



Federal Democratic Republic of Ethiopia
Ministry of Health

NUTRITION Extension Package

July 2003
Addis Ababa

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1. Introduction

Although Ethiopia is a producer of a variety of agricultural products, it is nevertheless, one of the countries in the world with the highest number of malnourished population. Studies show that the health problem of the majority of the population of Ethiopia emanate from lack of adequate and balanced diet. Children, pregnant women, lactating mothers and adults are most affected by the problem.

In addition to lack of adequate and balanced diet, the increasing growing number of people who are attacked by diseases that occur due protein-energy malnutrition and to lack of disease protecting foods especially low intake of vitamin A, iron and iodine, is an indication of the problem related to malnutrition. The 29% malnutrition prevalence among lactating mothers, the 5-15% prevalence of vitamin deficiency diseases (night blindness) among the pregnant women, the 30% prevalence of iodine among the general population and the 58% child death rate due to malnutrition. These statistics show the seriousness of the problem.

Malnutrition is predominantly seen among the rural population since the food of the population is based on crops. The knowledge of the rural population about the value and preparation of disease preventing and body building foods such as vegetables and fruits, and animal products is limited. The cultural practice the rural population has towards regularly feeding the family with these foods is not yet developed. The same is about giving supplementary food to children as an addition to breast milk. The main contributor of the above problems of malnutrition is not only low purchasing power of families, and inadequate supply of food but the belief and the concept of the society about nutrition is low. Hence, social and traditional pressures have a lot of contribution to the problem of malnutrition in Ethiopia.

According to the 2000 Central Statistical Authority study, more than 50% of Ethiopian children have not grown to the level they are expected to grow, 47% of them have weight below the standard weight set for their age and 11% are extremely malnourished (marasmic). This study also shows that the number of malnourished children under the age of 5 years is increasing. Surplus food producing areas are also among the areas where the problem of malnutrition is predominantly seen.

This family centered nutrition package is therefore, prepared to develop the knowledge and skills of the society about nutrition and to build its capacity for identifying and taking appropriate actions to eradicate malnutrition and prevent its resurgence. The health extension workers will be the implementers of the package.

With regard to the implementation of the package, each region can improve the package to promote balanced food preparation methods based on the types of agricultural products and the nutritional food preparation methods and practices prevailing in each worda.

2. Objective

2.1. General Objective

By preventing diseases that are caused by malnutrition, create a healthy society that has a balanced physical structure.

2.2. Specific objectives

- **The society:-**
 - Enable/capacitate the society to have adequate concept/ knowledge about the essence and value of nutrition.
 - Empower the society to identify health problems that are caused by vitamin, and mineral deficiencies and by malnutrition in general and

build its capacity to prevent the health problems caused by malnutrition.

- Empower the society to understand the nutritional care that mothers and children require and capacitate it to the implementation of the nutrition package
- Enable the society to acquire adequate knowledge and skills on balanced diet and supplementary food preparation
- Develop the society's practice of preparing and taking balanced diet by knowing the value of balanced diet.
- Enable the society to disregard harmful and backward food preparation methods and traditional feeding habits.

3. Implementation Strategies

3.1. Participatory planning

It is essential that the health extension worker involves the community as a whole and the family as an individual in the planning of the package with regard to nutrition.

3.2. Data Collection

The data that have to be collected are the following:-

- The concept the community has on nutrition.
- Estimates of the type and quality of agricultural products in the surrounding area.
- Harmful traditional practices related to nutrition, by age and sex.
- Health problems caused by malnutrition. Their names as known by the communities.
- The level of traditional practices on balanced food intake and the provision of supplementary food to children and similar types of nutrition and health related indicative information which serve as a baseline. These and the above information should be collected in advance by the health extension workers. This information can help to develop contingency plans and to measure the progress and outcome of the nutrition package.

3.3. Education through sensitization

Sensitization activities should be undertaken among the kebele population about the objective and value of the package before implementing the package at the household level. Continuing education should be given to families who are voluntary to participate in the package.

3.4. Training of trainers

Kebele residents who are voluntary to participate in the package, youths who have completed their education but unemployed, housewives, other people who are voluntary to educate, heard by the kebele population and with ability to coordinate should be selected and trained. These people will first change themselves and made to serve as assistant to the health extension worker.

3.5. Conduct demonstrations

A model or demonstration that shows the integration of animal husbandry and poultry with the nutrition extension package will be organized at the family level in collaboration with the agriculture extension programme.

3.6. Giving incentives

Giving incentives to health extension workers and families who have significantly contributed to the distribution of the package and have also achieved good results in the implementation of the package will help to achieve more results. The types of incentive can be based on capacity and can be merit certificates, money, vegetable seeds and improved breeds of male and female chicken.

3.7. Strengthening Collaboration

Since the nutrition package has to depend on the results of the agriculture package, the health extension workers in collaboration with the agriculture development workers and using the results of the agriculture package should attempt to involve families with good results. This approach will help better acceptance of the package by families and communities. It is also advantageous for the package to work in collaboration with non-

government organizations which are involved in similar activities at kebele level.

3.8. Organizing nutrition day

The package can be widely promoted by organizing a nutrition day once a year inviting the inhabitants of the surrounding areas (male and female), elderly people, students, youth, representatives of government and non-government organizations etc. Families who produced different vegetables, and had good poultry farms etc could be made to display their products on this national day.

Demonstrating the preparation of balanced diet, display of posters and self explanatory pictures, giving forums to households that have good results with the package to make presentations and motivating them in front of communities can motivate and raise the knowledge of the people covered by the package.

3.9. Exchange of experiences

Creating a forum for health extension workers and other participants of the package to visit and acquire experiences from model farmers who in addition to crops production have successfully developed horticulture and animal husbandry and are feeding well their families will contribute to the success of the package.

3.10. House visit

House visit is an appropriate strategy for monitoring the implementation of the package and for providing close technical assistance to each family based on the specific problems and needs of families.

4. Activities to be undertaken (technical package)

4.1. Collection of information

It is the primary task of the health extension professionals to collect information which are required for developing a plan that would be used for the implementation of the package. Based on this, the information that

would be collected are: type and quantity of agricultural products, family economic status, provision of water, number of households that are producing vegetables in their backyards and are involved in animal husbandry, culture of preparing and taking balanced diet, number of families that give supplementary food to children, types of food that are prepared to adults and children and the preparation methods, harmful feeding practices and others. These information have to be collected through house to house visits. The information has to be interpreted to identify nutrition related problems and practices.

4.2 Sensitization

Sensitization about the package can be conducted for members of the kebele administration, representatives of government and non-government organizations and kebele residents by calling meetings. The sensitization will be on the objectives and activities of the package. A plan that bases the information collected will be developed in advance through their participation.

4.3 Selecting, deciding and registering the places where the package will be distributed and participating members

4.3.1 Concerning the places where the package will be distributed

Deciding central places for education in consultation with representatives of the surrounding residents and kebele administration.

The package can be distributed around the following.

- Around farm areas where male and female farmers are found.
- Around farmers' villages and living areas.
- Around health offices, kebele administration, offices of youth and, women associations, public meeting places, and schools.

4.3.2 Selecting members that would be participating in the nutrition package.

- Register and document family members that have understood the package and are voluntary to participate. Establish a health

extension package team that constitute 20-25 members in such a way that it is convenient to implement the package annually and especially convenient for conducting demonstrations.

- For the purpose of taking collective responsibility and decision making, the two genders in a family or unmarried women or men in the kebele can be participants of the package.
- The package will have better results if families that have adequate food produce or those who have good income to buy food and feed their families are selected as volunteers and models for the implementation of the package.
- Since families that have no adequate produce can be taught about the proper use of what they have, they can be registered as participants.

4.4. Providing continuing education

In order to develop the knowledge and skills of the society, and for the success of the package, it is necessary, to give deep and continuing education about the package through theory and demonstration.

4.4.1. What does food mean?

Anything that we eat and drink except medicines is called food. Food gives heat and energy. It builds and rehabilitates the body. The food that we eat also protects our body from being attacked by diseases.

4.4.2. Nutrients found in foods and their values

Nutrients found in a variety of foods are:

Body building (protein)

Energy giving (carbohydrates and fat)

Disease preventing (vitamins and minerals), water

We have to take different types of food to enable our body get the above nutrients and to secure complete health.

4.4.2.1. Body building (proteins)

The cells of man and animals need body building foods. Every cell that has life needs body building foods for growing and live healthy.

Body building foods (protein) are found from animals and animal products and from cereals and grains (pulses).

The protein that is found from animals is more quality than the protein from cereals. The proteins from cereals can be reinforced by the protein from grains. The body can get adequate protein and use it for its intended purpose from a mix of cereals and grains.

For example: Enjera with pulse sauce (wat), can give useful protein.

Service that protein give to the body

- Proteins serves to build the body. Especially, a body that is under a process of development, requires sufficient proteins since the number of cells increases all the time.
- Proteins are required for the maintenance of hurt cells and creation of new cells.
- Since the majority of aging cells have to be replaced by new ones, proteins are required for the creation of new cells.
- Proteins serve for the production of different enzymes found in the body. The enzymes have a big role in the activities taking place in the body.
- Proteins gives energy and heat to the body when there is depletion in energy and heat sources of nutrition (carbohydrates, fats and oil).
- Proteins help the circulation of some nutrients and medicines in the blood by creating bondage with them.
 - We find protein from the food we take. Some foods have high protein content and the quality of the protein they contain is also high. Foods

that have good quality of protein are eggs & breast milk. The protein in egg is called reference protein. Following these, meat, fish, milk contain high quality protein.

- Pulses from the grain group which are soya beans, beans, peas, chick peas, sorghum and vetch have high protein content.
- From the cereals, teff (local cereal), barley, wheat, oats, millet and finger millet have less protein and their food values improve when they are mixed with pulses.

4.4.2.1. Carbohydrates and fats

Carbohydrates and fats give heat and energy to the body. Carbohydrates are found in many foods. Carbohydrate containing foods are cereals, pulses, potato, sweet potato, false banana and haricot beans. Carbohydrate containing foods have also other valuable nutrients such as vitamins, minerals and protein. For example fat, oil and butter can give double heat than the carbohydrates. The spice groups have no nutritional content. They are used to give anti cancer effect flavor to foods.

4.4.2.3 Vitamins and minerals

Vitamins are required in small quantity by the body for its various functions and for the prevention of diseases. If the body does not get adequate vitamins, the body parts do not do what they are expected to do. As a result, the signs of diseases start to be seen. Vitamins are found from animal products and various food items especially from vegetables and fruits. For example, vitamin A is found in carrot, pepper, cabbage, papaya, liver, kidney, milk, butter, cheese, fish and eggs. It is also found in health institutions in the form of capsule, injection and drops. Breast milk is especially the main source of vitamin A for children.

Minerals are also needed in small quantity. They help for the proper functioning of the body. They are found in different types of food. For example, one of the minerals, iron is found from cabbage, spinach, lentils, meat, liver and other similar food items.

Iodine is naturally found from the soil. A crop that grows from a soil that has adequate iodine content has iodine. Nevertheless, since most of the soil of our country has been washed by flood, the iodine that can be found from the soil is becoming very low. As a result, the population is found suffering from iodine deficiency diseases. In order to prevent iodine deficiency diseases, iodated salt is available on the market.

In general, vitamins and minerals are found in a variety of foods. In order to get vitamins and minerals in adequate quantity, it is necessary to regularly feed on a variety of foods. From one food item, one type of vitamin or mineral is found. And from another food item another type of vitamins or mineral is found. Therefore, if we take a balanced food, it is possible to get the sufficient vitamins and minerals. In Ethiopia, vitamin A, iron and iodine are among the vitamins and minerals that high deficiency is observed.

4.4.2.3. Water

The other essential nutrient is water. Water has a decisive role in our body function. In spite of this, it is necessary to take about one liter of water every day.

4.4.3. Health problems that occur as a result of inadequate and unbalanced food (malnutrition) intake and methods of preventing them

Lack of adequate and balanced food makes the society to have unbalanced physical development. The society is also exposed to diseases and its power to resist diseases is reduced. Signs of nutritional deficiency disease start to occur when the body fails to get the necessary body building, energy giving and disease preventing foods in adequate amount (mixed and balanced food) on a daily basis. If the body does not continuously get adequate and balanced food for a longer period of time, the damage that will be exacerbated. Therefore, to prevent disease or prevent the worsening condition of a diseases, a mechanism for meeting nutritional requirements should be explored urgently. In order to prevent the occurrence of the disease and take the necessary actions when a disease occurs, by looking at the signs, it is necessary to give adequate education to the society on how to take the necessary action.

4.4.3.1. Protein deficiency disease (Kwashiorkor) and its prevention methods

picture

If adequate body building foods are not taken on a regular basis, the body starts to feed on its protein. If this continues for a longer time, the disease which is known as kwashiorkor occurs. Kwashiorkor mostly attacks children under the age of three years.

Signs of the Kwashiorkor

- Depigmentation and loss of the hair.
- Pitting edema first seen on the child's hands, legs and face. This is confirmed by pitting with the fingers at the site of the edema.
- Dryness and scaling of the skin.
- Irritability.
- Occasional diarrhea.

To prevent this disease, each family has to be on a balanced, locally available and affordable food. Giving adequate and balanced supplementary food starting at the age of 4 months, prevention of diarrheal diseases through practising personal hygiene are some of the methods of preventing kwashiorkor.

4.4.3.2. Calorie malnutrition (Marasmus) and its prevention methods

picture

(Marasmus) is a disease that occurs when there is general food deficiency and particularly protein deficiency. It occurs when the body fails to get the carbohydrate needed for its

different functions, and for its development and maintenance. Children below the age of 2 years and sometimes those above 2 years are prone to this disease.

Signs of Marasmus

- Severe wasting of the subcutaneous muscle
- Old man face
- Diarrhea and vomiting
- Increased appetite
- No edema
- Wrinkling of skin
- Irritability

In order to prevent this disease, it is possible to use the methods for preventing kwashiorkor, and also prevent the potential causes of the disease like diarrhea, measles and vomiting. It is also necessary to educate and demonstrate to the parents about preparing and feeding adequate and balanced diet. Since other diseases can attack the child, it is necessary to take children with marasmus to a nearby health facility for medical assistance.

4.4.3.3. Protein-energy malnutrition (Marasmic Kwashiorkor)

This disease occurs due to lack of balanced and adequate diet. The children affected by this disease will have the signs of both marasmus and kwashiorkor. To prevent the disease, it is imperative to take foods which are known for their high protein, calorie, mineral and vitamin content.

4.4.3.4. Vitamin deficiency: Diseases and their prevention methods

The vitamins that our body requires are different. Unless we feed on the major types of foods, the following vitamin A deficiency signs will be seen.

Signs of vitamin A deficiency diseases

- Night blindness
- Dryness of eye lids (white and black)
- Bitot's spot (a white dry, lustreless, silvery patch accumulation on the white part of the eyelid)
- Drying, hardening and scaling of the skin (hyperkeratosis of the skin)
- Can lead to blindness through time
- Failure of the body to cope up with diseases and unable to recover from illness.

Therefore, it is possible to prevent vitamin A deficiency diseases by taking foods that have high vitamin A content. Foods that have high vitamin A content are liver, milk, egg yolk, deep green and orange food items and those vegetables that have red and orange colors like cabbage, carrot, sweet potato, green pepper, papaya etc.

In order to prevent the disease, it is essential to produce at the backyard or buying them from the market those food items that are easily available and affordable to the family.

Assistance that would be given when the disease occurs

- Educate the family to regularly feed the child with food items which have high vitamin A content, such as liver and carrot.

- If the disease is at higher stage, refer to the nearest health facility for treatment.
- Since the drug is dispensed against age, it is important to give vitamin A capsule on the basis of the guideline.

Vitamin C deficiency

The signs of vitamin C deficiency disease are the following:-

- Gum bleeding and ulceration
- Puffiness and scaling of the skin
- Eruption of the teeth
- Swelling of the bone joints
- Anemia due to skin hemorrhages

Foods with high vitamin C content

- From fruits- orange, lemon, bitter, papaya, mandarin
- From vegetables- cabbage, spinach, salad, tomato, green pepper, pepper, hot pepper
- From pulses- beans and other pulses.
- Care should be taken when these foods are processed as the vitamin C content of these foods is easily lost by cooking. Vegetables should be cooked with steam for a short period of time.

Vitamin D deficiency disease

Vitamin D is a nutrient required for strengthening the bones and teeth and for the body to grow without any deformity. Most affected parts of the body by vitamin D deficiency are the bones and teeth. Children are most affected by the disease. The signs of vitamin D deficiency disease are the following.

- Big skull (four angled)
- Weak and bending bones of the hands and legs.
- Delayed closure of the fontanelles (stays for more than 18 months)

- Bending chest bones with breathing difficulty
- Very weak legs (unable to stand)
- Delayed dentitions

This disease also shows bone deformity on adults. Mothers with hip deformity will face serious problem during pregnancy and delivery. Hence, it is important to take the necessary care to prevent the disease.

Sources of vitamin D

- Since sunlight is a source of vitamin D, children should be exposed to sunlight every morning for few minutes starting from birth.
- From food items, fish oil has high vitamin D content. Milk, butter, liver and eggs have moderate content.

To prevent the disease, families should be educated to feed their children with foods that have high vitamin D content. In addition to this, families which have a wrong belief on exposing children to sunlight because of fear of new borns being seen by people have to be well educated to change their beliefs and attitudes.

Assistance that would be given when the disease occurs

- Exposure of children to adequate sunlight and advice to mothers to feed their children with foods that have high vitamin D content.
- If the children are severely affected, families should be advised to take their children for treatment to a nearby health facility.

4.4.3.5. Mineral deficiency diseases and their prevention methods

Minerals have high value to the body. Diseases that are predominantly seen in our country as a result of mineral deficiency are the following.

Iron deficiency disease

When the body is deficient of iron, anemia occurs.

Signs

- Dizziness, exhaustion.
- Pale body, pale conjunctiva and tongue.

The disease mostly affects pregnant and lactating mothers and children. To prevent this disease, the society especially pregnant women should be advised to take iron rich foods and to do the same for their children. In addition to this, since the disease occurs due to heavy bleeding and due to malaria and similar diseases, taking food which have high iron content, (like liver, eggs, teff and others), is very much advantageous.

Assistance that can be given to an anemic person

- Giving foods that have high iron content.
- Feeding on GLV vegetables. This will help to mix iron in the body.
- Advice the patient to go to health facilities where iron tablets could be available.
- If heavy bleeding is observed, refer urgently to a health facility for adequate treatment.
- If there are associated diseases, examination and treatment is required.

Diseases that occurs due to iodine deficiency

Picture

Although the daily body requirement of iodine is very low, the iodine deficiency disease which is known as goiter occurs when the thyroid gland does not get sufficient amount of iodine. This disease retards physical growth, makes dumb, deaf, short (dwarf), idiot (foolish) or mentally retarded. These all have psychological impact on the child. To prevent the disease, it is necessary to take iodine containing foods and to use iodated salt during the preparation of food. Since this mineral is very necessary for pregnant mothers and children, it is necessary to make mothers aware of the value of this mineral and advice them to take iodine rich foods. Foods that have adequate iodine are fish, eggs, vegetables that grow on soil that is not eroded, iodated salt and others.

Assistance that can be given to a person who has the disease

Since the treatment for thyroid varies with its size, it is necessary to advice the patient to go to the nearby health facility for proper treatment.

Reminder

In order to make the nutrition education more clear, it is necessary to prepare and supplement it with posters, pictures and other IEC materials.

4.4.4. Balanced diet and preparation of different foods.

4.4.1. Balanced diet

Balanced diet means food that contains mixed nutrients in adequate quantity. The foods include body building nutrients (proteins), energy and heat giving nutrients (carbohydrates and fat), and the nutrients that help to defend the body from diseases (vitamins and minerals). To promote balanced diet, it is essential to prepare and demonstrate foods that contain the three main elements of a balanced diet.

To get a balanced diet daily and at every meal, the capacity to produce and the power to purchase the necessary food items must exist at the

household and community levels. There must be also knowledge about balanced diet with focus on nutrition.

The following conditions should be fulfilled for a society to have balanced diet and to live healthy.

- Produce food which can last for 2 years and protect the produce from being spoiled/damaged and eaten by pests.
- Make an effort to ensure there is financial power to purchase food.
- Know about healthy feeding strategy.
- Ensure that the food that is prepared at home is distributed to all members of the family.
- Prepare food that is healthy to children and feed them frequently.
- Undertake consultation with the family to ensure that pregnant and lactating mothers have received adequate nutritional care.
- Encourage the society at large to expand vegetable gardens and to practice good food preparation and feeding habits.
- Provide about the expansion of animal husbandry at the family level (chicken, goat, sheep, and other domestic animals).
- Identify the harmful traditional practices that have a negative impact on feeding, educate and in agreement with the society, eradicate these harmful traditional feeding practices.
- Promote foods such as soya beans, cassava and others, which their nutritional value is significant but, the society is not yet accustomed to them.
- Educate and promote the production or the purchase and use of fish where there are rivers and lakes.
- Educate and promote the culture of economic use of food. For example, minimizing wastages, combating repeated and unaffordable cultural festivities.
- A balanced diet and supplementary food for children should contain one from the following three groups of food items.

picture

Group 1

Cereals and fibers
Sorghum
Wheat
Millet
Corn
Teff
Oats
Finger millet
Barley
False banana
Potato
Sweet potato
Oils or fats
Cassava

Group 2

Animal products and pulses
Milk
Curd milk
Cheese
Skim milk
Meat
Fish
Chicken
Eggs
——
Peas
Chig peas
Soya bean
Vetch
Haricot beans
lentils
Peanut
Line seed
Finger millet
Safflower
Sesame

Group 3

Vegetables and fruits
Cabbage
Spinach
Lettuce
Tomato's
Carrot
Papaya
Banana
Mango
Mandarin
Orange
Guava
Avocado
Cactus
Grape

4.4.4.2. Preparation of different foods through demonstration

Hereunder are presented how different types of balanced foods can be prepared through demonstration side by side with the theoretical education on the basis of the above groups of food items.

This is to demonstrate how a balanced diet can be prepared from local food products by taking and mixing food items from each group. In this practical exercise the participants of the package will prepare and taste a balanced and adequate diet and will give comments. If necessary, and on the basis of the interest of consumers, the food recipe below can be improved.

Food preparation that is based on body building foods

Sauce from pulses (shiro wat)

<u>Food items</u>	<u>Amount</u>	<u>Utensils required</u>
Pulses flour	2 big coffee cups	Coffee cup
Onion	5 heads	Cup
Garlic	2 heads	Knife
Oil	1 big coffee cup	
Chilly pepper	1 big coffee cup	Cutter
Tomato	3 big	Iron/ clay pan
Salt	1 spoon	Pocker
Water	6 cups	

Preparation

- Peel an onion, wash and chop it.
- Cook the chopped onion with low fire flame by repeatedly dropping water on it.
- Add oil and continue cooking for some time.

- Wash the tomato, chop it in fine pieces, mix it with chilly pepper and cook.
- Peel garlic, wash and chop it into five pieces and cook.
- Add water, add the pulse flour by spreading and stir until flour is mixed.
- Cook the sauce until the bubbles at the top disappear.

For a change

Following this preparation, the sauce can be prepared by adding 2-3 green peppers instead of pepper when the sauce is almost cooked and removed from the fire. This is a sauce which is not hot.

Sauce from pea granules

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials required</u>
Pea	2 cups	
Onion	4 heads	
Oil	2 coffee cups	
Chilly pepper	2 coffee cups	
Garlic mashed	2 spoons	
Salt	1 teaspoon	
Water	3 cups	

Preparation

- Remove any waste from the pea granules, wash and cook it with 6 cups of water.
- Peel, wash and cook the onion until it looks red.
- Add oil.
- Add chilly pepper.
- Add garlic and salt, and continue cooking.
- Add the cooked pea granules after slightly mashing the granules with a big spoon.
- Add boiled water and cook until every thing is well cooked and then feed.

For a change

It is possible to cook a sauce which is not hot on the above way by substituting turmeric for chilly pepper.

If pea granules is not available bean granules can be used.

Lentil granules sauce

<u>Raw food items</u>	<u>Quantity</u>	<u>Essential materials</u>
Lentil	1 ½ cup	
Onion	5 heads	
Oil	2 coffee cups	
Chilly/pepper	2 coffee cups	
Garlic	2 heads	
Water	5 cups	

Preparation

- Peel, wash and chop the onion.
- Cook the chopped onion until it looks red.
- Add oil and cook.
- Add water and stir.
- Add garlic and salt.
- Remove any waste from the lentil granules, wash and cook.
- Add boiled water until it is cooked well.
- Feed when cooking is over.

For a change

The ground lentil granule can be replaced by ungrounded lentil. By leaving out the chilly pepper, a sauce which is not hot can be prepared.

Soya beans

Soya beans have high body building nutrient (protein) content. Hence it can be a substitute for animal products when a family can not afford to regularly feed on

animal products to prevent protein deficiency diseases. It can be used as a food when it can be bought at cheap price from the source or is produced in the backyard. In view of this, it is important to educate and encourage the society to adopt this crop as valuable food.

Preparation of Soya beans flour

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials needed</u>
Soya bean	as needed	- local pan (sefid) - Grinder (stone or motor) - Pan (clay/iron) - Plastic pail - Plastic sack

Preparation

- Remove any waste from the soya bean.
- Gently warm the soya bean on a pan.
- Grind the soya bean in small pieces and remove its cover.
- Roast the ground soya bean for 20 minutes.
- Grind the roasted soya bean with a motor grinding mill.
- Store the flour in clean and dry place until used.
- It is possible to prepare food from the soya bean flour alone or with mixing it with another cereal.
- Since the soya bean is already slightly cooked during roasting, it should not be cooked for a long time while preparing it as a food.

Soya bean milk

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials required</u>
Soya bean	2 cups	Clay or metal cooking pan
Water	12 cups	Seave, deep bowel
Sugar	for flavor	Small cloth bag
Oil (optional)	1 teaspoon	Stone grinder, chopper, spoon. Poker, stone (heavy) Tray, plastic jar, plastic glass Pan made out of straw

Preparation

- Remove wastes from the soya bean.
- Soak the clean soya bean in 6 cups of water for one day.
- Remove the water in the next day.
- Boil six cups of water.
- Grind the soaked soya bean by adding small water on it.
- Add the ground soya bean in boiling water. Boil it for 20 minutes or until the foam at the top disappears.
- If necessary, drop a small amount of water to prevent the foam that is building during up during boiling.
- Seave the milk with a seave or clean cloth, can be drunk after adding sugar or salt for the flavor.

Soya bean cheese

- Following the above process, put in the milk in a very thin cloth bag and then press it.
- Boil the soya bean milk for 5 minutes by poking.
- Add the boiled milk into a half lemon juice and stir it.

- Add a quarter of lemon juice after some time. No poking at this time.
- Add the remaining lemon juice after 5 minutes and poke it at the top. Then keep it covered for 5 minutes.
- At the end, the whey suspends at the top and the cheese settles at the bottom. If there is some thing that looks like milk that still suspends at the top instead of the whey, add lemon juice on it and keep it covered for some time.
- Remove slowly the suspending whey at the top with a spoon.
- Put the cheese part in a seaved cloth or plastic or wooden container that has many holes and is padded with a thin cloth. Press the cheese for 30 minutes by putting a big stone on it to, remove the water from the cheese.
- Put the cheese in cold water to cool it and use it after 20 minutes.

Reminder

- The cheese that is prepared in this form can be mixed with cooked cabbage, small amount of fat, small quantity of pepper or hot pepper, and salt for flavor and can finally be eaten with one of the energy giving foods, injera or bread to make it a balanced diet.
- To protect the remaining cheese from being spoiled, it can be stored by keeping it in water which has been boiled and then cooled. It can be stored for 1-6 days with this condition. But the water has to be changed every day.
- The surplus product from the soya milk press can be baked as bread by mixing it with wheat flour at 2:3 ratio. It can be also mixed with eggs and roasted with oil. Ratio of soya bean surplus to the egg will also be 2:3.

Egg sauce

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials required</u>
Chopped onions	2 big coffee cups	Coffee cup
Oil /butter if available	2 big coffee cups	Soup spoon
Chilly/pepper	3 soup spoons	Plastic cup
Chopped tomatoes (If available)	2 big coffee cups	Cooking pan/ clay
Eggs	6 in number	Poker
Water	2 cups	Knife
Spices	2 soup spoons	Chopper
Garlic /ginger	for flavor	Fork
Powdered salt	for flavor	

Preparation

- Peel, wash and mash the onion.
- Cook the onion with low flames until it looks red.
- Add the measured oil or butter and cook it for 5 minutes.
- Add the pepper and the mashed tomato and cook for 15 minutes. Add a small amount of water as necessary so that there is no tarring.
- Add the spices and continue cooking.
- Add the measured amount of water and continue cooking for 10 minutes.
- Break the eggs and stir with fork or spoon in a deep bowl and add it.
- Stir the eggs with the other materials in the cooking pan and cook for 5 minutes.

This egg sauce when eaten with bread or injera can give a balanced diet.

Fish sauce

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials required</u>
Fish flate	6 middle flate	Knife
Chopped onions	2 cups	Chopper
Oil	4 big coffee cups	Cooking pan (metal)
Chilly/pepper	2 medium coffee cups	Coffee spoon
Mashed garlic	2 soup spoonful	
Ginger		
Salt for flavor	1 tea spoonful	
Black lin seed		
Pepper	6 cups	
Water		

Preparation

- Soak the fish into 3 cups of boiled water for 10 minutes.
- Leave the water and remove the thorns from the fish.
- Cook the onion with a low flame until it looks red by adding water as necessary.
- Add oil and cook for 10 minutes.
- Add chilly/pepper and cook for 30 minutes by adding water as necessary.
- Add the spices and the fish and cook it for 5 minutes.
- Add the remaining water and cook for 30 minutes with low flame.

Reminder

- This method can be used for preparing meat sauce in areas where fish is not available.
- This sauce can be more complete/balanced if eaten with injera or bread, green pepper, cabbage, tomato or with any available fruit.

- Since feeding on fish is not customary, it is very important to educate people the nutritional value of fish and for the people to adopt a fish eating culture in areas where it is available.

Preparation of a diet based on energy and heat giving food products

Injera made from a mix of teff and soya beans

<u>Raw foods items required</u>	<u>Quantity</u>	<u>Required materials</u>
Teff flour	5 cups	Baking pan
Soya bean flour	1 cup	Plastic jar/ that does not rust
Baking powder	2 medium cups	Dough rotating cup/ guard, plastic
Water for mixing	6 cups	Plastic pail
Water for thinning	3 cups	Wenning
Yeast	1 big coffee cup	Seaver Plastic cup

It would be good if cereals are mixed with pulses to make it complete.

Preparation

- Seave and mix the indicated quantity of teff and soya beans flour.
- Add the baking powder to the mixed flour. Mix it with water and keep it for 2 days.
- On the third day, remove the suspending fluid at the top and thin the dough with water.
- Add one coffee cup of yeast in one cup of boiled water, cool the mixture and mix it with new dough. Cover and keep it for some time.
- Bake it after complete fermentation

Reminder

Teff injera alone or injera made out of a mixture of teff and other cereals can be prepared following the above method.

Injera from sorghum

<u>Raw of food items</u>	<u>Quantity</u>	<u>Materials required</u>
Sorghum flour	3 cups	Seave Wenning
Yeast	1 medium coffee cup	Big deep bowel/ plastic, clay
Water	5 cups	Baking pan Cups Coffee cup Dough rotating Cup/guard, plastic Pail

Preparation

- Seave the sorghum flour.
- Mix the seaved flour with one coffee cup of yeast adding 2 cups of water. Mix all well.
- Leave the dough for one day to ferment.
- On the next day, add and thin the dough with 2 cups of water.
- Add one medium coffee cup of yeast in one cup of boiled water and prepare the final dough.
- Add and mix it with yeast and keep it until the dough ferments well.
- Bake the injera after the dough has fermented well.

Reminder

- Sorghum injera alone or injera made out of sorghum and other cereals can be prepared following the above method
- Since dough prepared from sorghum becomes bitter as time goes, it cannot be left to ferment for more than one day.

- Since the quantity of water needed for preparing the dough and the yeast depends on the carrying capacity of the cereal, it is possible to add water as required.
- Again, since the quantity of water needed for preparing the dough depends on the carrying capacity of cereal, the quantity of water that can be used will be as necessary (more or less than the required)

Injera from millet

<u>Raw food items required</u>	<u>Quantity</u>	<u>Materials required</u>
Millet flour	3 cups	Baking pan
Yeast	3 medium coffee cups	Plastic jar
Water	5 cups	Plastic pail
		Plastic cup
		Plastic deep
		Bowel/ big

Preparation

- Seave the millet flour
- Add the yeast to the flour, pack and keep it with 2 cups of water
- Mix and thin the dough with 3 cups of hot water
- Bake it when it has fermented

Reminder

By mixing 85 % millet flour and 15 % soya bean, injera from the two cereals can be prepared.

Preparation of potato flour

Raw food items

Potato

Materials required

Knife

Chopper

Deep bowl/ plastic,
wooden or clay

Preparation

- Choose clean potatoes, wash and peel them.
- Chop in equal size immediately all the peeled potatoes and dry them at the same time.
- In order to prevent the chopped potato from being black, keep them in a salt water.
- After all the potatoes are chopped, wash with salt water and dry them on a sunny place by occasionally spreading them.
- In order to prevent from dirt and other waste materials, expose them to the sun on an elevated place or on a table and cover them with thin clothes.
- Break them in small pieces when it is dry so that it becomes easy for grinding, then take them to a grinding mill.
- Store the flour in dry place and with container that does not rust.
- If the flour is prepared cleanly, it can stay for 2-6 months without being spoiled.

Remainder

- A sweet potato flour can be prepared in the same way.
- Potatoes and sweet potatoes are highly energy source foods. Since they cannot stay long when they are green, families in potato producing areas should be educated on how to dry, store and use them before they are spoiled.

- A good quality of potato flour cannot be prepared during rainy, cloudy and dusty seasons.
- It is possible to prepare injera, bread, pan cake and porridge from a mixture of potato/ sweet potato flour and other cereal flours.

Injera from a mix of potatoes and other cereals

Preparation

- Seave and mix 2 parts of potato flour and 2 parts of teff flour.
- Add a small quantity of yeast to the mixed flour and prepare dough.
- Keep the dough for 2 days.
- Thin the dough with hot water on the third day and then bake it when it has fermented.
- If the baked injera is prepared with vegetables, pulses or animal products, its nutritional content will be complete.

For a change

- Based on the interest of the consumer, or by lowering or increasing the proportion of the cereal or potato flour, it is possible to prepare either a potato or a millet injera.
- By mixing 2 parts of potato flour and one part of wheat flour, it is possible to prepare bread, pan cake and porridge. Demonstrating this method is valuable in improving the nutritional status of families.

Preparing rough ground cereal (kik) for the preparation of thick porridge (kinche)

Raw food items

By roughly grinding wheat, oats, barley or sorghum, it is possible to prepare thick porridge as diet.

Materials required

Wenning, pounder gun, pounder mat, seave, plastic pail and plastic deep bowl.

Preparation

- Round big wheat or barley or sorghum seeds.
- Clean the seeds using hands, seave and wenning.
- Isolate the small and big seeds and equalize their size.
- Soak all in luke warm water for some time.
- Pound the soaked seeds and expose to sunlight for some minutes, separate the seed cover from the seed with wenning.
- Expose the cleaned seeds to sunlight and ensure with teeth whether it has dried up well or not.
- Grind roughly the dried seeds with hand or motor mill.
- Isolate the cover and roughly ground part of the cereal with seave and wenning.
- Isolate the finely ground and roughly ground part of the seeds.
- By using the roughly ground seeds, it is possible to prepare, food that is based on the interest of the consumer.

Remainder

- By boiling one part of roughly ground seed with water and adding fat, it is possible to prepare thick porridge.
- If it is thick porridge from sorghum, the rough ground seed of the sorghum has to be soaked in water for one day before boiling it for thick porridge.

Food from a mixture of sorghum and other cereals

For example, in areas where sorghum is found in abundance, it is possible to prepare and demonstrate the preparation of a balanced diet from a mixture of sorghum, haricot beans and cabbage.

Preparation

- Boil one cup of green haricot bean or haricot bean that has been soaked for a night.
- Add one handful of cabbage after separating and washing the leaves. Cook well the mixtures.
- Mix 4 caps of sorghum flour with a small amount of water and add it to the haricot bean that is being cooked. Do not poke/ stir.
- Add to the cooked haricot bean, sorghum and cabbage, mashed onion, ginger, green pepper and one cup of oil or butter (if available). Mix all these well. The food prepared in this way contains energy and heat giving and disease preventing nutrients. This food becomes more nutritious if it is taken with milk or skim milk.

Food preparation that takes into account vitamins and minerals

Cabbage sauce

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials required</u>
Lettuce	½ kgm	Cooking pan with cap Deep bowl
Oil	1 coffee cup	Tray/ wenning
Onion	1 head	Chopper
Green pepper	4 pieces	Knife
Garlic	2 heads	

Preparation

- Remove the drying and spoiled leaves of the lettuce.
- Wash with clean water.
- Chop the cabbage or lettuce.
- Chop the onion and cook it with oil and then add a small amount of water.
- Add the prepared lettuce when the water boils and cap the cooking pan.
- Add the well chopped garlic after a few minutes, stir and cap, all in the cooking pan.
- Add splintered green peppers and salt for flavoring and finish cooking.

For a change

- It is possible to improve the nutritional content of the above diet by mixing and re-cooking it with chopped tomatoes, carrots, potatoes.
- The other method of preparing is to cook the lettuce with a small amount of water, chopping the cabbage and mixing it with cheese.
- If the preparation of the diet was by boiling the lettuce, the left over water can be reused as a nutrient.

Vegetable salad

<u>Raw food items</u>	<u>Quantity</u>	<u>Materials required</u>
Rolled cabbage	1 small roll	Deep bowl
Carrot	6 big pieces	Chopper
Onion	2 heads	Spoon
Green pepper	2 heads	Flat plate
Salt	1 tea spoon	
Lemon juice	1 small teaspoon	
Oil	1 soup spoon	
Pepper	1 tea spoon	

Preparation

- Wash all the vegetables with clean water.
- Cut the cabbage and boil it with a small amount of water. Then thinly splinter the leaves.
- Scrap the cover of the carrot, wash, cut it into pieces horizontally and cook it with the cabbage.
- Chop and add to the cabbage the onion and the green pepper that have been washed and made ready.
- Add and mix with the salad, the lemon juice, oil, pepper and salt.
- Take the salad with injera or bread.

For a change

By replacing the rolled cabbage and carrot with salad leaf and tomato, and following the above method, it is possible to prepare another type of vegetable salad.

Reminder

- Before educating and demonstrating the essence of balanced diet and how to prepare it, it is important to:-
 - Know the availability/ storage of the food items.
 - Ensure that vegetables and fruits are available.
 - Know that here are animals and animal products that can be used for food.

Based on this, it is necessary to educate and demonstrate the preparation of balanced diets that take into account the traditional feeding methods. It is possible from cereals to prepare injera, bread and porridge and take pulses, fish, meat and vegetables as additives and essential supplementary foods. It is also necessary to educate the community on the regular consumption of fruits in places where they are available.

After the nutrition education is given through demonstration, it is important to select a few families as samples and know the diet the families prepared and took in the last 24 hours, and to give the necessary advice as per findings. This type of survey and follow up will help to develop a feasible program for educating the unreached families and for the successful implementation of the package as a whole.

4.4.4.3. Nutrient wastage due to backward food preparation methods and methods to prevent the wastage

Nutrient wastage

- Although the preparation and cooking of food is very important, there will be changes in the taste/ flavor, loss of nutrient (which is important), and food wastage when the food preparation is not undertaken properly. Therefore, it is

necessary to identify and know the traditional methods of food preparation and then educate improved methods. For example

- Chopping well the leaves of the vegetables, washing the chopped leaves with water, discarding the left over water, boiling the vegetables, and cooking for a long time without capping etc will ascribe to the loss of nutrients that we want to get. The food will also loose the necessary color and flavor.
- Peeling deep the cover of the food items, such as potatoes, reddish carrot, sweet potatoes, carrots and others without loosing the nutrients found under the peeled cover.
- Discarding the water with which meat has been boiled means partially loosing the food value that we intended to get from meat.
- The use of backward and traditional materials for seaving, rough grinding, fine grinding and others contribute to wastage of cereals and especially, repeated rough grinding will generally reduce the nutrient contents of the cereals.
- Chopping, juicing, grinding and doughing etc without keeping the cleanliness of individuals and the materials to be used will contribute to the immediate damage and waste of foods.

Methods of preventing food and nutrient wastage

- The water used for boiling meat and vegetables is highly nutritious. Therefore, in order to save the nutrients that are lost through water and heat, the boiled water remains should be reused or should be taken as foods.
- Peel thinly the cover of root foods so that nutrients from the cover are not lost or wash and simply peel.
- When preparing vegetables for food, first wash them well and separate the leaves. Then put the leaves in boiling water.
- Food items that contain nutrients could be lost by evaporation. Therefore, they have to be cooked with cooking pans that have caps.
- Nutrients and their flavors will be lost as they are stirred and cooked for along time. Therefore, in order to keep the nutrients and the flavor, cooking should be completed as soon as the foods are well cooked. Not longer than this.

- Grinding and pounding places shall be clean so that the foods ground or pounded are not made dirty by soil, dust and other waste materials. Cover the working ground with local carpets such as skin, mat carpet and clothes to collect the spill over.
- When undertaking seaving, picking and rough grinding, it is important to separate all the seeds which have the same size. This prevents wastage during pounding, roasting, and fine grinding. This also helps to keep the nutrients which would be lost during repeated rough grinding.
- Good personal hygiene, the cleanliness of the cooking utensls and the food, and proper cooking and feeding can reduce wastage of foods and nutrients.

4.4.5. The essence of supplementary foods and their preparation

4.4.5.1. Supplementary food

Supplementary food means food that is given to a child in addition to his mother's breast milk. Breast milk is adequate for the child up to 4 months. But, after 4 months, breast milk alone is not adequate for the child's growth and development. Since his growth continues to accelerate after this age, breast milk is not also adequate by its content for the child after this age. Therefore, the child needs to get supplementary and balanced diet after 4 months.

Picture

4.4.5.2. Demonstration on the preparation of supplementary food
Balanced supplementary food

Supplementary foods should at least contain one from the three groups of food items (from cereals or roots, grains or animal products, vegetables and fruits). The selected food items have to be mixed at different quantities when preparing supplementary foods.

- It is necessary to ensure that the family is able to easily buy or produce the food items.
- It is necessary to educate mothers about the addition of energy and heat giving sources of food items such as oil and butter to the food under preparation. This will help the body to properly use the vitamins that dissolve in fats.
- In areas where fruits are easily available, it is necessary to give to the child orange, lemon, banana etc juices mixed with small amount of boiled and cooled water.

The supplementary foods should be prepared in such a way that a child can easily take them. Since the child has no teeth and cannot also chew, all supplementary foods that are prepared for the child after 4 months shall be finely ground and mashed or should be prepared in the form of porridge and be given with spoon. The child must be made to practice eating by plate and spoon. For demonstration purpose, the following will be the methods of supplementary food preparation from the three groups of food items.

Supplementary food that can be prepared from one group

Gruel from false banana extract

<u>Crude food items</u>	<u>Quantity</u>	<u>Materials required</u>
False banana extract	1 soup spoon	Metal cooking pan
Milk	1 cup	Cup
Butter	1 tea spoon	Spoon

Preparation:-

- Heat on fire the false banana extract after thinly mixing it with milk or if milk is not available, with water.
- Add some fat and stir.
- After it is well cooked, cool and feed the child in addition to the mother's breast milk.

Reminder:-

- This type of supplementary food is given after 4 months for practicing. It is given for only 2 weeks. A mix of other supplementary food should be continued.
- It is possible to prepare gruel from food items that are locally available (wheat, barley, oats, etc) following this method.
- It is possible to feed a 4 - 6 months child with thin porridge prepared from a mix of one coffee cup of false banana extract, 2 coffee cup full of milk and little butter. This will serve as an alternate to the gruel.

Supplementary foods that can be prepared from a mix of different food items.

Porridge from a mix of sorghum and other food items

Sorghum porridge can be prepared from 2 soup spoonful sorghum flour, and 1/2 cup of milk, (if no milk, water can be used). When the two mixtures are well

cooked, add one egg and continue cooking. If there is no eggs, 1/2 soup spoonful of niger seed or lin seed or safflower or pea nut can be used. It is possible to add 1 drop of lemon or orange juice, or finely chopped tomato to the cooked porridge. This preparation will make the food complete and balanced.

Porridge from barley and grains

<u>Crude food items</u>	<u>Quantity</u>	<u>Materials required</u>
Barley flour	1 coffee cup	Cup
Grain flour	1 soup spoon	Spoon
Milk	2 coffee cup	
Water	1 coffee cup	
Butter/oil	1 tea spoon	
Salt	for flavor	

Preparation:-

- Seave and mix 3 parts of half ground and half roasted barley flour with one part of half boiled and roasted peas or beans or chig pea flour.
- Cook thinly the flour with milk or water or mix the flours to be boiled with the milk and water and then cook all the mixtures.
- Add butter or oil and cook well by stirring.
- Take the porridge when cool.

Reminder

- Since the gastric systems of children will be disturbed when the quantity of the grain is more, it is possible to prepare and feed children of 7 months to one year with a combination of 3 parts of teff, sorghum, wheat, millet or root vegetables to one part of grains. This supplementary food can be given to children of 1-5 years by increasing the quantity.

- The preparation of a balanced supplementary food from 4 parts of cereal flour, one part of vegetable and one part of grains or animal products is very useful to the child.
- Cereals and grains can be easily digested if they are half roasted before they are pounded.

Food from a mix of grains and milk

<u>Crude food items</u>	<u>Quantity</u>	<u>Materials required</u>
Grains/ chig peas, beans, peas or haricot bean	2 soup spoons	Wenning Deep bowel Cooking pan
Milk	½ cup	Spoon
Sugar /salt	For taste/ optional	

Preparation

- Select and remove all wastes and the damaged seeds from the grain seeds.
- Wash and then soak the clean grain seeds. Keep them soaked for one night.
- Boil the soaked grain seeds with milk
- After it is well cooked, grind it with a spoon and feed the child by adding sugar or salt.

Food from a mix of vegetables and eggs

<u>Crude foods</u>	<u>Quantity</u>
Potato	1 potato
Carrot	3 medium
Eggs	1 small
Oil/ butter	1 tea spoon
Salt	For taste

Preparation

- Wash and peel the potato.
- Rinse and peel the potato with water and boil it by capping the cooking pan. Grind the cooked potato with a spoon.
- Wash, pick and cook the leaves of the carrot capping the cooking pan. Thinly chop the potato when it is well cooked.
- Mix the chopped vegetable and the ground potato.
- Stir the eggs, and mix it with the potato and vegetable mixes.
- Add fat and cook for some time.
- Cool and feed the child after the food is cooked well.

For a change

- It is possible to prepare the above type of supplementary food with a mix of boiled and mashed carrot, and ground lentil (thinly chopped meat if available), replacing the cabbage and the eggs.
- The food prepared in this manner is ideal for children of 7 months to 1 year and by raising the quantity to children of more than one year old.

Porridges from a mix of vegetables and cereals

<u>Crude food items</u>	<u>Quantity</u>	<u>Materials required</u>
Cereal flour/sorghum, wheat, millet, barley or niger seed	4 table spoon	Cooking pan/metal Deep bowl
Ground potato, sweet potato or cucumber	1 table spoon	Chopper
Chopped cabbage	1/2 cup	Table spoon
Boiled grain/beans, chig pea or haricot beans	2 cup	Tea spoon
Water	1 tea spoon	
Fat	1/2 cup	
Milk		

Preparation:-

- Boil clean potatoes/ or cucumber after removing seed/washing and peeling.
- Cook the cabbage with the potato after washing and picking the leaves of the cabbages.
- When cooked well, chop finely or grind the potatoes and the cabbages.
- Boil the selected grain and after grinding, mix it with the potatoes and vegetables.
- Make porridge by mixing the cereal flour with milk or water.
- Mix and cook for few minutes the cereal porridge with the mashed potatoes and cabbage.
- Serve to the child after it is cooked well.

Non-chilly vegetable mixes mashed injera (Fitfit)

<u>Crude food items</u>	<u>Quantity</u>	<u>Materials required</u>
Potatoes	1 medium	Cup
Carrot	3 pieces	Cooking pan
Kale	4 leaves	Chopper
Onions	1 head	Knife
Butter/oil	1 tea spoon	Deep bowl
Water	1cup	
salt	for taste	
Injera	1/4	

Preparation:-

- Peel, finely chop and cook the onion with oil.
- Scrap the cover, wash, chop and add the carrot into the cooking pan and slowly cook by dropping water on it.
- Peel, wash and add the potato.
- Pick the leaves, chop, add the cabbage and continue cooking.

- Add the remaining water and continue cooking. When it is well cooked, add salt for taste and remove the pan from the fire.
- Cut the injera into pieces, and mix it with sauce. Feed the child when it cools.

Reminder:-

- Pulses flour or lentil can be used as a substitute to the vegetable.
- The food that is prepared in this manner is ideal for children above 2 years.
- It is necessary to refer to the personal hygiene extension package guideline when it comes to the preparation of food in a careful and hygienic manner.

4.4.5.3. System of supplementary feeding

Supplementary food should be given in small quantity three times a day at the start. Supplementary feeding has to be practiced before the child is breast fed. But, when it is well practiced, it is necessary to give after breast milk. When the food is given for the first time, it may look as he is vomiting or dislodging it from his mouth. This does not mean that he hates the food. This is because he cannot chew and it takes time for him to move away from sucking to chewing. Therefore it is necessary to put the food in his mouth repeatedly. When starting supplementary or new food to a child, it is necessary to start them one by one. This helps to know which food is appropriate for him.

The age of the child determines the amount of food the child has to take. The food that he should take must be thin porridge which may not be more than one soup spoonful. But as the child grows, his food needs and desires will continue to increase. For examples, when he is around one year, he can take five times a day. Food that is prepared for a child cannot be kept for more than 12 hours. If it is kept for more than this time, it will be contaminated by micro organisms. Therefore, it cannot be given in the next day. The following feeding are suggested for children of different ages.

- 0 - 4 months - Breast milk + sunlight
- 4 months - 1 year - Breast milk + supplementary food
- 1 - 2 years - Breast milk + supplementary food
- 2 - 3 years - Breast milk + supplementary food and
balanced foods of adults
- Above 3 years - Animal milk and balanced foods of
adults.
- The supplementary food given at 4 -6 months has to be clean and
in the form of fluid .
- The supplementary food given to 6 - 8 months children should be
mashed food and for the 9 -11 months children, it has to be from
thinly pounded cereals.

4.5. Variation in peoples food needs.

People living under one roof will have different food needs. The details will be as follows.

4.5.1. Feeding of pregnant women

It is very important to take balanced diet at time of pregnancy. Balanced diet builds the body of the fetus, develops his brain, and the body of the pregnant woman. It will help the mother to have adequate breast milk when she gives birth. Therefore, a pregnant woman should take maximum care in her diet. The family and herself should work on her diet. She should not engage herself in hard work and should not carry heavy load.

Pregnant woman who have not taken balanced diet during their pregnancy will face abortion and pre mature delivery. The child will also encounter unbalanced physical and mental development. He will be weak and easily exposed to diseases. He will have a low birth weight.

4.5.2. Feeding of lactating mothers

The health of a child on breast feeding is dependent on his mothers health and strength. The balanced food that the mother takes is not only for herself, but also for the growing child which he gets all essential nutrients through his mothers breast milk. A lactating mother produces 600 - 800 cc of breast milk a day. This milk contains adequate protein, calorie and disease preventing chemicals. In order for the mother to produce these essential nutrients for the child, she has to take more food than before. This means that she has take a mix of vegetables and fruits, animal products and cereals both in quality and quantity. It is in this way that she can maintain the health of herself and her child.

4.5.3. Child Feeding

Although the growth and development of a child is inherited from nature, the feeding and the life style of the mother at pregnancy determines the growth and development of the child. It is believed that a child who is well fed is protected from many diseases. This is also confirmed by many studies. The food that the child takes after his birth and until the age of 2 - 3 years, is decisive for his health.

- The world has now believed that no food can compete breast milk.
- It is also confirmed that breast milk alone has the highest nutritional value up to the age of 4 - 6 months.
- The thick milk that comes from the mother's breast in the first few days (cholestrum), contains a lot of nutrients and disease preventing chemicals. Hence, it is useful to feed the child with this milk.

- If the mother cannot breast feed the child because of some reasons, the alternative food that will be given to the child, will be cows milk/skim milk.
- Supplementary food will be given to the child after 4 months of age. The child needs supplementary food in addition to the breast milk as the child grows older and his physical activities are increased. If this is not done, the child's development will be limited or retarded. His power to stand against diseases will be reduced. Simple diseases will be serious on him and they will easily weaken him.
- Adding sugar and salt in the food of the child is not that much necessary.

Reminder

For additional information on the child's feeding and mothers' breast milk, refer to the maternal and child health package.

4.5.4. Adolescent and adult feeding

As a human being increases in age and reaches to adolescence, he starts many activities, which at this stage, whether male or female, needs to get adequate and balanced food. The quantity of food that people who undertake light and heavy work varies. In view of this, the quantity of food of people who do heavy work need to be increased.

4.5.5. Feeding the elderly

- ◆ As people get older, the internal function of some of their body parts will be limited. Because of this reason, the food that is given to old people will be different from that of adults in terms of both quality and quantity.

For example:- Since elderly people who have lost their teeth cannot chew, they cannot be served with foods that need

chewing. Torn pieces of injera mixed with sauce (fitfit), gruel, soup of meat (Merck) and others which can be available locally can be served to them.

- ◆ Since the production of their digestive enzymes decreases, serving much fatty foods such as fatty meat to them is not ideal.
- ◆ Since very elderly people do not work much and have limited movement, the amount of energy and heat giving nutrients that they require is low.

In view of this, the food that is prepared by the family should be food that can be easily absorbed by the body and is able to give some value to the family members. Therefore, any food that has no value to the individual should not be prepared and be liable to wastage. Care should be taken in advance in selecting and preparing foods to people at different ages especially to pregnant and lactating women and children.

It is necessary to educate and demonstrate on the use of local food products, and the preparation of balanced diets for different age groups of people from the food products that are available locally.

After education is given and demonstrations are made, it is also necessary to visit sample families to check that pregnant and lactating mothers have started to feed themselves and prepare and give supplementary foods to their children. Advice should be given to the mothers on the basis of the findings.

4.6. The essence of nutrition and methods that indicate the status

Nutrition is a science that studies processes from the production of one type of food up to the stages where this food is used as a diet, absorbed by the body and able to assist the different parts of the body to perform their functions. The nutritional status of a society can be known by different methods. They include the quantity of cereal foods produced locally, the purchasing power of the society and the society's demand for food. With these methods, it is necessary to know the food demand and supply situation at family and community level. These conditions can be estimated from the information gathered at the community or individual family levels. Food production and the decline in food purchasing power, the quantity of food on the market for sale and exchange, the quantity of food that is wasted, and used for food, will be considered and be taken as factors of imbalance in nutritional status. It is possible to further know the food security situation, by estimating the food produced in relation with number of family members, and the number of days or months ahead of the next harvest. While availability of food and knowledge on nutrition becomes one factor, organization and preparation of food in a hygienic way becomes another factor. The health statuses of a society to use/ consume the available food and the availability of health services to provide necessary services are also decisive factors to the nutrition status of a society.

4.6.1. The following are methods for knowing nutritional deficiencies.

- ◆ by knowing and measuring the daily supply of food.
- ◆ by taking and recording weight, height and other measurements.
- ◆ by health examination.
- ◆ by laboratory examination.

Health and laboratory examinations are undertaken in health facilities. The other activities can be undertaken by the health extension workers.

4.6.1.1. Methods of measuring and knowing the daily supply of food

It is possible to know the daily intake of each nutrient by a family. This is done by measuring the daily food intake of the family as a whole. Since the type and quantity of food that the family and the children take varies, it is necessary to measure the food that has been consumed for three or seven consecutive days. After knowing the type and quantity of food taken, it is possible to understand the quantity of nutrients that is available in each food by referring to the chart that is prepared for this purpose. The other simple alternative method is by exploring from a person who knows about what type and how much of food and drinks are taken by individual family members. This shows us how much food and how many times a day each member of a family has taken food. After this, the food situation of a child or children of 4 months to 5 years is registered. This method gives an idea on child feeding practices in communities. It also explains how much food the family has and the methods that families follow to feed their children. Based on this, we can also know what sort of advice we have to give to the family by conducting this study on a monthly basis. We can as well, know when food deficiencies can occur at the family and community levels.

4.6.1.2. Measurement of weight and height

It is possible to know the nutritional status of a person by measuring his weight and height. For example, it is possible to know the continuous physical growth and development of a child by taking his height and weight using meters and weight scales. The height and weight measurements have to be regularly recorded in a

growth monitoring card and advices should be given to the mother on the basis of the findings.

For example, if a child's birth weight is 3.2kg and if he is given breast milk and supplementary food at the appropriate age, his weight shall triple at his 6 months of age. Based on this:-

- ◆ If a child's weight increases with his age, it shows that his supplementary food is adequate and sound.
- ◆ If the child's weight does not increase, it means he has a problem with his feeding and health conditions.
- ◆ If a child's height at birth is 45-55 cm, he has to increase by 25-30 cm at his first year of age, and by 12 cm at his second year of age. This shows that the height of a child that received good care and is healthy, will increase as his age increases and will have also a weight that is proportional to his height.
- ◆ If the child's weight continues to decline, and shows growth retardation, his feeding and health conditions shall be grave concerns to the family. At this time, it is necessary to explore whether the child has been getting adequate food, whether he has been given balanced supplementary food, whether his food has been kept clean and that he has been also taking breast milk. If there are problems with his feeding and has been sick, the mother has to be advised to take him to the nearest health facility where corrective measures will be taken on his feeding practices and nutritional problems.
- ◆ Reference can be made to the annexed standard weight for height chart to know the nutritional status of a child.

In order to educate mothers by demonstration, a weight scale, a meter for height measurement and a growth monitoring card are required.

4.7. Training of Trainers

It is necessary to conduct training of trainers for kebele residents who are willing to participate in the implementation of the package (for housewives who have stopped going to school, for those residents who are willing to educate mothers, for hearded people and people who have the capacity to coordinate etc). The training should focus on nutrition and shall be given to those who have the potential to change the behaviors of their neighbors by first changing their behaviors.

4.8. Establishing model families

The establishment of model families is necessary among those people who have participated in the training of trainers program. Those who are competent enough to give nutrition education, are able to demonstrate the implementation of animal husbandry and horticulture development activities in addition to crop production, and those who are competent enough to demonstrate that these development activities can be integrated in the nutrition package can be taken as model families.

5. Expected results

The following results are expected when the preconditions of implementing the package are fulfilled and when the package is implemented.

- ◆ Awareness of the package beneficiaries on nutrition will be raised. Their skills for the preparation of different foods will be strengthened.
- ◆ The interest of the society for preparing and feeding balanced diet will be increased because of this reason, the number of people that will be affected by nutritional diseases will decline.

- ◆ The culture of giving supplementary food to children will be strengthened and as a result of this, the number of children that will be sick and die due to nutritional deficiency diseases will be reduced.
- ◆ The number of social groups that will be easily exposed to vitamin and mineral deficiency diseases especially mothers and children will be reduced. It will be possible to create citizens that are able to learn and work well and create a healthy and productive society in general.
- ◆ The high medical expense of beneficiaries of the package will be saved. Their health will be maintained and their social and economic status will be improved.
- ◆ The workload of the health institutions and health professionals and the amount foreign exchange required for the importation of drugs will be reduced.

6. Methods of communicating messages

6.1. Education and advise

- ◆ Educate the beneficiaries of the package by using the one to one method of communication. Provide also useful information and advisory services through this method.
- ◆ This method will help the health extension workers to impart a common knowledge about the package among the beneficiary families. It will also be a method that will be used by the health extension workers during performing their individual tasks.

6.2. Meeting

This method will enable to pass health messages to the kebele people as a whole about nutrition and the diseases that occur due to malnutrition. It also helps to pass timely information about diseases and raise the awareness of families about those diseases.

6.3. Demonstration

- ◆ It is necessary to give education about the preparation of a balanced diet and preparation of supplementary food for children by demonstration.
- ◆ Demonstration can be made for people organized in teams or individual families on preparing the food presented in the package and using food items produced locally. The demonstration should be carried out with inputs from the organized teams or individual families.
- ◆ The demonstration that will be carried out at the initial stage of the package will be undertaken with budget and material inputs from the health bureau.
- ◆ If demonstrations are to be made at the request of participants at their individual homes or as a team at their villages, the individual families or teams need to provide all food items and cooking utensils required for demonstration.

Communicating messages through the mass media

- ◆ Information on nutrition can be communicated through regional radio stations, woreda health offices and health extension workers.

Use of IEC materials

- ◆ Communicating information by leaflets, posters, video films, flip charts, flash cards etc have significant advantage.

Peer education

- ◆ The conduct of peer education on the nutrition package between the participants of the training of trainers program and their neighbors will have a satisfactory result.

7. Monitoring and Evaluation

Monitoring and evaluating the implementation and progress of the package will be an activity that will be undertaken by the Federal Ministry of Health, regional health bureaus, woreda health offices, kebele councils and the health extension workers. This activity is important for ensuring the sustainability and success of the package.

7.1. Health extension workers

- ◆ Will register and document the available health and nutrition information at the start of the package.
- ◆ By preparing their own daily activity record, they will record all activities that have been undertaken. They will register the number of participants of the package by sex and those participants who have implemented the package and other related information.
- ◆ Will monitor the implementation of the package by making weekly house visit to families. They will hold discussions with participants of the package on the implementation of the package. They will identify implementation problems and will give timely professional support to overcome those problems. They have to observe during their house visits, whether signs of nutrition deficiency diseases are occurring among family members, and whether there is improvement in the feeding practices of mothers.
- ◆ They will prepare and submit to the woreda office monthly reports that include, the daily activities performed by them on the basis of the plan the activities performed outside the plan, the advantage and results of the package and the problems encountered during its implementation.

7.2. Woreda health office

- ◆ Allocates necessary transport and operational budget for the success of the package and monitors its implementation.

- ◆ Provides on time, the inputs for demonstration activities. These include vegetables seeds, improved chicken breeds, crude foods and cooking utensils.
- ◆ Undertakes field visits with the kebele council once in three months or as necessary to monitor the implementation of the package, to ensure that the implementation of the package is one the right direction and to provide professional assistance to the health extension workers on overcoming operational problems. Collects useful information on a regular basis.
- ◆ Compiles and submits to the regional health bureau, monthly reports reports submitted by the health extension workers.

7.3. Regional and federal health bureaus

- ◆ Prepare and distributes IEC materials. Follow the implementation of the package.
- ◆ Prepare and send out to regions implementation guidelines. Follow the implementation of the guidelines.
- ◆ Establish forums for the exchange of experiences among weredas, and regions.
- ◆ Prepare a national standard format for the compilation of reports and monitoring the implementation of the package.
- ◆ Quarterly reports from woredas will be compiled and submitted to the Federal Ministry of Health by the regional bureau.
- ◆ Evaluation will be undertaken on the implementation of the package which has been improved at the regional level on the basis of the objective conditions of each region. The evaluations will be undertaken with the participation of government and non-government organization representatives, kebele councils and beneficiaries of the package. The evaluation activities will be undertaken twice a year by regional health bureaus and once a year by the Federal Ministry of Health.
- ◆ A strategy that will help better implementation and monitoring of the package will be developed by the Federal and regional bureaus. The

outcomes of the Federal and regional level evaluations, the advantage and changes brought about by the package and the operational problems that were encountered during implementing the package will be used for the development of the strategy.

- ◆ A report that takes stock of the observations of the evaluation, the suggestions made to improve implementation, actions taken to overcome the problems encountered and other important comments will be prepared by the Federal Ministry of Health and will be distributed to regional bureaus. Similar reports will be prepared by regional bureaus and will be sent to the Federal Ministry of health and woreda Health offices.
- ◆ A national workshop that involve all beneficiary regions of the package will be organized once a year by the Federal Ministry of Health to jointly evaluate the package and for exchanging experiences. The jointly adopted recommendations and the plan of operation for the succeeding year will be sent out to all regional health bureaus for their implementation.
- ◆ Questionnaires and data collection forms that provide information on the package at the federal and regional level will be developed and used when necessary. Activities that improve or strengthen the package will be undertaken on the basis of the information collected through those questionnaires and forms.