritious diet when they are planning a baby, when they are pregnant and when they are breastfeeding it can affect the health of both the mother and the baby. If a woman is undernourished while pregnant, she is more likely to have problems when giving birth and her baby is likely to be too small. An underweight baby may grow and develop slowly, get sick easily and develop health and learning problems throughout life. In Zimbabwe, one in every 10 children is born too short for their age. If this is not corrected by the age of two, it has lasting impacts on the growth and development of the child.

It is better for a woman to delay her first pregnancy until she is an adult and has achieved optimal wellbeing. Teenage girls who become pregnant need especially healthy, balanced diets, because they themselves are still growing and can easily become malnourished. Undernourished pregnant women are more likely to have problems when giving birth and their babies are likely to have a low birth weight (under 2.5kg). Low birth weight babies tend to:

- grow and develop more slowly;
- pick up infections more easily;
- have nutritional disorders (such as iron, zinc and vitamin A deficiency); and
- develop health problems when they are adults, such as heart disease, high blood pressure, obesity and diabetes.

Overweight and obese women

If a woman is overweight or obese when she gets pregnant she may suffer complications during pregnancy and birth including: high blood pressure, diabetes and miscarriage. Obese mothers are more likely to need caesarean sections. Babies of overweight or obese mothers have an increased risk of brain and spinal cord defects, stillbirth, prematurity, and abnormally high birth weight. These babies have an increased risk developing heart disease, stroke and diabetes as they grow older.

Food for pregnant women

Once they begin menstruating, women need to eat nearly double the amount of iron that men eat. Pregnant or breastfeeding women should eat one extra nutritious meal per day.

Each day they should try to eat:

- healthy, unrefined staple foods;
- animal products and legumes;
- foods rich in iron, zinc, vitamin A, vitamin C and folate;
- iron/folate supplements available from the local clinic; and
- iodized salt – iodine deficient mothers may bear children who are physically or mentally disabled.

The following should be avoided:

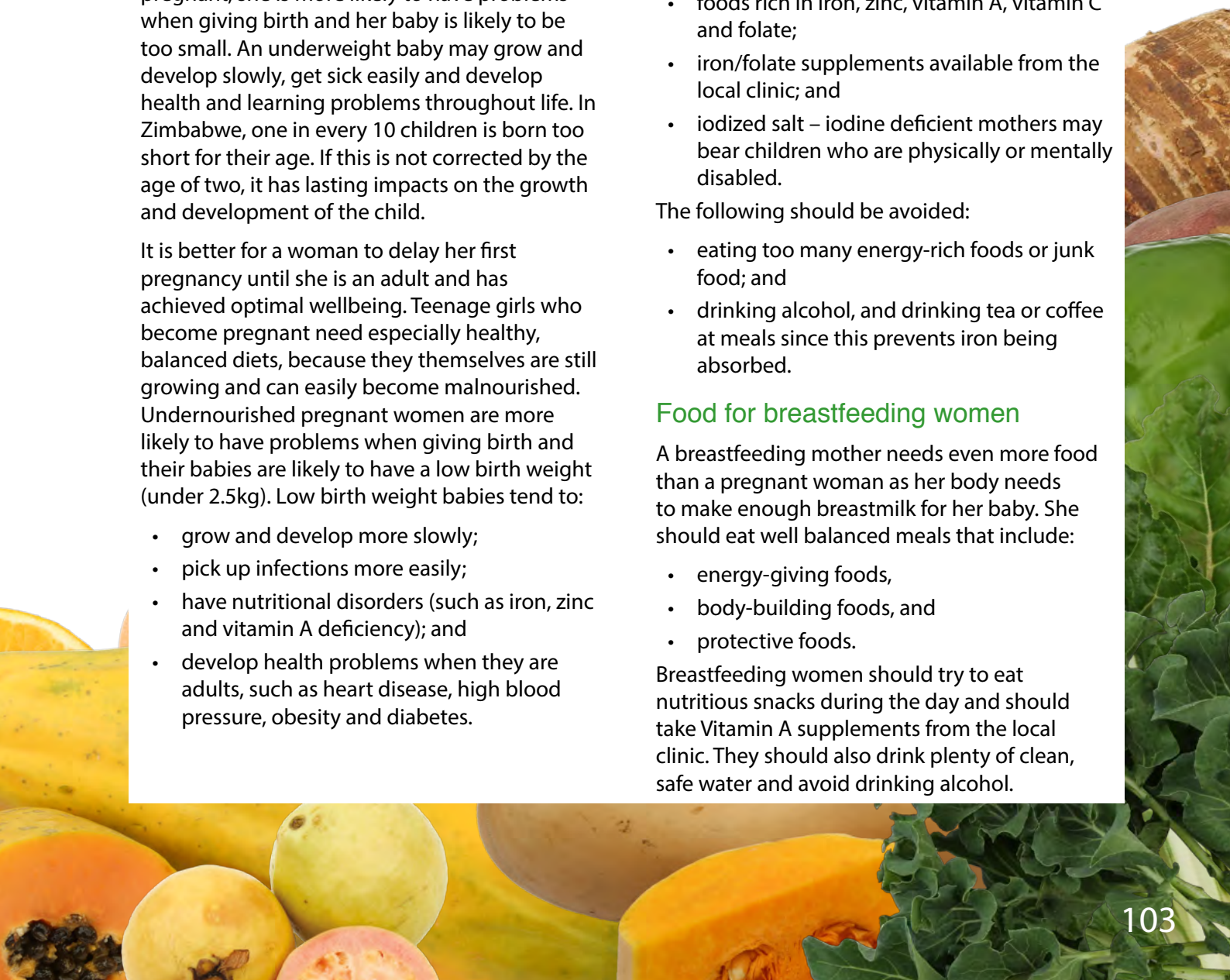
- eating too many energy-rich foods or junk food; and
- drinking alcohol, and drinking tea or coffee at meals since this prevents iron being absorbed.

Food for breastfeeding women

A breastfeeding mother needs even more food than a pregnant woman as her body needs to make enough breastmilk for her baby. She should eat well balanced meals that include:

- energy-giving foods,
- body-building foods, and
- protective foods.

Breastfeeding women should try to eat nutritious snacks during the day and should take Vitamin A supplements from the local clinic. They should also drink plenty of clean, safe water and avoid drinking alcohol.



Discussion: Better food for mothers

Time needed: 40 minutes

Materials: flip charts, marker pens, **Visual Aid 4** (Good nutrition is passed through generations)

Note: Use the Facilitator's notes to help you with this discussion.

1. Introduce the session by explaining that you are going to talk about why women of childbearing age, pregnant and breastfeeding women need a healthy diet.

Mothers need to be well-nourished

2. Ask participants to say why they think that pregnant and breastfeeding women need a balanced diet. Write their answers on the flip chart and ensure that they include:
   - A pregnant woman needs to increase the amount of nutritious food which she eats each day because she needs to feed herself and her growing baby.
   - If a woman is undernourished when she is pregnant, she is more likely to have problems giving birth, and her baby is likely to be born too small.
   - A small baby may grow and develop slowly, get sick easily and develop health and learning problems throughout life.

How a mal-nourished mother affects the health of her grand-children

3. Highlight the point that if a woman is not getting a healthy diet when she becomes pregnant her baby may suffer from undernutrition. For this reason women of childbearing age must have a nutritious, balanced diet.

4. Show the participants **Visual Aid 4** to remind them of how malnutrition can be passed between the generations when a malnourished mother gets pregnant and gives birth to an underweight or stunted baby. Describe how this baby could grow up stunted and may become a less productive adult. If she is a girl she may in turn give birth to an underweight baby.

Causes of malnutrition

5. Ask participants to explain why a mother may not be well-nourished when she is pregnant or breastfeeding. Write their responses on the flip chart and discuss them.

6. Explain that pregnant and breastfeeding women need to eat extra food rich in nutrients especially: unrefined staple foods such as millet, sorghum and maize; animal products such as eggs, meat, offal, fish, poultry; legumes; yellow and orange fruit and vegetables and dark green leafy vegetables. They should use iodized salt in their food because iodine is important for growing babies, but it should be taken in moderation as it may cause high blood pressure. Pregnant women must also visit their clinic regularly for check-ups and to get iron and folate supplements. Breastfeeding women should take vitamin A supplements supplied by the clinic.

Healthy diet for mothers

Activity: Maternal nutrition role play

Time needed: 40 minutes

Materials: role play scripts (3 copies in local language)

Tip for the facilitator: The day before the session, find three participants to play the role of Mrs Rugare, Mr Rugare and Grandmother Rugare. You should substitute names for the role play characters which are appropriate for the community which you are working in. Translate the role play into the local language and give the volunteers a copy of the script and ask them to practice the role play before the session.

1. Explain that you are going to do a role play about good nutrition during pregnancy and breastfeeding.
2. Introduce the role play characters. Say that Mrs Rugare is 21 years old and she is seven months pregnant with her first child. Mr Rugare is her husband. Grandmother Rugare is her mother-in-law.
3. Ask the volunteers to read and act out the script.

Script

At the beginning of the scene Mrs Rugare is lying on a sleeping mat.

Mrs Rugare: Oh I am so tired, my back aches. I feel as though I have no energy and I am so hungry!

Mr Rugare comes into the room

Mr Rugare: Wife! Where is my porridge? It is getting late – time for you to be in the fields.

Mrs Rugare gets up slowly and begins preparing the porridge. She puts some into a bowl for her husband.

Mrs Rugare: I am sorry husband but I just feel so tired and so hungry! I have an appointment to go to the clinic this morning for a check up.

She hands him the bowl. Mr Rugare eats his porridge. Mrs Rugare tries to help herself to some porridge but before she gets a chance...

Mr Rugare: Well there's no time to go to the clinic. The maize needs weeding! Have you heated water for my bath? Can you go and get the water? Did you remember to wash my blue shirt? What about the porridge for mother?

Mrs Rugare goes to fetch the water from the fire and comes back carrying a heavy pot filled with boiling water.

Mr Rugare: Careful! You will spill the water!

Grandmother Rugare comes into the room

4. Stop the role play and ask participants whether they think that Mr Rugare is supporting his pregnant wife in having a healthy diet.
5. Divide the participants into four small groups. Ask each group to think of something that Grandmother Rugare should say to her son to encourage him to support his pregnant wife. Give them ten minutes to do this.
6. When they have finished, ask the volunteer who is playing Grandmother Rugare to read out each group's points in turn. Discuss the points after each reading. Include the following points in the discussion:
   - Mr Rugare could allow his wife to rest while he does some of the work.
   - Mr Rugare should make sure that his wife eats.

- Mr Rugare should encourage his wife to go to the clinic for her check-up and iron/folate pills.
- Mr Rugare should not make his wife carry the heavy pot of water.

7. Ask participants what could be added to the porridge to make it more nutritious? Note that sorghum or millet porridge would be better than maize porridge and it would be more nutritious if sour milk and peanut butter were added.
8. Ask what other kinds of food Mrs Rugare should be eating to have a nutritious diet.

participants performing a role play

Wrap up

1. Ask participants what they have learned from the session. Make sure they include:
   - Well-nourished mothers have healthy babies.
   - Pregnant and breastfeeding women should eat balanced meals.
   - They should use iodized salt and drink plenty of clean, safe water.
   - Pregnant women should take iron and folate supplements.
   - Breastfeeding women should take Vitamin A supplements.
   - Fathers, families, and communities should support pregnant and breastfeeding women to have a nutritious diet and get enough rest.
2. Discuss why it is important to know what pregnant and breastfeeding women should eat and why they need this diet.
3. Ask participants to explain how they will use this information to make sure that pregnant and breastfeeding women in their family and community get a nutritious diet.

4.3 SESSION 4.3: FEEDING BABIES FROM BIRTH TO 6 MONTHS

Start here

1 Please read pages 107 to 108

2 do the discussion and

3 do the activity.

Aim

To enable participants to understand and communicate the importance of exclusive breastfeeding.

Facilitator's notes

The time between conception and 24 months (the first 1000) days of a baby's life is very important because if children do not get the right kind of food during this time, it can affect their physical and mental development for the rest of their lives. As we saw in session 4.1, a mother needs a nutritious diet from before she becomes pregnant to ensure that she has a healthy baby. She needs a nutritious diet and plenty of rest throughout her pregnancy.

continued...

Exclusive breastfeeding

Once the baby is born, he or she should be put onto the breast within the first hour of birth. The first yellowish milk that comes from the breast is called colostrum. It is nutritious and contains protective substances which help protect the baby from illness.

- The baby should be fed only breastmilk from birth or until he or she is 6 months old.
- Breastmilk is all the food and drink that babies needs for the first 6 months of life. The baby should not be given anything else, not even water, medicines or vitamin/mineral supplements unless it has been prescribed by a medical practitioner.
- Babies should be allowed to breastfeed as often as they want during both the day and the night for the first 6 months.
- The more the baby feeds, the more milk will be produced.
- Breastfeeding should continue until the baby is two years old or older and complementary foods should be introduced at 6 months.
- The mother should continue breastfeeding even if she or the baby is sick.

HIV, pregnancy and breastfeeding

A baby born to a HIV-infected mother can be infected with HIV during pregnancy, labour, delivery, and breastfeeding. If the mother takes ARVs during pregnancy and the baby receives medication at birth, and is breast fed exclusively, the risk of the baby getting HIV is greatly reduced.

Although HIV can be passed to babies in breastmilk, the benefits of breastfeeding (protecting infants against childhood illness, malnutrition and death) outweigh the risks of contracting HIV.

- All pregnant women should be tested for HIV.
- HIV positive pregnant women should go for counselling with a trained health worker and get information on feeding their babies. They also need to get the right treatment to avoid passing the virus to the baby.

Health visits

The baby and mother should go for medical check-ups at the nearest health facility within a week of giving birth; then at four weeks for immunisations and weighing; and at 6 weeks for weighing and check-ups. After that the baby must go for weighing and growth monitoring every month. At three months the baby will need more immunisations. The baby will also receive Vitamin A supplements once every six months.

It is important that the baby is weighed and measured regularly to ensure proper growth. The weight and height will be written on the child's health card, along with a record of immunisations. Mothers and caregivers should ensure that all children are vaccinated on schedule, since this protect children from illnesses that may affect their growth and development.

If a baby is gaining weight gradually, this shows that he or she is growing properly. If the baby is gaining weight too slowly, not gaining weight (or losing weight), there could be a health problem or else the baby is not getting enough to eat. If babies gain weight too quickly this could mean that they are in danger of becoming overweight or obese. If babies do not gaining weight normally, health workers will counsel mothers on the best way to address the problem.

Discussion: Feeding babies under 6 months

Time needed: 30 minutes

Materials: flip chart, marker pens. Samples of family health cards for boys and girls.

Steps

1. Explain that you are going to talk about feeding babies aged 0-6 months.
2. Ask participants to say which age in a child's life is the most important time to have a healthy diet. Now introduce the first 1000 days concept.
3. Ask participants to say what kind of food a baby should get from birth. Emphasise the need for allowing the baby to drink the first milk (colostrum) and exclusive breastfeeding. Explain what exclusive breastfeeding means. Ask participants how often a baby should be breastfed. Note that the baby should be fed on demand between 8-12 times per day during both the day and night.

Breastfeeding tips

4. Ask participants to say what the benefits of breastfeeding are. Write them on the flip chart. Explain that the benefits of breastfeeding: providing the baby with food and protection from illness, it is safe, cheap and readily available, it encourages bonding between mother and baby and it can help prevent another pregnancy while breastfeeding.
5. Ask why some women do not exclusively breastfeed their babies for the first 6 months.
6. Ask participants to say how long a baby should feed at one time. Note that the baby should be allowed to finish feeding from one breast before switching to the other breast. This will ensure that the baby gets the nutritious hind milk. Ask participants to give the age when a mother should stop breastfeeding her baby. Note that the baby should be exclusively breastfed for the first 6 months. At this time some first foods can be given but the mother should continue breastfeeding the baby for the first two years or longer if she is able.

HIV testing

7. Explain that all pregnant women should go for HIV testing. A woman who knows she is HIV positive should discuss her baby feeding options with a trained health worker.
8. Show participants a family health card for a boy and one for a girl. Say that there are different cards for boys and girls because male and female babies grow at different rates. Explain that new mothers will receive these cards from the health facility when the baby is born and will use them each time they visit the health facility for growth monitoring and recording immunisations.

Growth monitoring

9. Show how the growth chart will look for a healthy baby and a baby who is not gaining weight.

Activity: Breastfeeding quiz

Time: 30 minutes

Materials: none

1. Explain that you are going to do an activity to see how much people know about good breastfeeding practices. Note that at the beginning of the activity, all participants will stand in the middle of the room while you will read out a statement from Table 13. The participants who agree with the statement should go to the right of the room while those who disagree should go to the left. When everyone is in place you will all discuss whether the statement is correct or not. Then you will read out the next statement.
2. Ask participants to stand up and move to the centre of the room.
3. Read one of the statements in Table 13 and then ask participants to move to the side of the room according to whether they agree or disagree with the statement.
4. Ask participants on the right of the room why they agree with the statement. Then ask participants on the left why they disagree. Encourage discussion and make sure that participants understand the correct message and explanation for each statement.
5. Ask all of the participants to return to the centre of the room before reading out the next statement.
6. Repeat the previous steps using the next statement in Table 13.

Wrap up

1. Ask participants what they have learned from the session. Make sure that they include the following:
   - Mothers should begin breastfeeding within the first hour of birth so babies can drink the yellow colostrum, (first milk) which helps to protect a baby from diseases.
   - Babies should not be fed any food or liquids other than breastmilk for the first six months. Any other food or drink is not necessary and can make the baby sick.
2. Discuss why it is important to know about the importance of exclusive breastfeeding and how to do it correctly.
3. Ask participants to explain how they will use this information to make sure that babies under 6 months in their community get a nutritious diet.

Table 13 Statements on breastfeeding practices

Statement	Correct message and explanation
The mother should not feed her baby the yellow first milk (colostrum) because it has no nutrients. She should wait until the white milk is produced.	(Disagree) The mother should put the baby onto the breast within the first hour of birth. The first milk is very good because it helps to protect the baby from disease. Not giving the baby the first milk can increase the risk of illness.
A mother should breastfeed a sick child.	(Agree) A mother should breastfeed a sick child even more frequently than usual to ensure that the child receives the nutrients and liquid s/he needs to get better.
When the weather is very hot a baby under 6 months should be given water to drink.	(Disagree) Babies under 6 months get enough fluid from breastmilk. They do not need extra water.
Even if the baby gets flatulence, the mother should not give the baby traditional medicine.	(Agree) The mother should not give any medicine to the baby without seeking guidance from a trained health worker.
The mother should not feed her baby at night because she will not get enough sleep.	(Disagree) Babies should be fed day and night whenever they are hungry.
The mother should let the baby finish the milk from one breast before switching to the other breast.	(Agree) Allowing the baby to finish the milk from the first breast makes sure that the baby gets the nutritious hind milk.
Porridge should be given to babies under six months because breastmilk is not enough for a baby to grow big and strong.	(Disagree) Babies under 6 months should be given only breastmilk as it provides all the nutrients that a baby needs during that period. Other food or drink can make the baby sick.
A mother who is HIV positive should not breastfeed her baby.	(Disagree) She should get advice from a trained health worker to find out what the options are for her. Breastfeeding may be the best option.
If the mother has to go to work she can express breastmilk and give it to the caregiver who is looking after her baby.	(Agree). The mother should express milk into a clean cup which is kept cool (refrigerated). The caregiver should feed the baby from the clean cup not a bottle.
The mother should stop breastfeeding if she gets a cold or diarrhoea.	(Disagree) A mother should breastfeed even if she gets a cold or diarrhoea.

4.4 SESSION 4.4: COMPLEMENTARY FEEDING

Start here

1 Please read pages 112 to 114

2 do the discussion and

3 do the activity.

Aim

To enable participants to understand and communicate correct information about complementary feeding.

Facilitator's notes

From the age of 6 months, breastmilk supplies about half the energy needs of a growing baby and the other half must come from other foods. Breastmilk does not contain enough iron and vitamin A for a baby older than 6 months. At this age babies are ready to eat and digest other foods which we call first foods or complementary foods. The work "complementary" comes from the fact that these foods are important to complement or add to the nutrients already provided by breastmilk. Breastfeeding should therefore continue together with these other foods.

continued...

Breastfeeding should continue until the baby is at least two years old because of its important disease-protection function and the comfort and contact between the mother and the baby provided by breastfeeding which improves child development. It also provides important nutrition for the growing baby's needs.

When preparing complementary foods caregivers should avoid feeding babies with spicy food, or adding too much sugar or too much salt. Complementary foods do not include unhealthy snacks, sweets, tea, coffee and sugary drinks.

Complementary feeding tips

- **Frequency and amount of food**: As babies grow older they need to eat more food more often.
- **Texture**: At first the food must be soft because babies are not able to chew solid food. Food should not be too thin and watery and should not contain anything that could cause the child to choke. Older babies can have food that is thicker.
- **Variety**: The food should include all of the food groups (staples, legumes and oil seeds, animal products, fats and oils and fruit and vegetables). Complementary food should be the same food as the rest of the family is eating (i.e. family foods), but modified in texture to suit the age of the baby.
- **Active feeding**: The baby must learn to associate food with enjoyment. The caregiver should make meal times fun and encourage the child to eat. Caregivers should be patient and praise the child when s/he eats well. A child should never be forced to eat and mothers and caregivers should avoid harsh feeding practices such as closing the nose and pouring food down the child's throat.
- **Hygiene**: Caregivers should always wash both their own hands and the child's hands with soap and water, before and after eating. Clean utensils, clean food and clean, safe water should be used to prepare the food. (Review the food preparation and storage hygiene recommendations in Module 3).

Home food fortification

Complementary foods can be enriched with different ingredients to improve the nutrient content. A traditional way of doing this is by adding peanut butter or sour milk to porridges.

Adding eggs to porridges and mashes during cooking is another way to increase the nutrient content.

Other ways of fortifying complementary foods can be to add vegetable or fruit powders (discussed in Module 3), dried fish powder or legume powder.

Table 14 shows some foods which are suitable for complementary feeding. Recipes for some of these are given in the activity.

Table 14 Recommended complementary food for babies and infants

Meals	Snacks
Any cooked family food which can be mashed or chopped finely with a little liquid added to soften	Boiled egg
Millet or sorghum porridge with sour milk and peanut butter or with baobab powder mixed in	Fruit (especially banana, mango, pawpaw, avocado)
Porridge made from cereal and legume flour with leafy green vegetables mixed in	Boiled or roasted sweet potatoes (especially orange fleshed), cassava, *madhumbes* (yams)
Nhopi (made with mashed pumpkin or butternut, peanut butter and maize flour)	Brown bread or *chimodo* bread with peanut butter
Mixed vegetable mash (boiled sweet potato with green vegetables, tomato and peanut butter.	*Mahewu*
Zimbabwe multimix (maize, millet or sorghum flour, bean flour, chopped spinach and vegetable oil)	Sour milk
Cereal, groundnut egg and green vegetable porridge	
Mupunga (brown rice with peanut butter) mixed with vegetables	
Mashed *mutakura* with vegetables	

Figure 13 Guidelines for feeding babies of different ages (Visual Aid 9)

At 6-9 months

Frequency: Give the baby two to three meals per day plus frequent breastfeeds.

Amount: Begin with 2-3 tablespoons (tbsp) of food and gradually increase to half a 250ml bowl by 9 months.

Texture: Start with 2-3 tbsp of soft, thick, bland tasting food.

Variety: Start with porridge made from a staple e.g. millet, sorghum, maize, rice or potatoes. Add breastmilk or cow's milk to moisten the food.

Add a new food to the diet each week.

Gradually introduce animal products including cooked chopped meat, fish, poultry, liver, eggs and milk products.

Begin adding mashed legumes, orange and yellow fruit and vegetable mashes, chopped dark green leafy vegetables.

At 8 months start introducing finger foods which the baby can hold and eat without help.

At 9-12 months

Frequency: Give the baby three to four meals per day plus breastfeeds.

Offer the child one to two snacks between meals.

Amount: Feed the baby half a 250ml bowl increasing to three quarters of a bowl by 9 months.

Texture: Finely chopped, sliced or mashed foods.

Give the baby finger foods which he or she can hold.

Variety: Feed the baby the same foods as the rest of the family but chop them finely or mash them.

Give healthy snacks such as fruit, or sweet potato.

Give foods from all food groups (staples, animal products, legumes, vegetables and fruit).

Mix in a small amount of oil to give extra energy unless the food is fried or the baby is overweight.

At 12-24 months

Frequency: Give the baby three to four meals per day plus breastfeeds.

Offer the child one to two snacks between meals.

Amount: Feed the baby three quarters of a 250ml bowl increasing to a whole bowl by 9 months.

Texture: Finely chopped, sliced or mashed foods.

Give the baby finger foods which s/he can hold.

Variety: Feed the baby the same foods as the rest of the family but chop them finely or mash them.

Give healthy snacks such as fruit, or sweet potato.

Give foods from all food groups (staples, animal products, legumes, vegetables and fruit).

Mix in a small amount of oil to give extra energy unless the food is fried or the baby is overweight.

Discussion: Complementary feeding guidelines

Time needed: 30 minutes

Materials: cup, tablespoon, **Visual Aid 9**

1. Introduce the session by explaining that you are going to talk about feeding babies aged 6-24 months.
2. Ask participants to describe what kinds of food they would give to a 6 month old baby.
3. What would the texture of the food be like? How much would they give each time? How often would they feed the baby?
4. Explain that complementary foods are any food which is suitable as a complement to breastmilk when from 6 months of age. Note that many caregivers do not realise that like adults, babies need a diet containing all of the food groups (staples, legumes, animal products, fats and oils and fruit and vegetables).
5. Discuss some meals and snacks which would be suitable for complementary feeding of children in terms of texture and variety. See Table 14 for more ideas.
6. Using **Visual Aid 9** talk about the frequency, amount, texture and variety of foods which should be given to babies of different ages.
7. Show participants a 250ml cup and a tablespoon so that they can see the exact amounts of food which should be given.

Variety and texture

Frequency

Amount

Activity: Preparing complementary foods

Time needed: 60 minutes or longer depending on how many recipes are demonstrated.

Materials: a variety of different types of cooked and raw food ingredients from the different food groups, cooking utensils (including a knife and board for chopping and a potato masher or a fork), source of heat for cooking such as a gas cooker or fire.

Using the recipes below or your own recipes, demonstrate how to prepare some nutritious, balanced complementary foods. Before preparing the food, review the hygiene guidelines for preparing food and cooking methods for conserving nutrients from Module 3.

Pumpkin cooked in peanut butter (*nhopi*)

Ingredients

- pumpkin (*nhanga* or *shamba*) or butternut
- peanut butter (*dovi*)
- a pinch of salt
- ½ cup of water
- maize meal or cooked mashed sweet potatoes to thicken

Method

Wash and peel the pumpkin. Cut into cubes. Boil until soft. Add maize meal to thicken. Add peanut butter and salt to taste. Simmer for 20 minutes.

Explain that *nhopi* is a good first food because it contains energy-giving nutrients, body-building nutrients and protective nutrients. It is also soft and easy for the baby to chew.

Millet and bean porridge

Ingredients

- ¼ tablespoon dried cowpea leaves pounded into powder
- ¼ tablespoon dried tomato powder
- ¼ cup of cowpea flour (see Module 3)
- ¾ cup millet flour
- 2-3 cups hot water

Method

- Mix the cowpea and millet flours adding cold water to form a smooth paste. Add the hot water to the paste and cook stirring continuously until the porridge is ready. Add 1 tablespoon of dried cowpea leaves and 1 tablespoon of dried tomato powder.
- Cook for 2-3 minutes.

Adapted from: FAO, 2004

Mixed vegetable mash

Ingredients

- ½ cup chopped soft dark green vegetables (such as spinach, cowpea leaves, pumpkin leaves or blackjack leaves)
- ½ tomato (grated)
- ½ cup orange-fleshed sweet potato peeled and cubed
- 1 tablespoon peanut butter

Method

- Boil the sweet potato until just soft. Add the green vegetables and tomato and simmer for 2-3 minutes. Mash until soft.
- Add peanut butter and mix well.
- Serve with fresh or sour milk if preferred.

Zimbabwe multimix

Ingredients

- ½ cup of cereal flour (maize, or sorghum or millet)
- 2 tablespoons legume flour (bean, cowpea or groundnut)
- 1 teaspoon chopped spinach or (other soft dark green leafy vegetable)
- 1 tablespoon vegetable oil

Method

- Mix the cereal flour and legume flour and cook into a thick porridge.
- Add the vegetables and the oil.
- Cook for 2 minutes.

Variation - make the above porridge but when you add the vegetables add an egg or peanut butter instead of oil and cook for 2-3 minutes.

Adapted from: FAO, 2004

Wrap up

1. Ask participants what they have learned from the session. Make sure they discuss:
   - Children eat less than adults, so they need to eat more frequently.
   - Children aged 6-24 months need food from all of the food groups in the right amounts with the right texture for their age.
   - Caregivers should make mealtimes enjoyable so that children learn to love eating nutritious food.
   - Caregivers should avoid giving children junk food.
   - Hygiene rules must be followed when preparing food and feeding babies and children.
2. Discuss why it is important to understand the different types of food needed by children aged from 6-24 months.
3. Why do we need to know the amount of food, frequency of feeding and texture of food for these children?
4. Ask participants how they are going to use this information to improve the feeding practices of babies and children in their community.

4.5

SESSION 4.5: FOOD FOR PEOPLE WHO ARE SICK

Aim

To enable participants to understand and communicate correct information about nutritious food for people who are sick.

Start here

1 Please read pages 118 to 120

2 do the discussion and

3 do the activity.

Facilitator's notes

In Module 1 we learned about the malnutrition infection cycle. Because of this cycle people should always try to have nutritious diets so that their bodies can fight illness and recover quickly afterwards. People who are malnourished get sick more easily because their bodies do not have enough energy to fight the illness and their immune systems are weak because they are not getting enough protective food. The bodies of malnourished sick people cannot repair the damage caused by infection because they do not get enough body-building food. Sick people must have a varied, balanced diet and drink plenty of liquids each day.

continued...

Food for people suffering from diarrhoea or vomiting

Illnesses which cause diarrhoea and vomiting can have a serious impact on a person's food intake and they can quickly lose a lot of water from their bodies (dehydrate). This is a very dangerous condition for babies and children. The most important treatment is to give the child as many drinks and liquid-based foods as possible to prevent dehydration (which means not having enough liquid in the body). Children who are breastfeeding should be given breastmilk as often as possible.

The signs of dehydration include:

- great thirst;
- less urine, which is dark in colour;
- dry mouth;
- sunken eyes;
- babies have a sunken fontanel (the soft spot on the top of a baby's head);
- when the skin is pinched it goes back slowly;
- children are unhappy, weak and sleepy; and
- children pant (breathe quickly).

Families or carers can help people suffering from diarrhoea and vomiting by:

- Giving them oral rehydration solution made from half a teaspoon of salt and 6 teaspoons sugar mixed in 750 ml of clean safe water. Give children over 6 months ¼–½ a cup every time they pass a loose stool. Give children over 2 years ½–1 cup.
- Recommending that mothers continue breastfeeding as much as possible.
- Making sure sufferers do not skip meals even if they don't feel like eating. Offer food every 1-2 hours.
- Giving them soft foods such as soups, vegetable or fruit mashes or porridge. Include food that is high in potassium and other nutrients especially avocado, groundnuts, bananas, potatoes, fish, eggs, offal and meat.
- Reducing fat by using less cooking oil or removing fat from meat.
- Avoiding spicy, salty or sour foods.

People with HIV and AIDS

The HIV epidemic has had a huge impact on health, nutrition, food security and overall development in many African countries including Zimbabwe. Because HIV attacks the most productive members of a community, it affects the availability of, access to and use of food. People living with HIV who are sick may not get enough food because:

- the medicines they take reduce their appetite;
- their infections may cause a sore mouth, nausea, vomiting and stomach pain;
- the symptoms of illness reduce their absorption of food;
- they feel tired, lonely and depressed, which may reduce their appetite;
- they cannot afford to buy food, seeds or agricultural inputs to grow food; and/or
- they may not have the energy to grow their own food.

A better diet for people with HIV

Having a better diet can improve the effect of medicines being taken, boost the immune system, improve the health of the infected person and increase the length of their lives. It can help reduce some of the symptoms of AIDS. It may also slow down the illness. However no food has been proved to cure HIV or AIDS.

People living with HIV and AIDS should have a nutritious balanced diet. Eating more fruit and vegetables can help reduce the number and intensity of infections experienced.

HIV positive mothers should take recommended nutrient supplements during pregnancy and breastfeeding to improve pregnancy and birth outcomes.

HIV positive people who are losing weight should:

- eat more energy-giving foods;
- eat meat, eggs, fish as well as beans, peas and pulses regularly;
- use herbal teas to improve their appetite;
- eat nutritious snacks between meals;
- slowly increase the fat content of foods, unless they get diarrhoea;
- be very careful about food hygiene when handling, preparing, eating and storing food;
- take regular exercise to improve the appetite and build muscles; and
- try to eat extra food when they are not sick to make up for the times when they are feeling ill.

Note that eating sugar can worsen thrush which is a common problem for HIV positive people. People with thrush should avoid sugary foods, fizzy drinks, jam or honey.

Taking herbs for illness

Herbs can be used to treat the symptoms of some illnesses, however using the wrong plant in the wrong way can kill. Here are some guidelines for safe herb use:

- Only use the safe herbs listed in Appendix 4 for the illnesses listed.
- Make sure that you correctly identify the herb you intend to use and follow the correct instructions for its use.
- Follow the dosage stated in Appendix 4.
- Do not use herbs if you are pregnant, breastfeeding, a child under the age of 5 or taking medicine prescribed by a doctor especially ARVs.
- Serious illnesses including diabetes, HIV, TB, high blood pressure, asthma, bronchitis, pneumonia and diarrhoea in children should be treated at a medical facility.

Discussion: Feeding people who are sick

Time needed: 30 minutes

Materials: flip chart and marker pens, **Visual Aid 5** (the malnutrition infection cycle), copy of **Appendix 4** (safe herbs for home use) for each participant.

Steps

1. Introduce the session by explaining that you are going to talk about food for people who are sick.
2. Remind the participants about the malnutrition-infection cycle by showing them **Visual Aid 5**.
3. Ask whether any of the participants have had to look after a family member with an illness causing diarrhoea and or vomiting. Explain why such can have a serious impact on a person's food intake and talk about the dangers and signs of dehydration (use the Facilitator's notes to help you).
4. Ask participants what can be done to help a person who has this type of illness. Use the Facilitator's notes to guide the discussion.
5. Next whether the participants have had to care for someone with illnesses related to HIV and AIDS. Discuss how these illnesses can affect a person's food intake and nutrition.
6. Ask participants what kinds of food people living with HIV and AIDS should be given. Write their responses on the flip chart and use the Facilitator's notes to add to or correct the information given.
7. Ask participants whether any of them take herbs when they are sick or give herbs to family members. Discuss the advantages and dangers of using herbs to treat sickness.

Malnutrition -infection cycle recap

Caring for sick people

Using herbs

Activity: Role play - feeding people who are sick

Time needed: 60 minutes

Materials: flip chart and marker pens

1. Explain that you are going to divide into groups and each group will be given a different topic for a role play related to the discussion on food for people who are sick.
2. Divide the participant into five groups.
3. Give each group a different scenario to role play such as the ones given below.
4. Give participants fifteen minutes to prepare and perform the role play.
5. After each role play discuss the issues which come up and use the Facilitator's notes to ensure that the information given in the role play is correct.

Role play scenarios

- A grandmother suggests giving traditional medicine to a four month old baby who is sick. The mother wants to continue exclusive breastfeeding.
- A single father caring for a child with diarrhoea and vomiting gets advice from his sister.
- The difficulties experienced by a caregiver who is preparing meals for an HIV positive person who is losing weight.
- A mother wants to stop breastfeeding because she is sick and her husband agrees but her sister thinks she could continue.
- A herbalist advises a person who wants to treat diabetes with herbs. A neighbour suggests that the diabetic person should go to the health facility.

Wrap up

1. Ask participants what they have learned from the session. Make sure they include the following:
   - People who are sick need help to ensure that they have a nutritious, balanced diet.
   - Vomiting and diarrhoea and HIV and AIDS can have serious impacts on a person's nutrition.
   - Herbs can be dangerous and great care should be taken when using them.
2. Discuss why it is important and useful to know how to give a nutritious diet to people who are sick.
3. Ask participants to say how they will use this information to improve the diet of their families.

Appendix 1: Introductory exercises and energisers

Source: Leupold. S., 2007.

Introductions and icebreakers

The following games can be used to help participants get to know and trust one another.

Animal drawing

This activity helps people introduce themselves and get to know one another.

- Give each participant a piece of paper and ask them to draw an animal that represents their personality. For example if they are a quiet person they could draw a quiet animal. If they are a very strong person they could draw an animal which they feel symbolizes this strength.
- Ask one person to show everyone their drawing and ask others to guess what it is.
- Ask the participant to explain why this animal represents them.
- Ask the next person to show their picture.

Gesture with your name

This is a good activity to help participants get to know each other's names at the beginning of a workshop.

- Ask participants to sit or stand in a circle.
- Ask each person to say their name and then perform a gesture that expresses something unique about them.
- Demonstrate a couple of gestures yourself such as reaching out your arms, hiding your face behind your hands, bowing or touching the floor.
- After each person has been introduced, ask participants to introduce them "this is.." repeating their name and gesture.
- Participants then take it in turns to introduce themselves this way.

Stand up if this applies to you

This is a good activity to help participants get to know each other

- Participants sit in their usual places.
- Ask participants to stand if a statement applies to them. For example:
  - "Stand if you were born within 50km of this place."
  - "Stand if you watch football"
  - "Stand if you have children"
  - "Stand if you enjoy listening to music"
  - "Stand if you like eating okra"
- The participants are asked to sit down after each statement.
- Think of funny statements but take care not to embarrass people or make them feel uncomfortable.

Energizers

Below are some activities and games that get people moving around when they are feeling tired.

Who is the leader?

Participants imitate the movements of a 'leader'; someone guesses who the leader is

- Ask all participants to sit or stand in a circle.
- Explain the game: the leader will begin a repetitive movement (eg clapping, jumping etc) and everyone in the circle quickly imitates the movement; the leader chooses another movement and everyone follows. S/he then chooses another movement and again everyone imitates. One person has three chances to guess who the leader is in three tries. If successful that person chooses the next guesser. The 'guesser' has to work out who the 'leader' is. Example: the leader puts her/his hands on her/his head – and all the others do; she then waves her arms - and all the others do - and so on. The guesser will have three guesses. If s/he guesses correctly s/he can chose the next guesser. Point out that it is important that the players do not look at the leader too obviously – otherwise it is too easy for the guesser!
- Ask for a volunteer to be the guesser – ask her or him to close her/his eyes while you select a leader by pointing at her or him.
- Invite the guesser to stand in the circle and the players to start moving.
- End the game after at least 3-4 changes in leader and guesser. Thank the players.

Note: Ensure different people have a turn at being leader or guesser.

Gentle rain

Participants create the sounds of rain – a gentle game good for a large group!

Ask all participants to follow what you do. Tap the palm of one hand with one finger of the other hand; then two fingers, then three, then four and finally the whole hand – then back again four, three, two, one.

Hot potato

Participants have to be alert as they pass or throw an object.

- Participants stand or sit in a circle. Explain the game: you will begin to pass an object (like a small ball or knotted piece of cloth) to the person next to you who will pass it on to their neighbour as fast as they can. When you shout 'hot potato!' the person holding the object quickly throws it to someone *across the space* who tries to catch it and begins to pass it along, again. The more often you shout 'hot potato' the more excited and alert participants will have to be.
- Play until all are alert and thank them.

Variation: If working with a large group you may want to use two or more 'hot potatoes'.

Clap slap

Participants build up and maintain a rhythmic pattern of clapping and slapping.

- Participants stand in two circles, one inside the other. Players on the inside circle face outwards. Players in the outside circle take a small step to the left so they are standing opposite the gap between two players on the inside circle.
- Ask all players in the outside circle to lift their right hands and then take the right hand of one of the players standing opposite them to the right, in the inside circle. Ask players on the inside circle to lift their left hands and then take the left hand of the player standing diagonally opposite them. You should have all players holding one hand of the player opposite to the right, and one hand of the player opposite to the left. Check and assist where necessary.
- Explain that this game is similar to the one played by girls but the object of this game is to clap slap a rhythmic pattern all together and using the hands of two players instead of one.
- Demonstrate a simple pattern and ask participants to follow. For example, begin by clapping your hands together, then slap the opposite hands, clap, slap your thighs, and begin again. Repeat until all the players clap-slap together!
- As participants become more confident you can change the pattern and go faster.

Variation: Change partners in the circles; ask all players to move two or three steps to the left, and begin again.

Appendix 2: The functions and sources of common vitamins and minerals

Minerals	Function	Good sources
Iron	needed to make blood and helps brain function	Liver, blood and other offal, red meat and fish, breastmilk. Also: wholegrain cereals especially millet and sorghum, legumes and dark green leafy vegetables (if consumed with foods rich in vitamin C to help iron absorption).
Iodine	needed by the thyroid and essential for brain and nervous system development in the foetus	Seafood Iodized salt
Zinc	needed for growth, development, reproduction and the functioning of the immune system	Meat and offal Fish and poultry Insects
Vitamins	**Function**	**Good sources**
Vitamin A	helps prevent infection and keeps the immune system working properly, keeps skin, eyes and the lining of the gut and lungs healthy helps with night vision	Liver and kidneys Egg yolks Breastmilk especially colostrum Milk fat, butter and cheese Whole dried fish Orange fruit and vegetables (except citrus) Dark green vegetables Yellow maize and orange-fleshed sweet potatoes
B-group vitamins	helps the body use other micronutrients. Helps the nervous system work properly	Wholegrain cereals, beans, seeds, meat, poultry and fish, milk, cheese, lacto, meat, green leaves, eggs, sweet potatoes, avocados, bananas, meat, fish, poultry, seafood
Folate	needed to make blood and helps with normal development of the foetus	Liver, red meat, green leafy vegetables, fish, legumes, groundnuts, oilseeds, wholegrain cereals, egg yolk and avocados
Vitamin C	helps absorption of iron, destroys some harmful substances in the body and helps wound healing	Citrus fruits (oranges and lemons), baobab, guava, cabbage, green leaves, tomatoes, sweet peppers, potatoes, yams

Appendix 3: Flip charts for Session 1.3

(Pictures of the foods can also be used)

Vegetable stall

Item	$
Covo leaves (per bunch)	
Spinach (per bunch)	
Cabbage (whole)	
Tomatoes (per bowl)	
Pumpkin (whole)	
Sweet potatoes (per pile)	
Onions (per pile)	

Fruit stall

Item	$
Oranges (per pile)	
Apples (per pile)	
Mangoes (per pile)	
Bananas (per bunch)	
Pawpaw (whole)	
Pineapple (whole)	

Butcher shop

Item	$
Chicken (whole)	
Stewing beef (per kg)	
Beef bones (per kg)	
Pork trotters (per kg)	
Tripe (per kg)	
Ox liver (per kg)	
Eggs (per 6)	

Dried grain stall

Item	$
Maize meal (per cup)	
Millet meal (per cup)	
Sorghum meal (per cup)	
Brown rice (per cup)	
Samp (per cup)	

Dried goods stall

Item	$
Cowpeas (per cup)	
Roundnuts (per cup)	
Groundnuts (per cup)	
Sugar beans (per cup)	
Soybeans (per cup)	
Dried vegetables (per cup)	
Madora/amaximbi (per cup)	
Kapenta (per cup)	

Small shop

Item	$
Maputi (packet)	
Corn curls (packet)	
Chips (packet)	
Small cakes (for 2)	
Sweets (packet)	
Soda (can)	
Sugar (1kg packet)	
Salt (500g)	
Cooking oil (1L)	

Appendix 4: Safe herbs for home use

Names: common, local, *Latin*	Propagation method	Uses
African Wormwood, *Artemisia afra*	Cuttings and seed	Soothing tea for coughs, diarrhoea, fever and internal worms; fresh or dry leaves inhaled for blocked nose or headache; pest repellent.
Basil/sweet basil/wild basil, rukhovi, amaka, *Ocimum basilicum, O. minimum, O. canum*	Seed	Flavours cooking; soothing tea for intestinal worms, to stimulate appetite and freshen breath; juice soothes skin conditions; perfumed hair rinse; pest repellent; pesticide and fungicide.
Bulbinella, *Bulbine natalensis*	Cuttings	Soothing juice for skin conditions; poultice for hemorrhoids. **NOT EDIBLE**
Chilli, Mhiripiri, ibelebile *Capsicum annum, C. frutescens*	Seed	Flavours food; pesticide.
Comfrey, *Symphytum officinale*	Root cuttings	Poultice for boils, splinters and sores; soil improvement. **NOT EDIBLE**
Fennel, *Foeniculum vulgare*	Seed	Seeds and leaves flavour cooking; soothing tea for nausea, vomiting, heartburn, indigestion, cystitis, tiredness, coughs and diarrhoea; eye wash;
Garlic, *Allium sativum*	Bulb	Flavours cooking, stimulates appetite; cloves help treat flu, thrush, diarrhoea, worms and warts.
Ginger, Tsangamidzi, *Zingiber officinalis*	Corm	Flavours cooking, stimulates appetite; tea soothes sore throat, colds, flu, nausea, vomiting, aches and pains; hot compress soothes coughs.
Guava, *Psidium guajava*	Seed, cuttings and air layering	Fruit eaten fresh, made into juice or dried; Leaves made into tea to soothe coughs; chewed leaves soothe diarrhoea and mouth ulcers.
Lavender, *Lavandula officinalis*	Cuttings	Tea soothes headache; poultice soothes sprains; leaves make perfumed bath; pest repellent. **NOT EDIBLE**
Lemon grass, *Cymbopogon citratus*	Root division	Flavours cooking; tea soothes colds and flu; insect repellent on skin; soil protection
Mint, Spearmint, peppermint, *Mentha spp.*	Root division or cuttings	Flavours cooking; tea reduces nausea and vomiting; leaves freshen breath.
Moringa, *Moringa olifera*	Seed	Leaves, flowers and green pods can be eaten; dried seeds used to purify water. **DO NOT EAT ROOTS OR BARK**
Nettle, *Urtica dioica*	Seed or cuttings	Leaves eaten; tea soothes skin conditions and hay fever; powder helps nose bleeds; soil improver.
Pawpaw, Mupopo, *Carica papaya*	Seed or cuttings	Fruit eaten; facepack made from fruit; seeds expel worms; milk treats ringworm; poultice treats boils; pesticide.
Rosemary, *Rosmarinus officinalis*	Cuttings	Flavours food; tea gives energy, improves appetite, eases headache, anxiety, stress and depression; hair rinse, facial wash and gargle.
Sage, *Salvia officinalis*	Seed or cuttings	Flavours food; tea soothes earache, sore throat, diarrhoea, anxiety and stress; hair rinse, facial wash, deodorant.
Thyme, *Thymus vulgaris*	Seed or cuttings	Flavours food; tea soothes earache, thrush, shingles, herpes and coughs; facial wash, deodorant, aftershave lotion, or mouth wash
Turmeric, *Curcuma longa*	Corm	Flavours food; soothes aches and pains, sprains and gout; poultice for boils, pulp for leg ulcers.
Yarrow, *Achillea millefolium*	Runners	Tea to soothe nosebleed, diarrhoea, fever, fatigue and loss of energy; compost activator.
Zumbani, mumara, usuzwane, *Lippia javanica*	Cuttings or seed	Tea to soothe fever and headache; pest repellent, pesticide.

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This training manual is an effective tool for community workers in the agriculture, health and nutrition sectors to solve nutrition challenges related to the production, harvesting, processing, purchasing, preparation and consumption of healthy food.

The manual has been developed for community workers who want to carry out basic training programmes, awareness-raising or outreach activities in urban or rural communities. It provides simple, clear information in order for trainers to improve community knowledge, attitudes and practices in nutrition.

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