

Module 4

Understanding Malnutrition

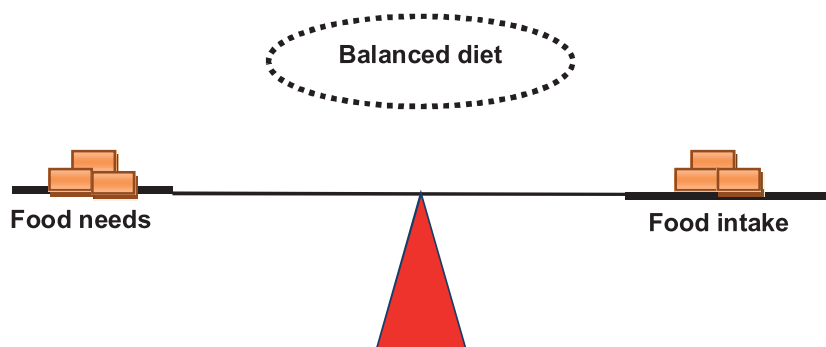
Learning Objectives

- Define malnutrition and the categorization of malnutrition
- Explain the main causes and consequences of malnutrition in the community

Introduction

What is malnutrition?

While a balanced diet delivers to the body exactly as much energy and nutrients as the body uses to do the physical work and maintain its metabolism, malnutrition is the situation when there is an imbalance between the person's nutritional intakes and the requirements of the body. People who have poor diets and do not eat the right amounts of energy-rich food and nutrients are often sick and become malnourished. The type of malnutrition that occurs depends on nutrients which are deficient or in excess, level of deficiency or excess of those nutrients and length of the period during which they are deficient or in excess.



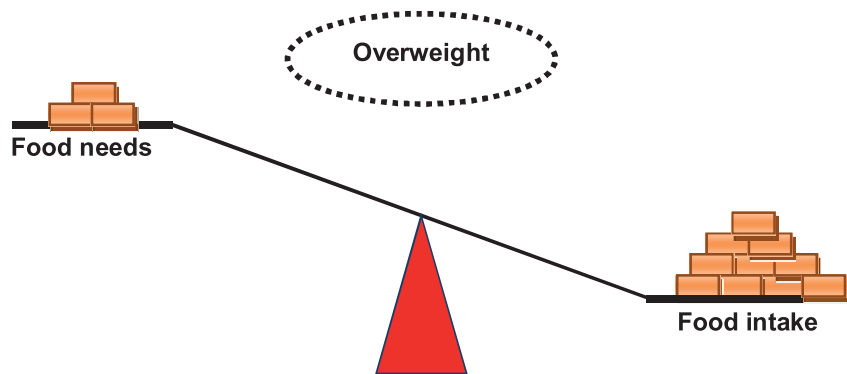
Pic. 8: In a balanced diet the food intake is adequate to the food needs

The main categorization³ of malnutrition is as follows:

- o Overweight

When the food intake is in excess in comparison to the nutritional needs of the body it often leads to a condition referred to as overweight or obesity. Sedentary lifestyle and over intake of high energy foods are some of the most common contributing factors. Overweight is described by a body mass index above 23 for Asian adults.

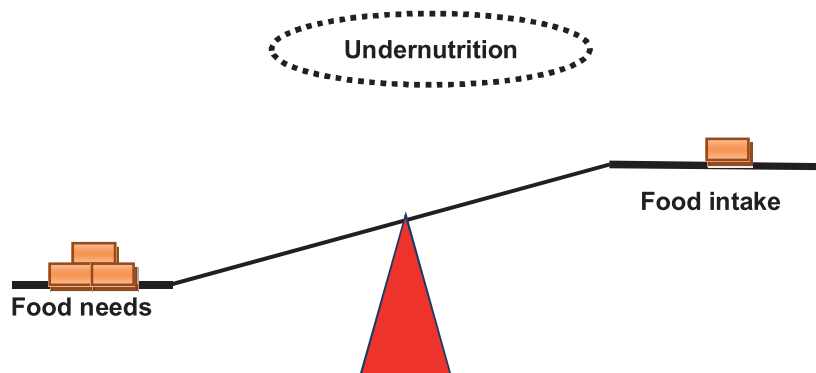
³ Le Cuzait G, Mattien H. 2007. Maximising the Nutritional Impact of Food Security and Livelihoods Interventions. A manual for field workers. Mali, Action Contre la Faim.



Pic. 9: Overweight occurs when the food intake is higher than the food needs

o Undernutrition

Under nutrition happens when the food intake is insufficient compared to the nutritional demands of the body. Under nutrition also occurs when the physiological and environmental conditions are such that the body is unable to utilize the sufficient food material (i.e. during illness). A person with an insufficient food intake is also at a higher risk of developing a deficiency.



Pic. 10: Undernutrition occurs when the food intake is lower than the food needs

When food intake and the associated energy provided by the food are insufficient usually there is weight loss as the body starts utilizing the energy from fat tissue reserves and muscles in order to maintain its function.

Young children are at highest risk of mortality and irreversible damage to the body due to the undernutrition. The child's growth and development, including cognitive development which is responsible for learning are impaired in a situation of undernutrition. In extreme cases severe malnutrition develops.

In pregnancy and lactation which are the periods of high food needs for a woman, undernutrition affects the health of both mother and child .

Groups at risk

Young children, pregnant and lactating woman and people living with HIV and AIDS are the groups most vulnerable to under nutrition. Undernutrition is one of the major causes of child mortality. Because of

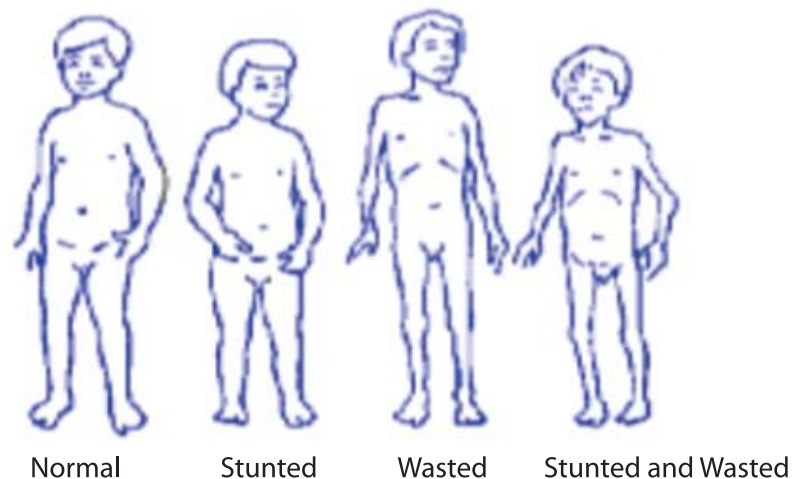
poor nutrition during pregnancy, the prevalence of low birth weight in Bangladesh is also high being 22 percent. Under nutrition makes children weak, affects their ability to learn and causes irreversible damage to the body the consequences of which are felt in adulthood.

The different types of under nutrition have been discussed below:

Underweight is characterized by a low weight for age. This index is used widely for growth monitoring of children in Bangladesh. Thirty-six percent of children under five in Bangladesh is underweight.

Chronic malnutrition is a long-term form of malnutrition. It is characterized by a low height for given age. It results from various factors (e.g. poor feeding practices the first two years of life) leading to growth failure that may have irreversible effects. Around forty percent of children under five in Bangladesh suffer from moderate or severe stunting.

Acute Malnutrition results from a relatively short duration of nutritional deficit that is often caused by infections. It refers to a small weight for a given height. It is also measured using the Middle Upper Arm Circumference (MUAC) and checking for oedema (excessive fluids under the skin and in certain tissues). In Bangladesh, 16 percent of children are wasted.



Adapted from UNSCN (United Nations Standing Committee on Nutrition).
2011. *Nutrition in Emergencies, Harmonized Training Package*. Internet source:
<http://www.unscn.org/en/gnc> Accessed on 08.01.2015.

Pic. 11: Malnourished children in comparison with a normally growing child

Micro nutrient malnutrition

If the diet is unbalanced and poorly diversified it lacks micronutrients. The micro nutrient deficiencies that are of public health significance in Bangladesh are as follows:

1. Iron deficiency

When people do not get enough iron in their diet, their body becomes weak as the blood cannot carry enough oxygen around the body.

Everyone should eat plenty of dark green leafy vegetables, offal (liver, kidney, heart), red meat, chicken and fish, legumes and cereals to prevent and control anemia.

2. Iodine deficiency

Iodine is a micronutrient which is needed for proper functioning of the body cells, as it builds some of its regulatory hormones. It regulates growth and development of the human body and energy processes.

Iodine deficiency cause:

- o Goiter, which is a swelling on the neck due to enlargement of the thyroid
- o Apathy
- o Difficulties in working and learning

If a woman lacks iodine in early pregnancy, she is at high risk of having a child with mental and growth retardation. The child may be born deaf and have lower IQ and difficulties in learning.

Iodine is found primarily in shellfish and other sea foods and milk and milk products. It is also commonly consumed through iodized salt.

3. Vitamin A deficiency

Vitamin A deficiency occurs when people do not eat enough foods containing vitamin A or fats which help in absorption of Vitamin A. This vitamin is important for eyes, proper growth and the body immunity.

Vitamin A deficiency causes:

- o Night blindness
- o Permanent eye damage or blindness
- o Frequent infections and sickness

Children under 5 are at risk of vitamin A deficiency as their need for this vitamin is high due to increased growth and development of this period. Pregnant and breastfeeding mothers also have to ensure that they consume enough vitamin A to cover the needs of unborn and nursing children.

Oil is very important for the uptake of vitamin A from plant sources. To ensure that the organism can utilize vitamin A we should always mix vegetables with some oil or another fat source.

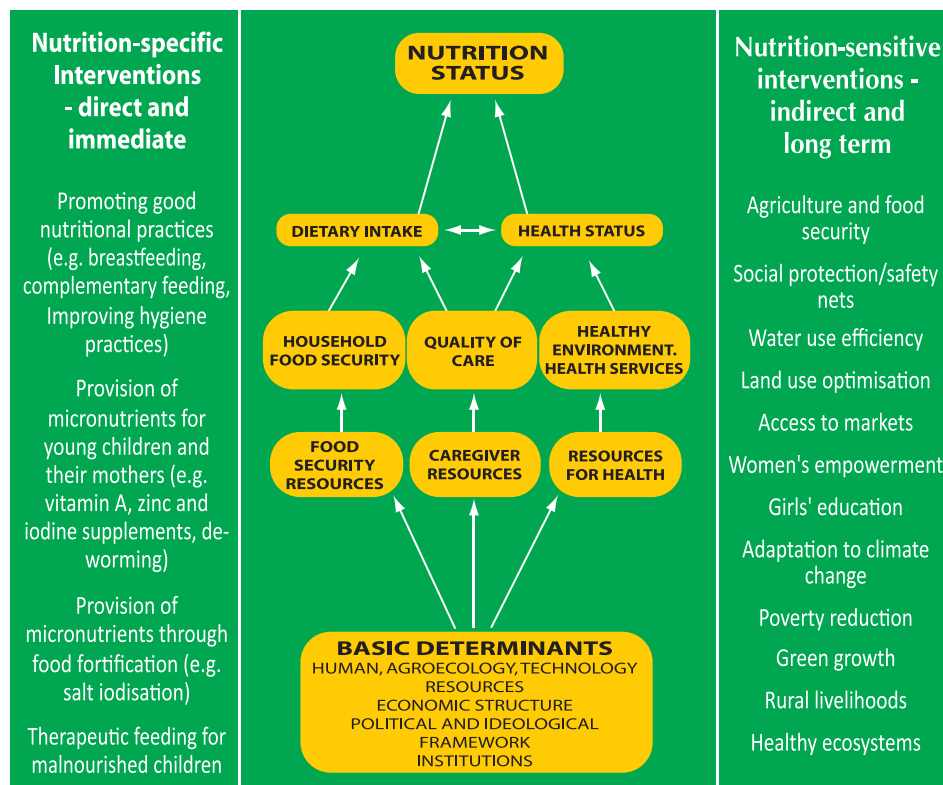
Vitamin A is found in animal source foods, especially liver, milk products and small fish (especially when consumed whole with heads). Plants are also good sources of this vitamin, especially dark green leafy vegetables and yellow and orange vegetables and fruits.

Note: FAO projects in Bangladesh focus only on under nutrition and micro nutrient malnutrition. This manual does not address any components of overweight. The term malnutrition throughout the document represents only under nutrition.

Causes of malnutrition

In order to reduce malnutrition, it is necessary to understand its causes. The causes are various and can be divided into three broad categories: The causes which affect a child's health directly are called "Immediate causes"; immediate causes are identified as inadequate dietary intake and a poor health status. These Immediate causes are in turn influenced by the "Underlying causes" which are influenced by the "Basic causes".

The framework of the causes of malnutrition is presented on the figure 15.



Source: Adapted by World Vision from 'Strategy for Improved Nutrition of Children and Women in Developing Countries: A UNICEF policy review' (UNICEF, 1990) and 'Investing in Early Childhood Nutrition' (M. Ruel and J. Hoddinott, IFPRI Policy Brief 8, 2008).

Figure 15. Causal framework of malnutrition

Immediate causes

- **Inadequate dietary intake**
 - o Insufficient breast milk;
 - o Poor meals: Inadequate variety and quantity or thin consistency of foods;
 - o Infrequent meals.
- **Diseases**
 - o Poor absorption of nutrients;
 - o High usage of nutrients in the body (fever);

Underlying causes

- **Inadequate access to food**
 - Lack of money for food;
 - Low production of family food.
- **Poor food storage and preservation**
- **Faulty food choices and budgeting**
- **Inadequate care**
 - Inappropriate children feeding (see IYCF module 5) and caring practices especially in the first years of life;
 - Inadequate care for women (especially during pregnancy, childbirth and breastfeeding);
 - Inappropriate method of food preparation and poor hygiene in the house;
 - Prevention and treatment of illnesses at home and inadequate access to and use of health facilities.
- **Insufficient health services and unhealthy environment.**
 - Poor living conditions (e.g. insufficient water, inadequate sanitation and overcrowded housing);
 - Poor health services (e.g. shortage of medicines and lack of skilled health staff increases the risk of disease);
 - Lack of health centre;
 - Inadequate sanitation services increase the risk of food-borne infections.

In Bangladesh, low social and nutrition status of women is an important underlying cause of child malnutrition.

Basic causes

For each Underlying cause there are “deeper” causes:

- Widespread poverty and lack of employment (poor livelihood opportunities leading to casual work and migration);
- Unequal distribution and control of resources at community, district and country levels;
- Low status and education of women;
- Environmental damage/Climate change;
- Political unrest and conflict;
- Discrimination.

Long term consequences of malnutrition

Malnutrition leads to numerous health problems if not treated on time and can result in:

- Increased risk of mortality;
- Increased risk of diseases because the body is too weak to fight against them;
- Difficulties in learning at school;
- Adults are not able to support their families due to frequent illnesses, weakness and difficulties to learn new skills.

Module 5

Infant and Young Child Feeding (IYCF)

Appropriate feeding practices help promote growth, prevent stunting and increase a child's chances of a healthy productive life as an adult,. These feeding practices, known collectively as infant and young child feeding (IYCF) practices, include breastfeeding and complementary feeding. Infants should be breastfed within one an hour of birth, exclusively breastfed for the first six months of life, and thereafter should receive nutritionally adequate and safe complementary foods while breastfeeding continues up to two years and beyond.

Part 1: Breastfeeding

Learning objectives:

To state the advantages of exclusive breastfeeding (for mother and child)

To understand the correct breastfeeding position and attachment.

To understand the recommended breastfeeding practices.

Introduction

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants. As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health.

Exclusive Breastfeeding

Exclusive breastfeeding means giving a baby only breast milk, and no other liquids or solids, not even water for the first six months of life.

Importance of Breastfeeding for the Infant/Young Child

- Saves infants' lives
- Promotes adequate growth and development
- Is always clean
- Is always ready and at the right temperature
- Contains enough water for the baby's needs
- Is the perfect food for the infant, contains balanced proportions and sufficient quantity of all the needed nutrients for the first 6 months.

- Contains antibodies that protect against allergies and diseases, especially against diarrhoea and respiratory infections
- Frequent skin-to-skin contact between mother and infant leads to better development of the infant both mentally and physically
- Promotes brain development
- Colostrum, the first milk mother has after giving birth is very important for the infant, it protects him/her from diseases

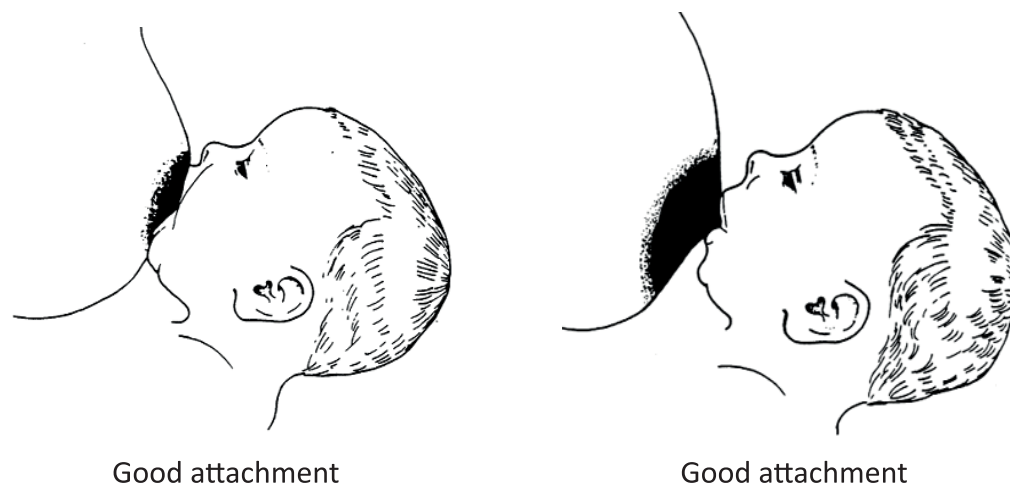
Importance of Breastfeeding for the Mother

- Reduces risks of bleeding after delivery
- Putting the baby to the breast immediately after birth facilitates the expulsion of placenta because the baby's suckling stimulates uterine contractions
- It facilitates the contraction of uterus bringing it back to its original size.
- When the baby is immediately breastfed after birth, breast milk production is stimulated
- Immediate and frequent suckling prevents engorgement of breasts
- Breastfeeding is an effective contraceptive method during the first 6 months provided that breastfeeding is exclusive and amenorrhoea persists
- Reduces the mother's work load (no time preparing milk, gathering fuel)
- Breast milk is available at anytime and anywhere, is always clean, nutritious and at the right temperature
- Stimulates bond between mother and baby

How to breastfeed

- The mother must be comfortable, relaxed and free of pain when feeding
- Hold the infant in such a way as to have his/her face at the mother's breast level (The infant should be able to look up at the mother's face, not flat to her chest or abdomen)
- The infant's neck should not be twisted; the head, back, and buttocks should be in a straight line
- The infant needs to be close to the mother, tummy against tummy
- The baby should breathe freely
- The baby's chin should touch mother's breast
- The mouth should be wide open
- The lips especially the lower one should be turned outward with more of the areola covered below than above the mouth
- The infant is brought to the breast (not the breast to the infant); the baby's whole body should be supported, not just the head and shoulders.
- The mother should be relaxed and supported by her family.
- Pain is usually the sign of poor attachment

Picture below shows the difference between good and poor attachment



Adapted from WHO (World Health Organization), UNICEF (United Nations Child's Fund). 1993. *Breastfeeding counselling, A training course*.

Pic. 12: The difference between good and poor attachment of a child during breastfeeding

Table 26 shows recommended breastfeeding practices and describes the possible points for counselling.

Table 26. Recommended breastfeeding practices and counselling points

Recommended Breastfeeding Practice	Possible Points for Counselling (choose most relevant to mother's situation)
Put infant skin-to-skin with mother immediately after birth	<ul style="list-style-type: none"> • Skin-to-skin with mother keeps newborn warm • Skin-to-skin with mother helps stimulate brain development
Initiate breastfeeding within the first hour of birth	<ul style="list-style-type: none"> • This first milk 'local word' is called colostrum. It protects your baby • Colostrum provides the first immunization against many diseases • Breastfeeding from birth helps the milk 'come in' and ensures plenty of breast milk
Exclusively breastfeed for 6 months (no other food or drink)	<ul style="list-style-type: none"> • Breast milk is all the infant needs for the first 6 months • Do not give anything else to the infant before 6 months, not even water • Giving water will fill the infant and cause less suckling; less breast milk will be produced • Dirty water may cause diarrhoea in a child
Breastfeed frequently, day and night	<ul style="list-style-type: none"> • Breastfeed the baby on demand, at least 8-12 times for a newborn, and 8 or more times after breastfeeding is well-established • More suckling (with good attachment) makes more breast milk.
Breastfeed on demand – every time the baby asks to breastfeed	<ul style="list-style-type: none"> • Crying is a late sign of hunger • Early signs that a baby wants to be breastfed: <ul style="list-style-type: none"> - Restlessness - Opening mouth and turning head from side to side - Putting tongue in and out - Sucking on fingers or fists

Recommended Breastfeeding Practice	Possible Points for Counselling (choose most relevant to mother's situation)
Let infant finish one breast and come off by him/herself before switching to the other breast	<ul style="list-style-type: none"> • Switching back and forth from one breast to the other prevents the infant from getting the nutritious 'hind milk' • The 'fore milk' has more water content and quenches infant's thirst; the 'hind milk' has more fat content and satisfies the infant's hunger. • The baby should be tucked against the shoulder after drinking milk until the baby burps
Continue breastfeeding for 2 years of age or longer	<ul style="list-style-type: none"> • Breast milk contributes a significant proportion of energy and nutrients during the complementary feeding period and helps protect babies from illness • In the first year breastfeed before giving foods to maintain breast milk supply
Mother needs to eat and drink to satisfy hunger and thirst	<ul style="list-style-type: none"> • No one special food or diet is required to provide adequate quantity or quality of breastmilk • Breast milk production is not affected by maternal diet. Even malnourished mothers can breastfeed • No foods are forbidden • Mothers should be encouraged to eat supplemental foods where they are accessible
A pregnant women can continue breastfeeding	<ul style="list-style-type: none"> • It is safe to continue breastfeeding during pregnancy • You should not stop breastfeeding while pregnant
Avoid feeding bottles	<ul style="list-style-type: none"> • Foods or liquids should be given by a spoon or cup to reduce nipple confusion and the possible introduction of contaminants. Bottle feeding also increase the risk of diarrhoea and pneumonia to the infants.
Mother should consider breast feeding as a pleasant experience	<ul style="list-style-type: none"> • Even the cry or thought of the baby may lead to milk ejection due to related emotions. Emotions like worry, anxiety, fear, grief or anger may retard milk secretion. The mother should not regard lactation as a binding or imposition on her.
How do you know your child is getting enough breast milk	<ul style="list-style-type: none"> • Good weight gain every month • Good urination (at least 6 times a day)

Part 2: Complementary Feeding

Learning objectives

- To define the term complementary feeding
- To understand the recommended and optimal complementary feeding practices
- To understand the frequency, quantity and the types of complementary foods

Current status of Infant and Young Child Feeding in Bangladesh

In Bangladesh around a fourth of children aged 6-23 months are fed appropriately according to recommended IYCF practices; that is, they are given milk or milk products and foods from the recommended number of food groups and are fed at least the recommended minimum number of times (BDHS 2011). Feeding according to IYCF recommendations is quite low during ages 6-8 months (6 percent), with an increase to 31% among 18-23 months old children. There is no difference between boys and girls. IYCF practices are better in urban areas than in rural areas (28 versus 19%). Recommended IYCF practices are lowest in Sylhet (11%) and highest in Khulna (28%). IYCF practices improve with increasing education levels and wealth score (BDHS 2011).

Definition of complementary feeding

Complementary feeding refers to the period when other foods or liquids are provided along with breast milk. Complementary feeding is defined as the process that begins when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, at six months of age, and when other foods and liquids are needed. These other foods are called complementary foods. Some examples of good complementary foods include egg suji, khichuri, fruit payesh, etc.

In order to maintain normal growth rates, breast feeding must be complemented by the timely introduction of appropriate, nutritious complementary foods.

Why are complementary foods important?

It is well recognized that the period from birth to two years of age is a “critical window” for the promotion of optimal growth, health and behavioural development. Poor breastfeeding and complementary feeding practices, coupled with high rates of infectious diseases, are the principal proximate causes of malnutrition during the first two years of life. Small children have to receive adequate amounts of essential nutrients, consumed in appropriate quantities of diverse foods to maintain proper growth and develop of their full potential and future capacities.

After 6 months as a baby grows and becomes more active, additional foods from the nutritional stand point are required to "FILL THE GAP" between the total nutritional needs and the amounts provided by breast milk.

Recommended complementary feeding practices

From six months of age, complementary foods should be added to breastfeeds. Considering a child's small appetite, it is advisable that the food is rich in nutrients and the child eats small quantities often during the day. Few important points about complementary feeding are presented in the following table.

Table 27: Recommended complementary feeding practices

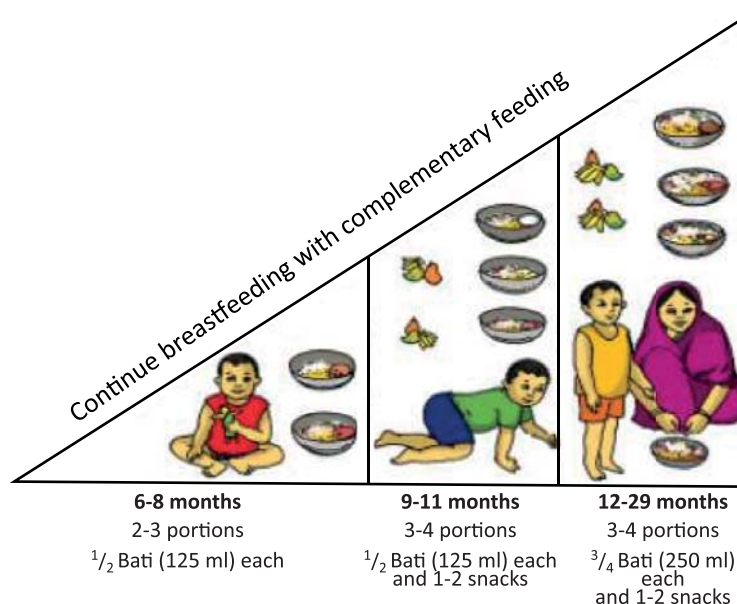
Recommended Complementary Feeding Practice	Possible Points of Discussion for Counselling (choose most relevant to mother's situation)
Continue breastfeeding	<ul style="list-style-type: none"> • Breast milk is of great added nutritive value
Wash hands with soap and water before preparing food, eating, and feeding young children	<ul style="list-style-type: none"> • The main points to remember for clean and safe preparation of feeds are: <ul style="list-style-type: none"> - Clean hands - Clean utensils - Safe water and food - Safe storage • Foods given to the child must be stored in hygienic conditions to avoid diarrhoea and illness.
Feed baby using a clean cup and spoon	<ul style="list-style-type: none"> • Cups are easy to keep clean • Never use a feeding bottle as this is difficult to clean and may cause your baby to get diarrhea.
Introduce new food one by one	<ul style="list-style-type: none"> • Children need time to get used to food other than breast milk.
Be patient and actively encourage baby to eat all his/her food	<ul style="list-style-type: none"> • At first baby may need time to get used to eating foods other than breast milk • Use a separate plate to feed the child to make sure s/he eats all the food given. • Assist children to eat, being sensitive to their cues or signals. • Feed slowly and patiently, encourage but do not force. • Talk to children during feeding with eye-to-eye contact.
Do not add any salt and spices/chillies	<ul style="list-style-type: none"> • Babies are not ready to eat salt spices and chillies
A child's appetite may be poor during illness. Even with encouragement to eat, the child may not eat well. The child's appetite usually increases after the illness so it is important to continue to give extra attention to feeding after the illness.	<ul style="list-style-type: none"> • Give extra breastfeeds • Feed an extra meal • Give an extra amount of food • Use extra rich foods • Feed with extra patience.

Complementary foods should be

- Diversified: rich in energy, protein, fat and micronutrients
- Clean and safe: no harmful chemicals or toxins; no bones or hard bits that may choke a child
- Not spicy or salty
- Easy for the child to eat
- Liked by the child
- Locally available and affordable
- Easy to prepare

Complementary feeding should be guided by the following principles

- **Timeliness:** it should be introduced when the child has completed 6 months (180 days) of life, when the need for energy and nutrients exceeds what can be provided through exclusive and frequent breastfeeding.
- **Adequacy:** it should provide sufficient energy, protein and micronutrients from different types of foods in the right proportions. Complementary foods should contain diverse foods to meet a growing child's nutritional needs.
- **Safe and hygienic:** it should be clean and safe, hygienically prepared and stored, fed with clean hands using clean utensils and not with bottles and teats.
- **Responsively fed:** it should be given according to the child's signals of appetite and satiety, and meal frequency and feeding method (actively encouraging the child, even during illness, to consume sufficient food using fingers, spoon or self-feeding) should be suitable for the age of the child.



Thick food on a spoon

Food served to a child should be thick as in this form it supplies more nutrients



Right consistency

Thin food on a spoon

If food served to a child is too thin it will not supply adequate amount of nutrients in a meal



Too liquid consistency

Thick food in a cup



Thin food in a cup



Source: Adapted from NNS

Pic: 13: Age specific complementary food

Frequency, quantity and types of complementary foods

According to WHO guiding principles, for the average healthy breastfed infant, meals of complementary foods should be given:

- 2-3 times per day at 6 to 8 months of age.
- 3-4 times per day at 9 to 11 months of age.
- 3-4 times per day at 12 to 23 months of age.

Additional nutritious snacks (such as piece of fruit or bread or chapatti with nut paste) may be offered 1 to 2 times per day as desired. During the first 6 months of complementary feeding (6th to 12th month of children's life), to minimize any interference with the normal pattern of breast feeding, complementary food should be given only after a breast feed. From the 12th to 23rd month of children's life complementary food should be given first and then the breast milk.

The stomach of a young child is small. At eight months of age the stomach can hold about 200 ml at one time. Thin foods and liquids fill it quickly. The consistency or thickness of foods makes a big difference to how well that food meets the young child's energy needs. Foods of a thick consistency help to fill the energy gap.

Table 28 shows the frequency, quantity and type of complementary foods depending on the age of the child. Always adapt your counselling to what is available at household level.

Table 28: Complementary foods: frequency, quantity, texture and local examples

Age	Frequency (per day)	Amount of food at each serving (in addition to breastmilk)	Texture (thickness/ consistency)	Local examples for counselling
6-8 Months	2-3 times	2-3 tablespoons up to ½ bati (bati=250ml)	Thick porridge; mashed pureed	<ul style="list-style-type: none"> • Cooked Rice/Sabudana/Sujji/Chira with Sugar/Molasses and Oil • Wheat flour/ Ground Rice/ Ground Millet/Corn or any other cereal porridge with addition of water + Sugar/ Molasses +Oil • Mashed cooked rice and dal with addition of Sugar/ Molasses + oil • Mashed soft banana/potato/papaya/pumpkin/mango • Soft boiled egg yolk
9-11 Months	3 - 4 times	½ bati (bati=250ml) Depending on the child's appetite 1-2 snacks may be offered	Finely mashed/ chopped family food	<ul style="list-style-type: none"> • Roti or rice or tubers softened in dal, mashed correctly + sugar/Molasses +oil • Khichuri (Rice + Dal/whole pulses +Egg+ oil + other vegetables and leafy vegetables: carrot, peas, tomato, spinach, cauliflower leaves) • Whole pulses well mixed and mashed either with rice or roti +Oil • Whole egg (start with yolk, then introduce the white, well cooked) • Mashed soft banana/ripe papaya/ripe mango/boiled apple/guava/melons • Any Dal mashed with water with or without addition of oil/sugar/Molasses • Wheat flour/ Ground Rice/ Sujji/ Chira or any other cereal porridge + water/milk + Sugar/ Jaggery +Oil • + any of the options from the 6-8 Month
12-23 Months	3- 4 times	3/4-1bati (bati=250ml) Depending on the child's appetite 1-2 snacks may be offered	Family foods/ Sliced foods	<ul style="list-style-type: none"> • Powdered Groundnuts added to porridge/roti/rice with addition of Sugar/ Molasses • Minced fish/meat/chicken (well cooked and clean) • Rice cooked with meat/fish/chicken • Well cooked rice or roti + dal + vegetables • Mashed soft banana/ripe papaya/Ripe Mango/boiled apple/guava/melons • + any options from 9-11 months
If non breastfed child	Add extra times	food and snacks		Add 1-2 cups of milk per day

Table 29 lists the main risks associated with starting complementary foods too early or too late.

Table 29: Risk associated with starting complementary foods too early or too late

Starting too early (before 6 months)	Starting too late (after 6 months)
<ul style="list-style-type: none"> - Make it difficult to meet the child's nutritional needs - Increase the risk of illness because less of the protective factors in breast milk are consumed - Increase the risk of diarrhoea and other illness because the complementary foods may not be as clean or as easy to digest as breast milk - Increase the risk of wheezing and other allergic conditions 	<ul style="list-style-type: none"> - The child does not receive the extra food required to meet his/her growing needs - The child grows and develops slower - Might not receive the nutrients needed and may develop deficiency syndromes such as anaemia from lack of iron.

Complementary food preparation

The composition of the complementary food is critical as it must be adequate in energy, proteins, fats and micronutrients and must be given frequently so as to meet the needs of the child. An example of a complementary food mix that can be popularized and widely promoted in Bangladesh could include 4 parts by volume of rice to one part each of mung bean (green gram) and groundnuts or sesame to be given as gruel to the young child. A variety of vegetables such as carrots, yellow pumpkin, tomato or tender dark green leafy vegetables such as spinach can be given along with this complementary food. An example of a preparation process for a complementary food mix is shown on figure 16.

Hygiene

- Complementary foods should be prepared with clean water using clean utensils and child should be fed from clean cups and bowls. Feeding bottles should never be used to give liquid complementary foods to the child.
- The mothers and other household members in charge of caring for the infant and young child should wash their hands thoroughly before preparation and feeding.
- The cooking and preparation area should also be kept clean.
- It is preferable to feed the child immediately upon preparation; avoid storing cooked food.
- If the complementary food has been kept for over two hours, it should be boiled before feeding it to the young child.

Pusti gura preparation

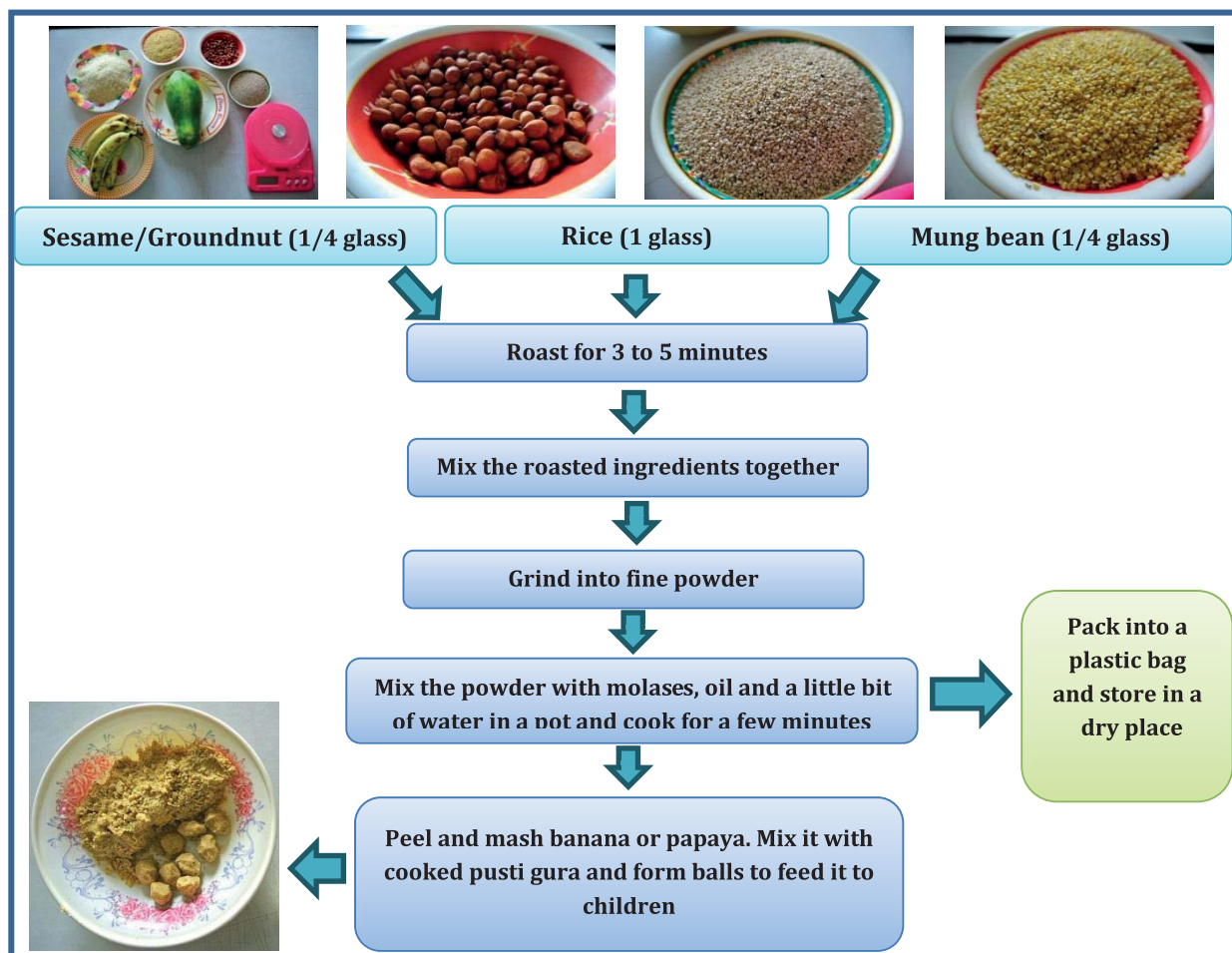


Figure 16. Steps in preparation of pusti gura

The powder prepared according to the instruction presented on figure 16 can be mixed with ripe banana, mango, papaya or cooked, mashed dark green leafy vegetables and fed to a child. This powder can also be cooked into a porridge with addition of water, sugar and seasonal fruits could be added to make it more palatable for children.

Note: Please refer also to the complementary feeding recipe booklet developed under FAO nutrition project (GCP/BGD/049/USA).

Community based complementary food production

Nutrition education activities can be organized by which mothers to guide them to prepare complementary foods as group initiatives in the community.

Households and communities need to be encouraged to develop and promote utilization of improved complementary foods in order to prevent and address child malnutrition, using locally available and affordable foods. Agricultural extension services and health care systems can work in an integrated manner to train mothers and communities on nutrition and optimal child feeding practices.

Providing appropriate nutrition counselling to mothers of young children and recommending the widest possible use of locally available food sources will help ensure that local foods are prepared and fed safely in home.

Steps in community based complementary food preparation

- Encourage mothers to get mixtures of roasted rice, mung beans and sesame/nuts in household measures
- Allocate tasks to women to weigh the ingredients, roast, mix and grind them (4:1:1)
- Ask mothers to pack them in plastic bags (100g capacity) and seal them
- Women group leaders could give the method of cooking the mixture to a semi – solid consistency
- Mothers could also be asked to get a stove or chula and be advised to cook the mixture together
- This activity could be organized in a central meeting place in the community

The involvement of the community in the preparation of local complementary foods serves as an excellent nutrition education learning experience for community members. Below are some tips on how to make this process more beneficial for the community:

- Feeding of the children could be organized at a central meeting place in the village.
- Such activities serve as a stimulus for growth monitoring and promotion (GMP) activities. Malnourished children in the community can be identified and timely dietary guidance can be given by community mobilisers to their mothers for appropriate dietary action.
- A village nutrition development fund may be created through sale of the complementary food mixture and the complementary food mix can be given free to children whose growth falters.

Since the mother does not always have the ability to take decisions that affect what and how her child is fed, other family members also need to be targeted with information and counselling, particularly husbands and mothers-in-law.

Module 6

Nutrition and Care of Adolescent Girls

Learning objectives

- To know the growth changes during adolescence.
- To learn about the increased food and nutrient needs during adolescence.

Introduction

Boys and girls between 10 and 19 years are known as adolescents. The phenomenal growth that occurs in adolescence creates increased demands for energy and nutrients. Nutrition and physical growth are integrally related and optimal nutrition is a requisite for achieving full growth potential. Failure to consume an adequate diet at this time can result in delayed sexual maturation and can arrest or slow linear growth.

Why adolescents require more food

Prior to puberty, nutrient needs are similar for boys and girls. It is during puberty that body composition and biologic changes (e.g., menarche) emerge which affect gender-specific nutritional needs. Nutrient requirement for both males and females increase sharply during adolescence. At the peak of the adolescent growth spurt, the nutritional requirements may be twice as high as those of the remaining period of adolescence. Hence adolescents need a proper diet which supplies increased amount of energy and protein for increased muscle mass and for rapid growth of skeleton.

Iron rich foods for adolescent girls

Development of critical bone mass is essential during this period as this forms the ground for maintaining mineral integrity of the bone in later life.

Adolescent girls are at greater physiological stress than boys because of menstruation. Their nutritional needs are also of particular importance as girls have to be prepared for motherhood.

During the menstrual periods, adolescents lose iron. They must take increased amounts of blood building foods or foods that are rich in iron like green leafy vegetables, liver, chicken, meat, chick peas, whole grain cereals, rice flakes, jaggery, etc.

Adolescents also require more calcium to achieve a high peak bone mass. Milk/curd, dark green leafy vegetables, bony fish, sesame seeds, poppy seeds and whole grain cereals are good sources of calcium.



Pic. 14: Nutrient rich foods are particularly important for adolescent girls

Important foods in the diet of an adolescent

Adolescents should be encouraged to eat a varied diet that includes at least the following amounts:

- 100 g leafy vegetables to meet the needs for Vitamin A, folic acid, calcium, iron and other minerals,
- 50 to 100 g yellow orange vegetables (YOV) to meet the needs for Vitamin A,
- 30 to 50 g small bony fish to meet the needs for calcium, protein and important fatty acids,
- a glass of milk to meet the needs for calcium, protein and B complex vitamins,
- Good breakfast every day. The breakfast should be a combination of energy giving, body building and protective foods.
- School lunch and snacks make a major contribution to energy and nutrients in an adolescent's diet. Snacks should be well timed and given in small portions so as not to lessen the appetite for the next meal. Well-planned school lunch and snacks should furnish at least 1/3 of the child's daily food requirement. Sweets and candies should be avoided, instead snack of high nutritive value should be given like: fruits and fresh vegetables, boiled eggs, milk products, nuts and oilseeds.

Special nutritional concerns during adolescence and steps to be taken

Pregnancy, childbirth and lactation are much more nutritionally demanding for adolescent girls than for adult women. Adolescent pregnancy is often the cause of malnutrition not only for the mother but also for her child, and should therefore be avoided.

- Particular attention should be given to adolescent girls so they enter adulthood with adequate iron stores and do not develop anaemia during adolescence.
- The adolescent should be guided in proper food selection at home and at school to encourage good food habits.
- A well balanced diet spread over three main meals and small snacks can help to ensure adequate nutrition.

Module 7

Nutrition and Care of Pregnant and Lactating Women

Learning objectives

- To state the consequences of chronic energy deficiency among pregnant women.
- To learn the importance of a nutritious diet and the type and amounts of food to be given to women during pregnancy and lactation.

Well nourished mothers are likely to have healthy babies

Girls and women need to eat well throughout their lives but particularly when they are planning a baby, are pregnant or breastfeeding. If they eat healthy, balanced diets they are likely to:

- Stay active and well;
- Produce healthy babies and breastfeed successfully.

A woman is at risk of complications and difficult labour if she is undernourished when she becomes pregnant and during pregnancy. Her child is likely to have a low birth weight (< 2500 g) and therefore is more likely to:

- Grow and develop slowly;
- Have higher chances of infection;
- Greater risk of death;
- Suffer from anaemia, vitamin A and zinc deficiencies;
- Develop heart disease, high blood pressure, obesity and diabetes when adult.

Other causes of low birth weight are prematurity, malaria or other infections undergone by the mother during the pregnancy, or the mother's smoking/chewing tobacco or abusing drugs during pregnancy.

Consequences of chronic energy deficiency among pregnant woman

- Increased risk of maternal complications and death;
- Increased risk of infection;
- Anemia;
- Lethargy and weakness leading to lower productivity;
- Obstructed labor;
- Consequences for fetal and infant health;
- Increased risk of fetal, neonatal and infant death;
- Low birth weight;
- Preterm birth;

- Birth defects;
- Child's growth retardation, difficulties in learning and mental development, brain damage.

How do we know if a pregnant woman is eating adequately?

One of the practical indicators of good health and adequate nourishment in a pregnant woman is the rate of weight gain and the total weight gain during the period of pregnancy.

The weight gain should approximately be:

- 1.5 kg during the first trimester (1st three months);
- 2.7 to 3.0 kg during the second trimester (2nd three months);
- 2 kg/month during the last trimester (last 3 months)

A total weight gain of 10-11 kg is expected during pregnancy

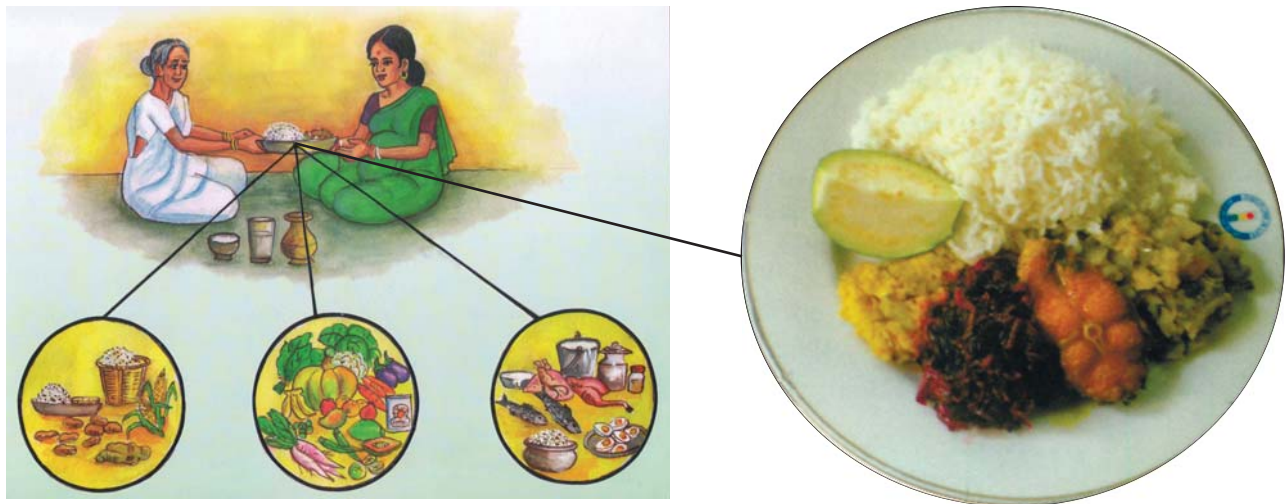
Nutritional needs during pregnancy

A women's need for energy and most nutrients are highest during pregnancy and lactation. A variety of foods in additional amounts is required to meet the demands of the growing foetus, A pregnant woman prepares herself to meet the nutritional demands by increasing her own body fat deposits during pregnancy. Iron needs during pregnancy are so high that supplements such as iron/folic acid tablets should be given.

When pregnant, women need more energy, protein, zinc, vitamin A, vitamin C and folate, and much more iron (meat, poultry, fish, eggs, whole grain cereals, beans, chickpeas, lentils, dark green leafy vegetables). It is particularly important for women to eat well and more throughout their pregnancy, including the first trimester, so that the babies' bodies and brains develop properly.

All pregnant women should-

- Take one extra meal during the day and one extra helping of family food during each meal.
- Get adequate food in her plate, both in terms of quantity and quality.
- Drink plenty of water.
- Take plenty of meat, fish, milk and its products, dark green leafy vegetables, pulse, molasses, nuts and seeds to nourish the child in her womb.
- Use iodized salt. Women who lack iodine are at greater risk of having a baby who has poor physical and mental development.
- Avoid heavy work and rest for two hours during day and eight hours at night.
- Take iron/folic acid tablet every day from the moment of recognizing the pregnancy to the third month after giving birth.



Pic. 15: All pregnant women should take extra helpings of nutritious foods during the meal

No food items are restricted during pregnancy.

Nutritional requirements during lactation

Breastfeeding increases women's nutritional requirements and micronutrient needs. Nutritional requirements are greater during lactation than during pregnancy. A woman who is well nourished during pregnancy will have adequate fat reserves to compensate partially for these additional requirements during lactation.

Breastfeeding women need much more energy, protein, zinc, vitamin A, vitamin C and folate (i.e. the equivalent of an extra meal each day). A breastfeeding woman must continue to eat a well balanced diet to meet the enhanced nutritional requirements of lactation. Besides, intake of fluids should increase as fluids are essential for adequate milk production. Therefore, consumption of fluids in any form such as soup, buttermilk, milk or milk based beverages and clean plain water should be encouraged.

All lactating women should-

- Take two extra meals during the day and one extra helping of family food during each meal.
- Drink plenty of water
- During lactation a woman's nutritional needs are very high, even higher than a well built hardworking man. A nursing mother often feels hungry and must eat frequent meals in a day to meet the additional nutritional demands of the growing infant.
- Vegetables like dark green leafy vegetables, and yellow orange vegetable and fruits which are rich in vitamin A, should be encouraged in the diet of the lactating mother. A lactating woman also needs to eat other vitamin A rich foods like milk with cream, ghee etc.

- During lactation extra calcium is necessary for making breast milk. Foods rich in calcium include milk, curds, paneer, sesame, DGLVs particularly drumstick leaves (sajna patta), beans, shell fish and small fish should be taken.



Pic. 16: Lactating woman should be supported by her family to enable her to consume all the foods she needs to cover her high demand for nutrients



Pic. 17: Lactating woman should consume varied diet with plenty of vegetables and animal source foods

No food items are restricted during breastfeeding.

Table 30 shows how much food, in addition to what was consumed habitually before pregnancy, a pregnant and lactating woman should get during the day.

Table 30. Additional food requirements during pregnancy and lactation (quantity in g/d)

Type of food	During pregnancy	During lactation
Cereals	35g (1/3 cup rice/atta/1 slice bread)	60g (¾ cup rice/atta)
Pulses/meat	1 table spoon (15 g)	2 table spoon (30g)
Vegetables (DGLVs, YOVs, YOFs)	1 serving each (100 g each)	1 ½ serving each (150 g each)
Milk	100 ml (¾ cup)	100 ml (¾ cup)
Fat	no additional requirements	10 g (2 tsp)
Sugar	40 g (8 tsp)	10 g (2 tsp)

DGLV : Dark Green Leafy Vegetables; YOV: Yellow Orange Vegetables; YOF : Yellow Orange Fruits

The diet of a pregnant and lactating woman need not be different from the rest of the household members: the total amount that she should take would need to be more than normally.

All members of the family such as the husband, parents, parents-in-law, and others should ensure that the mother gets an adequate quantity of a variety of foods and takes sufficient rest.

Remember that daily diet of a pregnant or lactating woman should contain-

- Vitamin C rich foods such as lemon, orange, sweet lime, Indian gooseberry (amloki), guava (peyara), and star fruit (kamranga).
- Calcium rich foods such as dark green leafy vegetables, small bony fish, milk and milk products (if possible), and sesame.
- Iron rich foods such as dark green leafy vegetables, small fish, meat, chicken, dried fruits, (dried dates, raisins, etc.)
- Iodine rich food items such as iodized salt and foods like sea fish.
- Folic acid rich foods such as dark green leafy vegetables, whole grains, legumes, peas, beans, mushrooms, nuts, liver, fish and eggs.

Some other tips to improve nutrient adequacy of the diet

In order to increase the amount of calcium in food-

- Combine DGLVs with tomato or other sour fruits like lemon, boroi.
- Put a teaspoon of lime juice while kneading wheat flour (atta) dough for making rotis.
- Soak bones or egg shells in lemon juice for a few hours and then use the liquid in soup or other food.
- Add a little lemon juice, vinegar or tomato after cooking bones for soup.
- Soak maize (corn) in lime juice and eat.
- Use some milk and curd in daily diet.
- Use small fishes with bones in daily diet.

In order to improve iron availability from vegetable sources-

- Add foods like lime juice, tomatoes, berries, amla, coriander, green chillies (which are high in vitamin C) to preparations such as dal and other mixed dishes.
- It is best to eat dark green leafy vegetables, cereals and pulses and other iron containing foods along with sour fruits like amla, lemon, tamarind and berries e.g. tak dal, khichdi topped with grated amla, dal garnished with coriander and seasoned with green chillies.
- Promote use of fermented foods whenever possible.
- Beverages like tea bind dietary iron and make it unavailable. Hence, they should be avoided before, during or soon after a meal.

Care of pregnant and lactating women

Antenatal care

A pregnant women should undergo a health check up by a trained health worker every month or at least 4 times during each pregnancy to detect any problems and ensure safe delivery and healthy new born.

The medical supervision of woman during pregnancy is to prevent and detect any abnormalities during pregnancy. The dangers of child bearing can be greatly reduced if:

- The woman is healthy and well-nourished before becoming pregnant;
- Having a skilled birth attendant to assist the delivery in a health facility and checking on the mother within 24 hours after delivery.

Postnatal Care

A woman who gave birth should undergo four post natal visits: the first one should be within 24 hours from the delivery and the last one within 1 month.

- Both mothers and their new born children are vulnerable during the postnatal period, especially during the first 24 hours following birth.

Post natal care for all women should include:

- Monitoring and referral for complications such as excessive bleeding, pain and infection.
- Counselling on breast care and breastfeeding, new born care practices, and family planning.

Module 8

Home Food Safety and Food Preparation Techniques

Learning objectives

- To understand the correct cooking techniques to minimize losses of nutrient during food preparation.
- To be aware of the various food enhancers which Improved nutrient absorption from food.
- To discuss the food safety concerns for households raising backyard poultry and small livestock.

Introduction

Vegetables and fruits are excellent sources of vitamins and minerals. Some also provide protein and carbohydrate. During cooking, loss of nutrients can occur that are quantitative or qualitative. Quantitative losses occur when edible parts are discarded while qualitative losses occur through loss of vitamins particularly water soluble vitamins such thiamine, riboflavin and vitamin C during cooking. Appropriate cooking therefore, can help to prevent these losses.

Food preparation techniques for minimizing nutrient losses



Wash fruits and vegetables before cutting.

If fruits and vegetables are washed after cutting a big part of water soluble vitamins will be lost.



Cut fruits and vegetables right before cooking or eating them.

Cutting fruits and vegetables in advance and leaving them exposed to the air or sitting in water causes nutrient losses



When you peel fruits and vegetables remove as thin layer as possible.

Fruits and vegetables store most of the nutrients just below the peel, by removing a thick outside layer of them we remove nutrients which are stored there. If possible, use a peeler to remove the skin as it removes only a very thin layer.



Cook roots and tubers like potatoes, sweet potatoes, beetroot and colocasia, whole with skin to retain the flavor and nutrients.



Always cut big pieces of vegetables for cooking.

Loss of nutrients is minimized when vegetables are cut into bigger pieces.
Cook just until vegetables become soft.



Use minimum amount of water for cooking.

Cover the vessel to prevent loss of nutrients.

Cook on slow fire to retain nutrients.

Do not add extra water while cooking green leafy vegetables.

Leafy vegetables release their own water and get cooked into it.



Always add salt at the end of cooking.

Iodine from salt is lost if salt is added at a very early stage of cooking.



Spices, other flavoring ingredients and dark green leafy vegetables should be added in the oil used for seasoning.

Vitamins in these ingredients are soluble in fat and are thus easily dispersed in the preparation that has oil or fat.

If you cook dark green leafy vegetables in water, do not discard the excess of it but use it in dals, soups or in dough for roti.

While preparing soups or liquid gravy preparations, cook the slowest cooking ingredient first. Then add other ingredients which require less cooking time.

For example, meat or pulses should be cooked half way before adding the vegetables. This procedure avoids over cooking of the vegetable and preserves nutrients.

Dark green leafy vegetables should be cooked for a minimal time required and no more than ten minutes⁴. This practice will help to preserve the vitamins and minerals.

Dark green leafy vegetables should be served immediately after cooking.

Try to use young leaves of leafy vegetables.

Old leaves contain high amount of fiber which may interfere with the digestion.



It is healthy to eat vegetables raw, without cooking, but the vegetables should be thoroughly washed.

Many of the leafy vegetables like: spinach, cabbage, lettuce, and yellow orange vegetables like carrots can be eaten without cooking after thorough washing. Other vegetables which can be eaten raw include cucumber, radish, turnip, tender green peas, tomato and others.

Raw vegetables can provide you many nutrients which are destroyed when you cook them.

Use acid foods such as lime juice, tomato, vinegar or curd when you prepare salads.

Acid foods prevent loss of vitamin C.

Never eat raw eggs.

Raw eggs contain dangerous germs that cause food poisoning.

Always boil fresh milk before its use.

Curd and fermented milks may be safer than fresh milk.

Keep cooked food covered and store in a clean and dry place.

Store cooked and uncooked food separately to prevent microbial contamination.

Do not re-heat food repeatedly.

If you have wounds on hands cover them while cooking, or don't cook at all until the wound is healed.

Wounds can be source of food contamination with dangerous germs which may affect whole family and cause food poisoning.

⁴ Typically, a common practice that can be promoted is to place the washed and cut dark green leafy vegetables (commonly lau shak/mishti kumra shak) along with a few green chillies on top of the partially cooked rice. This is then allowed to cook completely. When the rice is cooked, the vegetables are removed and mashed in to a paste with raw onion, salt and mustard oil. This paste is eaten with cooked rice. The retention in beta-carotene is reportedly the highest by this method as compared to the most commonly used methods of frying and boiling, but this is less frequently practised.

Hygienic handling of vegetables and fruits

All vegetables and fruits must be handled in a hygienic manner before they are consumed. Fresh vegetables/fruits from the home garden must be cleaned, trimmed and properly handled prior to and during preparation. Fresh vegetables/fruits should always be washed to reduce any possibility of contamination from external sources.

Essential steps in hygienic handling of vegetables and fruits



Wash hands thoroughly with soap and clean water before handling and preparing food.



Keep food preparation surfaces clean.

Use clean, carefully washed dishes and utensils to store, prepare, serve and eat food.



Use clean cutting equipment (boti) or choppers for cutting food.

Wash cutting knife thoroughly with soap and safe water between cutting meats and vegetables.



Wash vegetables and fruits thoroughly using clean safe water before using in salads or chutneys.

Always wash squash and melons, even if you do not eat the rind or skin.

During cutting cut, dirt or bacteria that is on the outer surface can be transferred to the inner flesh.



Clean all green leafy vegetables thoroughly to get rid of soil, dust and other dirt.



**Store fresh fruits and vegetables in a cool, dry and well ventilated place.
Store foods which are eaten raw (vegetable, fruits etc.) separately from raw meats, fish and poultry.**

All meat contains germs which can be only removed by cooking. Foods stored together with meat can get contaminated with these germs and they will cause food poisoning.

To get rid of pesticide residues and formalin, wash vegetables in clean running water, and soak them in water for one hour and then rinse.

Do not store cooked vegetables at room temperature for more than 2-4 hours and reheat well just before eating.

Food combinations to increase nutrient availability

- While preparing iron rich vegetables, like dark green leafy vegetables or dal add sour foods like tomato, amlaki, lemon, tamarind, kamranga, amra, jambura, boroi which help to improve the absorption of iron. Tamarind may also be used as it contains compounds that promote retention of minerals such as iron.
- Use of fresh herbs and spices like green chillies, coriander, mint, tulsi as they will add to the vitamin C content of the meal.
- When preparing chutneys, use micronutrient rich vegetables like carrot, tomato, boroi, pumpkin and green peas, and herbs like coriander, chillies and mint leaves. It adds to vitamin A, iron and vitamin C content of the meal.
- Addition of even small amount of flesh foods to the dish will improve the dish quality. The fat content and facilitate absorption of vitamin A and iron from the meal.
- Sprouted legumes are a good source of B complex and vitamin C, and promote the absorption of the nutrients from the meal. They should be combined with dark green leafy vegetables and yellow orange vegetables to prepare salads and vegetables or dals.

Food safety concerns for households with backyard poultry and small livestock

To prevent the occurrence and spread of disease, it is important that the community undertakes the following preventive measures:

- Vaccinate livestock and poultry annually against various diseases that may affect them.
- Do not cut open carcasses of animals that have died due to disease.
- Bury the carcasses within a depth of at least 2 meters and treat the soil liberally with chloride of lime. Carcasses may also be burnt without cutting them open.
- Report suspected cases immediately to the nearest animal health technician, district veterinarian or livestock/poultry specialist.
- The district veterinarian or livestock/poultry specialist may prescribe methods to disinfect the premises, transport vehicles and other tools which might have contact with the affected animals.
- Direct contact with the affected animals or animal products or inhaling dust which contains spores can also affect humans and sometimes lead to deaths.
- The bloody discharge from the nostrils, mouth and anus, as well as skin, bone and other tissues can be the source of pathogenic bacteria.
- Scavengers, vultures and even flies play an important role in the spreading of these resistant spores. The infection is usually acquired by drinking contaminated water, grazing on contaminated pastures or when animals get in contact with infected carcasses.

Module 9

Household Processing and Preservation

Learning objectives

- To raise the awareness of the importance of processing and preservation.
- To understand processing and preserving methods that can be commonly used at the household level.
- To demonstrate practical ways to process and preserve fruits, vegetables and other foods for long term use.

Introduction

Often there is no steady supply of vegetables and fruits throughout the year. During peak periods, the vegetables and fruits that are produced in excess are often destroyed due to lack of marketing and appropriate storage facilities and their perishable nature. In between the growing seasons there is usually an acute shortage of fresh vegetables and fruits.

At household and community levels fruits and vegetables can be appropriately processed into various products which could be preserved for a long time, provide year round supply, provide nutrients in the diet and add to the value of the product.

Foods are preserved in order to keep them for a longer period after they have been harvested. Preserving stops the food from decaying.

Effective preserving methods helps:

- Food to last for a long time, so that families can use it when fresh produce is not available;
- Preserve the nutrients of food;
- Make produce easier to package and transport for selling.

Proper training and development of facilities for home based processing and preservation can play an important role in supplementing vegetable requirements throughout the year.

The cheapest, most effective and simplest methods for preserving food in Bangladesh are blanching, fermenting, drying and pickling.

Some home scale techniques commonly used in Bangladesh

Vegetables can be processed and preserved at home by drying and dehydration, fermentation and pickling, bottling, making preserves and a variety of other methods.

Drying

Many fruits, leafy vegetables and other vegetables do not grow all year round. When these particular micronutrient dense foods are out of season, there is a greater risk of not having enough micronutrients in the diet. Therefore, some leafy, orange and yellow and other vegetables are preserved by drying. Preservation of vegetables by drying is the oldest and simplest method.

Drying helps to preserve food by removing the water from vegetables and fruits by either sun drying or using a dryer that prevents growth of bacteria and fungi. Most of fruits, vegetables and root crops can be dried. Produce that are commonly dried include bananas, mango, papaya, guava, okra, tomato, onion, pepper, pumpkin, sweet potato and all green leafy vegetables. Meat, including fish can also be dried. Mushrooms, pumpkin seeds, beans and grains can be dried. When they are required for cooking add the dried vegetables directly to cooked dishes. Dried fruit can be a useful and, long-lasting snack.

Dark green leafy vegetables and yellow orange vegetables should be cleaned, washed and spread on a clean sheet for drying in the sun. When completely dried, powder them coarsely by rubbing with hands and store in air tight containers. Use when fresh supply is not available.

Steps in drying

1. Cutting and trimming

Vegetables require cutting, stemming, pitting, trimming or coring. This can be done with stainless steel knives or the traditional cutting equipment (called boti) used in rural households.

2. Blanching

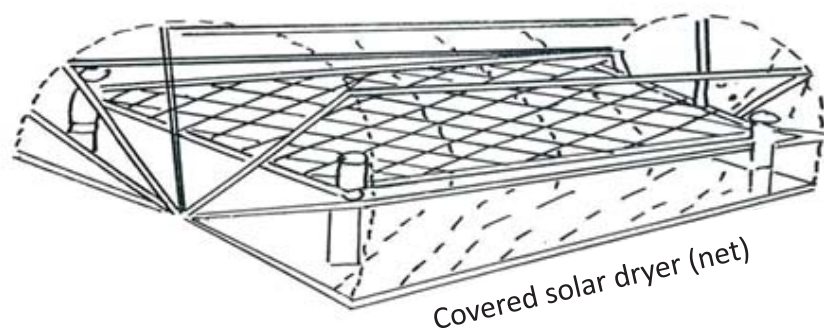
Preliminary treatment like blanching is essential to improve the quality of the dried products in both methods of drying. Blanching is an important step which involves exposing the vegetable very quickly to heat (100°C) to inactivate the enzymes. This is especially needed for frozen vegetables as no more heating is involved later. The time for blanching is important. Too short blanching will make it ineffective while too long a time will soften the tissue. In order to preserve the vegetables they should be processed at higher temperatures to kill all the pathogenic microorganisms and spores, if any.



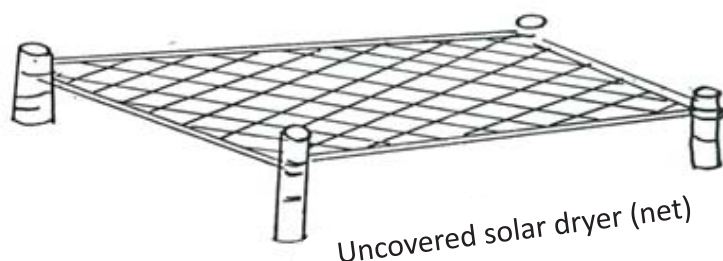
Pic. 18: Examples of dried products

Drying structures

Drying food in the sun is not advised as sunlight causes oxidation of nutrients and destroys them. The simplest method to avoid this is to construct an open sided drying shed. An example is displayed on picture 18.



Temperature:
60 - 75⁰ C,
Time of drying:
2-3 days



Adapted from BIRTAN (Bangladesh Institute of Research and Training on Applied Nutrition). 2004.

Pic. 19: Drying shed allows to dry products under sun light without the need of exposing them to direct sun Light

Solar driers

Simple solar driers can be made using wood, black plastic and clear plastic.

In a solar drier the prepared food is placed on drying trays. The black plastic part of the drier is placed in the sun. As it heats up it pulls warm air through the drying trays. The drying trays are in the shade.

Drying of some common vegetables

Some rural and urban women practice drying of different vegetables such as cabbage, green leafy vegetables, beans, bitter gourd and a variety of other vegetables. Some examples are given below:

Cabbage (Badha Kopi)

1. Remove over mature outer leaves and core first
2. Then cut cabbage into fine shreds (0.2 cm thick)
3. Blanch the shreds in boiling water containing 2% sodium bicarbonate solution for 2-3 minutes
4. Dry



Pic. 20: A solar drier allows to dry foods on sun without exposing them to the direct sun light

Beans (Sim)

1. Cut tender string beans into small lengths
2. Blanch in boiling water for 2-3 minutes
5. Dry

Carrots (Gajor)

1. Remove the stalks and tips and then peel the carrots
2. Cut the peeled carrots into 0.5 cm thick slices
3. Blanch in water containing 2 to 4% salt⁵ for 2- 4 minutes
6. Dry

Bitter gourd (Teeta korola)

1. Cut gourds into slices about 0.5 cm thick
2. Blanch the slices in boiling water for 7-8 minutes
7. Dry

Green peas (Motor suti)

1. Blanch tender green peas for 1-2 minutes in boiling water
8. Dry

Tomato

1. Scald ripe tomatoes in boiling water for 30-60 seconds
2. Remove the skin using a pointed knife
3. Slice peeled tomatoes into 0.5 to 1 cm thick pieces
9. Dry

Spinach (Palang)

1. Wash leaves thoroughly
2. Blanch for 3-4 minutes
10. Dry

Dried pulses (bori)

1. Soak black gram for 6 hours.
2. Grind well, add a pinch of kalajeera and salt and keep for about 8 hours.
3. Allow the mixture to ferment⁶.
4. Prepare small rounds (bori) of the mixture
5. Dry for 2-4 days.
6. The bori can be used in dal and vegetable (sabji) preparations, increasing nutritive value of meals and variety and palatability of the diet.

⁵ 2 to 4g Salt in 100ml of water

⁶ Fermentation promotes the growth of beneficial bacteria and increase the content of B complex vitamins.

Tips for drying

Crops must be processed within 48 hours of harvesting.

Avoid exposing foods to the direct sunlight during sundrying. Drying in the shade reduces loss of nutrients.

Wash, sort, peel and cut up the produce. Sort it into groups of similar ripeness and cut it into pieces of similar size so that they take the same amount of time to dry.

Store the produce in well-ventilated places to avoid mouldy conditions.

Keep dried or cured foods in clean, dry, dark, airtight containers.

Bananas, sweet potatoes and pumpkins can be made into a flour for storage.

Green vegetables should be blanched before you dry them.

Pickling

Pickling is an important food preservation method which combines salting and fermentation to control microorganisms. Fresh vegetables soaked in a watery solution will soften in 24 hours and begin to undergo a slow, mixed fermentation putrefaction process. The addition of salt will permit the lactic acid bacteria to grow, suppressing all other types of undesirable microbes and rapidly produce sufficient acid to supplement salt reaction.

Brinjal /Sweet potato pickle

Ingredients	Amount
Brinjal /sweet potato (peeled and sliced)	1000g
Chilli powder	30g (2 tablespoons)
Garlic	30g (6 pods)
Ginger	80g
Turmeric powder	10g (2 tsp)
Mustard powder	10g (2 tsp)
Green chilli	30g
Sugar	200g (2 cups)
Fenugreek powder (methi powder)	5g (1 tsp)
Acetic acid or vinegar	15ml of acetic acid (1 table spoon) or 1 ½ cup vinegar
Salt	75g
Cumin	3g
Mustard oi	300ml (3 cups)

Method

1. Cut brinjal or sweet potato into small slender pieces.
2. Fry the slices in oil.
3. Peel ginger and garlic and make paste in a little vinegar solution.
4. Mix chilli powder, mustard powder and ginger-garlic paste and cook in the oil left after frying the slices.
5. Add green chillies, fried slices of brinjal/sweet potato, sugar and fenugreek and cumin powder one by one as cooking continues.
6. Finally, add salt and the rest of the vinegar .
7. Cook the mixture to a thick consistency and pack in bottles.
8. Seal the bottle and store in a cool dry place.

Lemon peel pickle

Ingredients	Amount
Lemon peels	500g
Cumin powder (jeera)	20g (4tsp)
Chilli powder	10g (1tsp)
Garam masala	2g (a pinch)
Salt	According to taste
Sugar	50-100g
Vinegar	½ cup

Method

1. Cut the peels into small pieces.
2. Prepare the vinegar⁷ solution.
3. Add vinegar to the lemon peels in a container.
4. Add in the spices, salt and sugar.
5. Fill into sterilized bottle, shake well and keep in sun for 15 days.

⁷ Vinegar solution is prepared by mixing acetic acid and water (4% acetic acid in sterilized water).

Mixed vegetable pickle

Ingredients	Amount
Cauliflower, peas, beans, capsicum	1000g
Onion	100g
Garlic	10g
Ginger	20g
Mustard powder	50g
Black pepper	10g
Garam masala	5g
Red chilli powder	25g
Salt	100g
Jaggery/sugar (optional)	50g
Vinegar	½ cup
Tamarind	25g
Oil	300 ml

Method

1. Blanch the vegetables (Boil the vegetables for 5 minutes to remove air from the tissue of the vegetables, tie in a cheese cloth in boiling water).
2. Heat oil and fry onion, garlic and ginger.
3. Remove from fire and add vegetables and mix properly.
4. Mix other ingredients and stir properly.
5. Add thick pulp of tamarind and salt.
6. Add in the vinegar and fill into sterilized bottles.

Bottling**Fruit squash**

- This is a type of fruit beverage containing at least 25% fruit juice of pulp or 40 to 50% of fruit juice and 40 to 50% of total solids. It also contains about 1% of acid. It need to be diluted before serving.
- A variety of fruits when in season can be used to prepare squashes. Mango, orange, pineapple are used for making squash commercially. It can also be prepared from lemon, lime, bael fruit, guava, litchi, pear, apricot, pummelo, musk melon, papaya, using potassium metabisulphite (KMS) as preservative or from jamun, peach, phalsa, plum, strawberry, grapefruit etc.

- Squashes contribute to the energy content in the diet, serve as appetizers and also meet the fluid and thirst requirements of individuals

Orange squash

Ingredients	Amount
Orange juice	1000g or 5 cups
Sugar	2000g or 10 cups
Water	1000g or 5 cups
Citric acid	30-40g or 6-8 level teaspoons
Orange essence	15-20 ml or 4 table spoons
Orange red colour	Pinch
Preservative	Potassium meta bisulphate (3.2g or $\frac{3}{4}$ teaspoon)

Method

1. Select good quality fresh oranges or musambi (sweet limes).
2. Wash thoroughly, cut into halves and extract juice in a juicer.
3. Strain the juice and calculate for all ingredients.
4. Prepare syrup by boiling sugar, water and acid.
5. Strain the syrup through a cheese cloth and cool it to near about room temperature.
6. Add the syrup into the juice and also the essence and colour.
7. Dissolve the preservative in little water and add into squash.
8. Pour into clean and dry bottle and seal with molten wax and close cap.

Sauces and preserves

Tomatoes can be preserved as sauces, jams and chutneys. Sauces add variety, taste and serve as useful adjuncts to the diet. They improve appetite and promote interest in the meal or the snack being taken.

Tomato sauce

Ingredients	Amount
Tomato	1000g
Onion	50g
Ginger	25g
Garlic	15g
Red chilli powder	15-20g
Garam masala	5-10g (tied in a small cloth)
Sugar	70g
Salt	20 - 25g
Vinegar	1 tsp
Sodium benzoate	$\frac{1}{2}$ -1g

Method

1. Select fully ripe, sound, red coloured tomatoes, wash properly and cut into small pieces.
2. Boil in water for 5-10 minutes along with grated ginger, garlic and onion and garam masala tied in a cloth.
3. Extract the juice through sieve or pulper machine.
4. Put over fire and add required quantity of sugar, salt and spices.
5. Cook for some time till the required consistency is reached.
6. Add sodium benzoate and acetic acid.
7. Fill into bottle while hot and seal with molten wax on the next day.

Chutney

Ingredients	Amount
Tomato pulp	1000g
Sugar	100g
Onion	30g
Garlic	10g
Ginger	20g
Cumin powder	20g
Pepper powder	2g
Salt	60g
Garam masala	2g
Vinegar	1 tsp

Method

1. Blanch tomatoes for 3 minutes to remove peels, crush the pulp and cook for a few minutes
2. Then add sugar and masala except garam masala and cook for some time
3. When it is getting thickened add garam masala and salt
4. When it is ready, take it out from fire and add vinegar
5. Stir properly
6. Fill into bottle when hot.

Preserves

Preserves are made from mature vegetables by cooking little pieces in heavy sugar syrup until it becomes tender and transparent.

Carrot preserve

Ingredients	Amount
Carrots	1000g
Sugar	185g

Method

1. Select and wash fresh sound and tender carrots of uniform size and colour.
2. Peel and cut into uniform slices of 5-8 cm length.
3. Prick the slices with stainless knife thoroughly and place in boiling water.
4. Cook gently till they become soft.
5. Drain off the water and spread the slices on a clear white cloth to remove excess moisture.
6. Prepare sugar syrup by dissolving 2 cups (185g) of sugar in 3 cups of water.
7. Boil and filter the syrup. The quantity of syrup required should be equal to 2.5 times the weight of the prepared carrots.
8. Add carrot pieces to the boiling syrup.
9. The syrup is done when it becomes thick enough to give 2-3 threads when drawn between the two fingers.
10. Keep the mass for 48 hours, boil it again and place in pre sterilized glass containers. Close the containers and store.



Pic. 21: Examples of preserved foods in jars



Pic. 22: Participants of the Training of Trainers prepare pickle during a cooking demonstration

Module 10

Hygiene and Health

Introduction

A clean house and living area is required for good health. Germs and dirt make us sick. We lose nutrients and energy during disease, illness, and diarrhea.

More than half of all illnesses and deaths among young children are caused by germs that get into their mouth through food, water or dirty hands. Many of these germs come from human and animal feces. Many illnesses, especially diarrhea, can be prevented by good hygiene practices.

Learning objectives

- To discuss and raise awareness about some important points for personal & household hygiene
- To understand the importance and steps of hand washing

Personal Hygiene

Good hygiene protects you and your family against diseases

Wash hands with clean water and soap or ash especially after



Pic. 23: Washing hands with soap and water

- Going to the toilet, cleaning a baby's bottom or cleaning clothes;
- Washing dirty bed linen or surfaces contaminated with feces;
- Handling animals;
- Before and after preparing food and eating;
- Before feeding a child or sick person (they should wash hands too).

Other important points on personal hygiene-

- Washing face with soap and water everyday prevents eye infections.
- Parents and children should bathe every day.
- Use a latrine and teach your children to use the latrine.
- Children are easily infected with worms. Worms and their eggs can be found in human and animal feces and urine, in surface water and soil, and in poorly cooked meat. Children should not play near the latrine, toilet or defecation areas. Shoes/Slippers should be worn in and around latrines to prevent worms from entering the body through the skin of the feet.

- Keep fingernails short and clean.
- Avoid coughing or spitting near food or water. While coughing, use hand or handkerchief.

Keep soap and water at three critical places (cooking area, feeding area and latrines)

Steps for Hand Washing

When washing hands soap should be applied on wet hands for 20 seconds

Hand washing comprises of six steps which are as follows:

1. scrub palms,
2. back of hands,
3. between fingers,
4. finger tips,
5. thumbs and
6. wrists and fingernails

Once hands are scrubbed thoroughly, rinse both sides of hand with water and wipe hands with a clean and dry towel.

The six stage of hand washing technique is further illustrated on picture 18.



Pic. 24: Six steps of hand washing

Household Hygiene

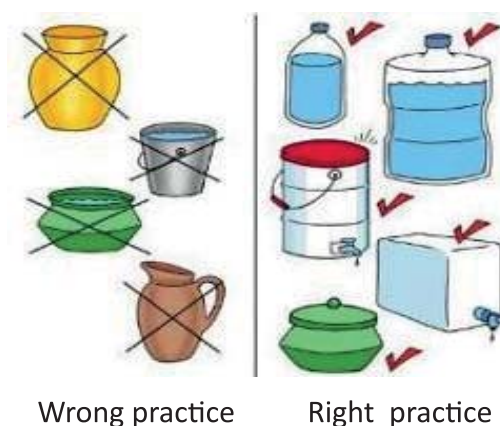
- Always dispose off rubbish in a pit and cover it.
- Household waste water can be disposed off safely by making a soak pit or a channel to the field or an area outside the house.
- Keep the household and nearby areas clean and free of feces, refuse and waste water. This can help prevent disease.

- If it is not possible to use a toilet or latrine, everyone should always defecate well away from houses, paths, water sources and where children play. The feces should be buried immediately.
- Keep poultry and animals separate from the house.

Keeping Water/Food safe and clean

Use clean and safe water:

- Use safe water, such as treated pipe water, green tube well (arsenic free) or water from a protected source, such as a borehole or protected well (bathing and washing does not take place and the water is not contaminated).
- Boil water before drinking.
- Use clean and covered containers to collect and store water.
- Water from unsafe sources such as ponds, rivers, open tanks and step-wells can be made safer by boiling rapidly for ten minutes.
- Keep animals away from drinking water sources and the household area.
- Keep buckets, ropes and jars used to collect and store water clean by storing them in a clean place, rather than on the ground.
- Avoid touching clean water with unclean hands. Always use a clean ladle or a cup to take water out of the container.



Pic. 25: Water should be stored in closed or covered containers

Store food safely

- Cover foods with lids or clean clothes to protect them from insects, pests and dust.
- Keep dry foods such as flours and legumes in a dry, cool place where they are protected from insects, rats and mice, and other pests.

Use and store chemicals and pesticides in a safe place

- Chemicals and pesticides should be stored away from the reach of children.
- Never put food or water in empty containers that have been used for chemicals or pesticides.
- Wash hands after using chemicals or pesticides.

Common illnesses and nutrition

Feeding sick people: eating well helps to fight infections

A sick person needs to eat well to recover from illness such as fever, cough, cold, diarrhoea.

In case of sickness it is important to:

- Feed small, frequent meals with a variety of foods as infection often reduces appetite.
- Drink extra liquids frequently: people with diarrhoea or vomiting need extra drinks. Provide plenty to drink every 1-2 hours (at least 8 cups per day), e.g. boiled water (boiled for 10 minutes), fresh fruit juice, soup or watery porridge

It is important that sick a woman (flu, cold, or diarrhoea) continue breastfeeding their child.

If sick people do not eat enough, they use their own body fat and muscles for energy and nutrients. They lose weight and become undernourished. Their immune systems may become less effective and they are less able to fight infections. They need plenty of clean, safe drinks.

If a child is sick:

- Do not stop breast-feeding. Breast milk may be the only food and drink the child wants. If the child is too ill to suckle, advise the mother to express her milk and feed it from a small cup or spoon.
- If the child is over 6 months, give him/her a variety of fresh and rich foods such as well-mashed mixes of cereals and pulses, fish, well cooked meat, egg, curd and fruits. One or two teaspoons of oil can be added to cereal and vegetables.
- Infection often reduces appetite: feed small and frequent meals.
- Give to the sick child safe water. If there is a possibility that water is not clean, it should be purified by boiling (10 minutes) or filtering.
- Drinks should be given from a clean cup. Feeding bottles should never be used. It is difficult to clean bottles and unclean bottles can cause diarrhoea.

Sick children should eat well and more even if they are not active. They need nutrients to keep alive, fight infections and replace lost nutrients.

In areas where vitamin A deficiency is a problem, children with measles, diarrhoea, respiratory infections or malnutrition often benefit from vitamin A supplements. Vitamin A should be given every 6 months. However, when giving these, health workers should emphasize the need for vitamin A-rich foods as well such as:

- orange and yellow vegetables (e.g. carrots, pumpkin, orange and yellow sweet potatoes)
- green leafy vegetables (e.g. spinach, amaranth, etc)
- orange and yellow fruits (e.g. papaya, mango etc).

Cough, cold and fever

Children with coughs, colds, runny noses or sore throats who are breathing normally can be treated at home and will recover without medicines. They need to be kept warm and be given plenty to eat and drink. Medication should be used only if prescribed by a health worker. A child with a fever should be sponged or bathed with warm but not cold water.

Sometimes, coughs and colds are signs of a serious problem. A child who is breathing rapidly or with difficulty, or has harsh cough might suffer from signs of a serious problem such as pneumonia and tuberculosis that are infections of the lungs. These are serious diseases and the child needs immediate treatment at a health facility.

Diarrhea

Diarrhoea is defined as a minimum of 3 liquid stools per day. Feeding recommendations are the same as for other diseases.

Key message about diarrhoea:

- As soon as diarrhoea starts, it is essential that the child is given extra fluids as well as regular foods.
- Breast milk prevents dehydration and malnutrition and helps replace lost fluids. If the child is still breastfed, mothers should breastfeed more often than usual when the child has diarrhoea.
- Recommended drinks for a child with diarrhoea: Breast milk, ORS, soups, rice/dal water, weak tea with a little sugar, coconut water, porridge made of sweet pumpkin, safe drinking water.
- After the diarrhoea stops, extra feeding in small quantities and frequent is vital for a full recovery. At this time, the child needs to eat an extra meal a day, or breastfeed more often every day, for at least two weeks. This will help the child replace the energy and nourishment lost due to diarrhoea.
- Parents should urgently seek help from a trained health worker if the child:
 - o Passes several stools in one or two hours;
 - o Passes blood in the faeces;
 - o Vomits frequently;
 - o Has a fever;
 - o Is extremely thirsty;
 - o Does not want to drink;
 - o Refuses to eat;
 - o Has sunken eyes;
 - o Looks weak or is lethargic;
 - o Has had diarrhoea for more than one week.

If the child has any of these signs, help from a trained health worker is needed urgently. In the meantime, the child should be given ORS solution or other liquids.

Method to prepare ORS

Oral Rehydration Salts (ORS) solution is a special drink for the treatment of diarrhoea and is a combination of sugar, salts with safe clean water that helps rehydrate the body when a lot of fluid has been lost due to diarrhoea. ORS packets are available from health centres, pharmacies, markets and shops.

Preparation of the ORS formula

1. Wash hands with clean water and soap.
2. Put the contents of the ORS packet in a clean container. Check the packet for directions and add the correct amount of boiled, cooled clean water.
3. Too little water could make the diarrhoea worse as the solution will get concentrated and too much water will dilute the solution and make it ineffective.
4. Stir well, and feed it to the child from a clean cup. Do not use a bottle.
5. Add water only. Do not add ORS to milk, soup, fruit juice or soft drinks. Do not add sugar.
6. Once ORS is made it should be consumed within 24 hours, after 24 hours it should be discarded.

Home remedies for treating cold and flu

- 1 crushed clove of garlic taken with water or food three times a day
- ½ tea spoon of fresh root of ginger made as tea and consumed three times a day
- 1 crushed clove of garlic mixed with lemon juice and sweeten with honey as wanted

Home remedies for treating cough

- 2 teaspoons fresh or dried guava leaf (peyera pata) made as a tea and sweetened with honey and lemon three times a day.
- Cough syrup - Crush a lemon and mix the juice with honey. Take large spoon fuls as necessary to sooth the throat. Do not use honey if you have thrush.

Home remedies for treating nausea and vomiting

- Soak a teaspoon of foeniculum (mouri) in a clay vessel through the night. In the morning mash the soaked mouri, add sugar candy (misti) or batasha as per taste and drink it on an empty stomach.
- ¼ teaspoon fresh or dried ginger root eaten directly or as tea three times a day.
- 2 teaspoon fresh or dried mint leaf made as tea three times a day.
- 2 teaspoons fresh or dried fennel leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day.
- Drink small amounts of water, soups and herb or spice tea, especially mint or ginger.
- Sniff fresh orange or lemon peel.
- Drink plenty of fresh butter milk (gol), lemon juice, curds (doi) and coconut water.

Module 11

Food Adulteration

Learning objectives

- To define the term food adulteration and adulterants.
- To become aware of the adulterants commonly used in food items.
- To learn simple tests that can be used at household level to detect adulteration in food.

Introduction

Food is essential for nourishment and sustenance of life. One works hard to satisfy the food and income needs of oneself and family. But at the end of the day, many of us are not sure of what we eat. We may be eating a dangerous dye, sawdust, soap, stone, industrial starch, aluminium foil, formalin, calcium carbide and many others that contaminate our foods. Contaminated foods and drinks are also common sources of infection and poisoning.

What is adulteration

Food adulteration is an act of intentionally degrading the quality of food offered for sale either by the admixture or replacement with inferior substances or by the removal of some valuable ingredient. Food adulteration takes into account not only the intentional addition or substitution or abstraction of substances which adversely affect nature, substances and quality of foods, but also their incidental contamination during the period of growth, harvesting, storage, processing, transport and distribution.

What is an adulterant

Adulterant means any material which is or could be employed for making the food unsafe or sub standard or misbranded or containing extraneous matter.

Adulterated food is dangerous because it may be toxic and can affect health and it could deprive nutrients essential for proper growth and development.

Shortage of items, increasing prices, consumer demands for variety in foods, lack of awareness, negligence, also and indifference among consumers and inadequate enforcement of food laws and food safety measures are some of the common reasons leading to food adulteration. The most common types of food adulterants are presented in table 30.

The commonly adulterated foods are milk and milk products, cereals, wheat flour (atta), pulses, chick pea flour (besan), edible oils, condiments (whole and ground), coffee, tea, confectionary, baking powder, non alcoholic beverages, vinegar and curry powder. The methods to detect presence of adulterants in foods are described in table 31.

Type	Substances added
Intentional adulterants	Sand, marble chips, stones, mud, other filth, talc, chalk powder, water, mineral oil, formalin, calcium carbide and harmful colour.
Incidental adulterants	Pesticide residues, droppings of rodents, larvae in foods.
Metallic contaminants	Arsenic from pesticides, soil leaching, lead from water, cheap toys, paint, effluent from chemical industries, tin from cans.

Role of extension staff in identifying adulterants at the community level

The increasing number of food producers and the outstanding variety of foods enables the producers to mislead and cheat consumers. For that reason, the consciousness of consumers is essential. Awareness and knowledge about simple screening tests for detection of adulteration would be crucial for the community. Many of the tests to detect adulteration are simple and can be conducted at household level. For some others you need special equipments and materials.

Extension staff can be trained to detect food adulterants in commonly consumed foods at community level. By virtue of their direct access to rural farm families, extension staff is well placed to promote use of safe food by using simple tests to detect adulteration.

Regular spot checks and constant monitoring of local markets with strong support of community by extension workers can help to reduce the possibility of food adulteration.

Extension workers from relevant ministries can provide guidance and encourage the community to check for adulteration. It is a valuable investment in human resource development to train extension workers to detect adulteration. This can reduce health hazards and help to improve food safety in the community.

Table 31: Methods to detect common adulterants in food

Food	Adulterant	Test
Semolina	Iron filings to add weight	Pass magnet through the semolina; iron filings will cling to it
Sago	Sand and talcum	Heat sago in a little water; pure sago swells and on burning it leaves hardly any ash
Pulses	Lead chromate	Shake 5 g of pulse with 5 ml water and add a few drops of HCl. Pink color indicates lead chromate.
Jaggery	1. Metanil yellow 2. Chalk powder	1. A few drops of HCl added to jaggery solution turns magenta colour 2. Dissolve a little amount of jaggery in water in a test tube, chalk powder settles down.
Ghee or butter	Vanaspati	Dissolve 1 tsp. of sugar in 10 ml of HCl. Add 10 c.c.s. of melted ghee and shake thoroughly for 1 minute. Allow to stand for 10 minutes. If vanaspati has been added, the aqueous layer will be red
Milk	1. Water 2. Formalin	Measure specific gravity with lactometer – Normal specific gravity = 1.030 to 1.0340 Take 10 ml of milk in a test tube and add 5 ml of concentrated sulphuric acid from the sides of the wall without shaking. If a blue or a violet ring appears at the intersection of the two layers then it shows the presence of formalin
Green chillies and green vegetables	Malachite green	Take a cotton piece soaked in liquid paraffin and rub the outer green surface of a small part of green vegetable. If the cotton turns green, we can say that the vegetable is adulterated with malachite green.
Tea powder	Exhausted tea leaves, dried powdered and artificially coloured	Sprinkle the powder on a wet white blotting paper, spots of yellow and red colour appearing on the paper indicate that tea is artificially coloured
Cardamom	Oil is removed and pods are coated with talcum powder	On rubbing the pods, talcum will stick to the fingers. Upon smelling, if there is hardly any aromatic flavour indicating removal of the essential oils
Black pepper	Papaya seeds	Papaya seeds are shrunken, oval in shape and greyish brown in colour
Cinnamon	Wood bark	It is far harder than cinnamon and does not have aroma and smell of cinnamon
Cloves	Oil removed	If oil removed, cloves appear shrunken, will not give the taste of cloves
Cumin seeds	May contain grass seeds coloured with charcoal dust	If rubbed in hand, fingers will become black
Chilli powder	Saw dust and red colour	Sprinkle on the surface of water. Sawdust floats. Added colour will colour the water
Turmeric	Metanil yellow Starch	When concentrated HCl is added to solution of turmeric powder, it turns magenta if metanil yellow is present. Add iodine solution to turmeric solution, it will turn violet if starch is present
Common salt	White powder	Stir a spoonful of sample in a glass of water. The presence of chalk will make the solution white and other in soluble impurities will settle down.
Iodized salt	Common salt	Cut a piece of potato, add salt and wait for a minute. Add two drops of lemon juice. If the salt is iodized blue color will develop, in case it is common salt, blue color will not develop.

Module 12

Participatory Cooking Demonstration Guidelines

1. Coconut Egg Vegetable Curry

Technical note

Coconut Egg Vegetable Curry is a nutritious dish prepared using various kinds of vegetables, egg, coconut and oil. It is a dish that provides energy as the coconut adds significant amount of fat. Eggs are source of high quality protein and other essential nutrients which are required for the child's growth. Addition of vegetables like carrot, beans and sweet pumpkin provides vitamin A and also some iron which improves the immunity and play an important role in body building. It is a dish containing 3 food groups that can be given to children as complementary food along with rice and also for pregnant and lactating mothers as an accompaniment with the meal.

Cooking demonstration

Step 1: Introduce participants to the recipe

First tell the name of the recipe (Coconut egg vegetable curry) and then tell the ingredients of the recipe. Emphasize that this diversified balanced dish can be offered to children as well as pregnant and lactating mothers as it provides three types of food groups such as energy giving, body building and body protecting. After completing 6 months children can be offered these types of dishes along with continuation of breast milk.

Ingredients for a demonstration for 30 participants:

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household Measure</i>
Ridge gourd	1 kg	1 kg
Snake gourd	1 kg	1 kg
Beans	1 kg	1 kg
Sweet pumpkin	1 kg	1 kg
Potato	1 kg	10-15 pieces
Carrot	1 kg	12-18 pieces
Tomatoes	2 kg	25-35 pieces
Onion	1 kg	12-18 pieces
Lemon	10 pieces	10 pieces
Red amaranth	1 kg	1 kg
Coriander leaves	70 g	1 bunch
Egg	1 kg	20 pieces
Oil	400 ml	1 cup
Coconut	500 g	2 pieces
Green and red chilies	12 pieces	12 pieces
Cumin	30 g	2 Tsp
Garlic	40 g	12 pieces
Ginger	40 g	1 large piece
Turmeric	30 g	2 Tsp
Salt	15 g	1 Tsp

Step 2: Now divide the group into 5 and distribute ingredients for preparatory tasks of the cooking demo as described in the tables below

Everyone wash their hands before starting the work.

Group 1: Receives ridge gourd, sweet pumpkin and snake gourd to wash, peel and cut.

Ingredients	Quantity	
	Amount	Household Measure
Ridge gourd	1 kg	1 kg
Sweet pumpkin	1 kg	1 kg
Snake gourd	1 kg	1 kg

Group 2: Receives carrot, potato and onion to wash, peel and cut, lemon to wash and cut, and coriander leaves to wash and chop.

Ingredients	Quantity	
	Amount	Household Measure
Carrot	1000 g	12 - 18 pieces
Potato	1000 g	10 - 15 pieces
Lemon	10 pieces	10 pieces
Onion	1000 g	12 - 18 pieces
Coriander leaves	70 g	1 bunch

Group 3: Group three receives coconuts to grind and mash to a paste together with green chillis, ginger and cumin; they also wash tomatoes and mash them with garlic.

Ingredients	Quantity	
	Amount	Household Measure
Coconut	500 g	2 pieces
Tomato	2 kg	25-35 pieces
Green/red chillies	12 pieces	12 pieces
Cumin	30 g	2 Tsp
Garlic	40 g	12 pieces
Ginger	40 g	1 large piece
Turmeric	30 g	2 Tsp
Salt	15 g	1 Tsp

Group 4: Receives eggs and string beans. They should begin from putting eggs to boil. In the meanwhile they will wash and cut beans and boil them by putting beans into a little amount of already boiling water for 3 minutes. After 3 minutes the beans should be removed from water and kept aside. If possible they can also keep the water after blanching aside in a covered pot. They peel eggs and keep them aside well covered.

Ingredients	Quantity	
	Amount	Household Measure
Eggs	20 pieces	20 pieces
Beans	1 kg	1 kg

Group 5: Arrange utensils, water, fuel and finally take lead during cooking.

Step 3: After distribution of ingredients details of preparatory tasks and cooking methods are to describe in following manner

Group 1: Clean and wash the vegetables before cutting. Chop the vegetables into big pieces in order reduce nutrient loss during cooking and store in a clean bowl with a lid.

Group 2: Wash the carrot and potato, remove a thin layer of peel and cut into big pieces. Chop the onion and keep aside. Wash and cut coriander leaves into big pieces. Wash and cut the lemon into pieces.

Group 3: Grate the coconuts and grind it to a paste on a stone grinder. Mash chilli, ginger and cumin to a paste on a stone grinder and mix it with the coconut paste and store in a clean bowl with lid. Mash tomatoes with some chilli and garlic on a stone grinder and store in a clean bowl with lid.

Group 4: Start from putting eggs to boil. After touching eggs wash your hands thoroughly with soap. While they are boiling wash and cut beans and boil them for 3 minutes with a little amount of water to prevent nutrient loss. Make sure that you place beans into boiling water. After boiling keep beans aside on a clean pot. Keep water after blanching in a covered pot. Peel boiled eggs from the shells.

Group 5: Prepare the cooking area: arrange the burner or a stove and a pot. After completion of preparatory tasks, group 5 will collect all the prepared ingredients for cooking.

Step 4: Now Facilitator will ask to group leaders to share their findings

During sharing of group findings conversations between group leader and the facilitator are following: the facilitator will say “till now we all have completed preparatory tasks, let’s listen who did what?”

Group 1:

Facilitator: What have you done?

Group leader: First we washed our hands then we cleaned and washed the vegetables. We removed a thin layer of the peel and cut vegetables into big pieces. Removing only thin layer of peel helps to preserve nutrients most of which is located just under the peel, and cutting big pieces will reduce nutrient loss during cooking.

Facilitator: What are the benefits of eating sweet pumpkin?

Group leader: Sweet pumpkin will keep eye healthy and protect from disease.

Group 2:

Facilitator: What have you done?

Group leader: First we washed our hands and washed the potatoes, carrots, lemons and coriander leaves. We removed thin layer of peel from potato and carrots and cut them into big pieces. Then we cut onions and coriander leaves into big pieces. Removing only thin layer of peel helps to preserve nutrients most of which is located just under the peel, and cutting big pieces will reduce nutrient loss during cooking.

Facilitator: What is the benefit of eating lemon and coriander leaves?

Group leader: Lemon and coriander leaves protect body from disease and help our body to absorb the nutrients which are needed for blood building. Coriander leaves and lemon should be always combined with blood building foods.

Facilitator: What else can be used instead of carrot for this meal?

Wait for 1 minute and try to get response from the participants

Now tell participants instead of carrots mother could use red amaranth. Red amaranth helps in blood formation and protects body from disease. We can get this easily from home garden.

Group 3:

Facilitator: What have you done?

Group leader: First we have washed our hands and then we washed tomatoes and green chilies. We ground the coconut and mashed it to a paste. Then we mashed garlic and ginger into a paste and mashed it together with the coconut paste. We mashed the tomato, green chilies and cumin together into another paste.

Facilitator: What are the benefits of adding coconut to our meals?

Group leader: Coconut contains fats which provide a lot of energy for body.

Group 4:

Facilitator: What have you done?

Group leader: First we washed our hands then we put eggs for boiling. We washed beans and cut them into big pieces. We blanched beans by putting them into a small amount of boiling water for 1-2 minutes. Finally we cooled down the boiled eggs and removed the shells.

Facilitator: What are the benefits of eating eggs?

Group leader: Eggs are highly nutritious, body building food. Egg yolk contains nutrients and good quality protein which helps children to grow healthy.

Step 5: Cooking

After completion of group work group 4 will start cooking. Other participants will actively observe the cooking demo.

Cooking steps for egg coconut vegetable curry

	Instruction	Notes	Time of cooking
1	Heat a pot, add oil, sauté chopped onion	Cover the pot State: “we cover the pot to reduce the time of cooking and avoid using a lot of fire. Also this way the volatile compounds of food (like garlic and ginger compounds) will stay in our food.”	Cook for 2-3 minutes
2	Add tomato, green chili and cumin paste, garlic and ginger	Cover the pot	Cook for 2 minutes
3	Add the vegetables first which take more time to be boiled than others: potato and carrots	Cover the pot Keep adding a little of hot water, but never let water cover all the ingredients in the pot. If there is water after boiling beans use this water throughout the cooking process.	Cook for 5 minutes
4	When carrot and potato are half boiled add gourds and pumpkin	Cover the pot Keep adding little of hot water, but never let water cover all the ingredients in the pot State: “We add pumpkin and gourds when carrot and potato are half-ready because these vegetables require less time to be cooked. This way we reduce the time of cooking vegetables. It is important to cook vegetables as little as possible because cooking destroys vitamins in vegetables”	Cook for 10 minutes
5	Add coconut paste and stir adding salt	Cover the pot State: “We should always use iodized salt and add it at the end of cooking process to reduce the loses of iodine during the process” State: “We should not overcook vegetables, it is important to cook them as little as possible to reduce vitamin loses during cooking”	Cook for 5 minutes
6	Add boiled eggs and beans to the mixture and	Add first beans and mix them into the dish. Then add the eggs cut in halves and let them stay on the surface.	Cook for 3-4 minutes

Step 6: Take feedback from the participants by asking below questions

- How is the food?
- How many food groups are in Coconut egg vegetable curry?
- Is there anything new in this cooking method?
- Will you practise this recipe at home?
- Do you anticipate any problems when practicing this recipe at home?

2. Egg Suji

Technical note

Egg suji” can be main meal for children and is a combination of semolina, egg, ash gourd, carrot, molasses and oil. Semolina is a nutritious recipe prepared to feed children of our country as one of the first meals for complementary feeding. It is a good source of calorie, protein and also provides small quantities of fiber. Besides providing calorie, egg also supplies all the essential amino acids (complete protein), iron, essential fatty acids, and vitamin A, D, E, and B complex vitamins. Ash gourd consists of suboptimal amounts of moisture and a little amount of protein, fat, fiber and carbohydrates.

Cooking demonstration

Step 1: Introduce participants to the recipe

First tell the name of the recipe (Egg suji) and then tell the ingredients of the recipe. Emphasize that this diversified balanced meal can be offered to children as well as pregnant and lactating mother as it provides three types of food groups such as energy building, body building and body protecting. After completing 6 months a child should offered these types of meal with continuation of breast milk.

Ingredients for a demonstration for 30 participants:

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household measurement</i>
Semolina	140 g	4 tbsp
Egg	200 g	4 pc
Ash gourd/papaya	60 g	1 pc (moderate size)
small carrot/sweet pumpkin	40 g	1 pc (moderate size)
Molasses	60 g	6 tsp
Oil	20 g	4 tsp
water	600 g	1 glass

Step 2: Now divide the group into 4 and distribute ingredients for preparatory tasks of the cooking demo as described in the below tables .Tell them to wash hands before starting works.

Group1: Receive suji, molasses, oil and safe water to clean.

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household measurement</i>
Semolina	140 g	4 tbsp
Molasses	60 g	6 tsp
Oil	20 g	4 tsp
water	600 g	1 glass

Group 2: Receives egg.

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household measurement</i>
Egg	200 g	4 pc

Group 3: Receives Ash gourd/papaya and pumpkin/carrot to wash, peel and cut.

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household measurement</i>
Ash gourd/papaya	60 g	1 pc (moderate size)
small carrot/sweet pumpkin	40 g	1 pc (moderate size)

Group 4: G4 is to arrange utensils, water fuel and finally take lead for cooking.

Step 3: After distribution of ingredients details of preparatory tasks and cooking methods are to describe in following manner.

Group1: Heat a tawa and roast semolina for few minutes and sprinkle some water in it.

Group2: Clean and chop vegetables, put it in to semolina.

Group3: Cook slowly and stirring all the times until it comes to the boil and thickens. Add egg stir quickly until it mix well.

Group 4: Add molasses and oil. Cook for a while and remove from the heat.

Step 4: Now Facilitator will ask to group leader of 1, 2,3, 4 to share their group findings.

During sharing of group findings conversations between group leader and Facilitator are following: Facilitator will say "till now we all have completed preparatory tasks,let's listen who does what?"

Group1:

Facilitator: What have you done?

Group leader: First we have washed our hands then we clean suji, molasses and take oil and safe water to for cooking.

Facilitator: What are the benefits of eating suji ?

Group leader: Suji provides energy.

Facilitator: What is the benefit of eating molasses.

Group leader: Molasses provides energy and helps in blood formation to protect body from disease

Group2:

Facilitator: What have you done?

Group leader: First we have washed our hands and take egg for cooking.

Facilitator: What is the benefit of eating egg.

Group leader: Eggs are highly nutritious body building food. Egg yolk contains nutrients which helps children to grow healthy, and which support blood formation and prevent anaemia. It also keep eye healthy and protects body from disease. By rearing the chickens/ducks we can easily get this food.

Group3:

Facilitator: What have you done?

Group leader: First we have washed our hands and. We removed thin layer of peel from Ash gourd/papaya/ and pumpkin/carrot and cut them into small pieces.

Facilitator: What is the benefit of eating ash gourd/papaya and pumpkin/carrot

Group leader: all hells to protect from disease and pumpkin/carrot will keep eye healthy. We can get this easily from home garden.

Group 4: After completion of group works group 5 will start for work for cooking. Other members of the groups will also watch the cooking demo.

Step 5: Cooking

Group 5 cooks, members of other groups watch.

Cooking steps for egg suji:

	Instruction	Notes	Time of cooking
1	Heat a tawa and roast semolina for few minutes and sprinkle of water in it.	Cover the pot <i>State: "we cover the pot to reduce the time of cooking and avoid using a lot of fire.</i>	Cook for -3 minutes
2	Clean and chop vegetables, put it in to semolina and add1 cup water.	Cover the pot	Cook for 5-8 minutes
3	Cook slowly and stirring all the times until it comes to the boil and thickens. Add egg stir quickly until it mix well.	<i>Adding egg helps to build the body of the child</i>	Cook for 2 minutes
4	Add molasses and oil. Cook for a while and remove from the heat.	<i>Instead of molasses sugar can be used</i>	Cook for 5 minutes

Step 6: Take feedback from the participants by asking below questions

- How is the food?
- How many food groups are in egg suji?
- Which benefits we would get from this recipe?
- Is there any new thing /innovation in the cooking method?
- Will you practice this recipe at home?
- Will you get any problem to practice this recipe at home?

3. Pusti gura

Technical note

'Pusti gura' has been formulated for children aged 6-8 months. This is a nutritious main meal composed of rice flour, green gram flour, peanut, molasses/sugar, oil, banana/carrot powder. Rice and pulses are excellent sources of energy and B complex vitamins. Besides, a mixture of rice-pulse-nuts has a mutual supplementary value that improves protein quality. Roasting of rice, green gram and nuts improves flavor and digestibility, helps to reduce bulk and provides a concentrated source of nutrients. Sugar and oil adds energy in it, improves flavor and taste. All of ingredients except oil (and sugar, if used) provide good amounts of iron. This recipe can be served as a snack or as a main meal.

Cooking demonstration:

Step 1: Introduce participants to the recipe

First tell the name of the recipe (Pusti gura) and then tell the ingredients of the recipe. Emphasize that this diversified balanced meal can be offered to children as well as pregnant and lactating mother as it provides three types of food groups such as energy building, body building and body protecting. After completing 6 months a child should offered these types of meal with continuation of breast milk. These powders can be stored for one month and it can be used with fruits such as papaya, sweet pumpkin, carrot powder or vegetables.

Ingredients for a demonstration for 30 participants:

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household Measurement</i>
Rice	160 g	11 tbsp
Green gram	40 g	2.5 tbsp
Nuts	40 g	2 tsp
Molasses	20 g	12 tsp
Banana/ Mango/safota/papaya	20 g	Add to get required thickness

Step 2: Now divide the group into 4 and distribute ingredients for preparatory tasks of the cooking demo as described in the below tables' .Tell them to wash hands before starting works.

Group1: Receive rice to clean

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household Measurement</i>
Rice	160 g	11 tbsp

Group 2: Receives green gram to clean.

<i>Ingredients</i>	<i>Quantity</i>	
	<i>Amount</i>	<i>Household Measurement</i>
Green gram	40 g	2.5 tbsp

Group 3: Receives nuts, molasses papaya/banana/safota and pumpkin/carrot to wash, peel and cut.

Ingredients	Quantity	
	Amount	Household Measurement
Nuts	40 g	2 tsp
Molasses	20 g	2 tsp
Banana/papaya/safota/mango/		Add to get the required thickness

Group 4: G4 is to arrange utensils, water fuel and finally take lead for mixing of pusti gura.

Step 3: After distribution of ingredients details of preparatory tasks and cooking methods are to describe in following manner.(please show the festoon and explain how to prepare carrot powder). Tell participants to wash hand with soap.

Group1: Clean rice then roast and grind to fine powder.

Group2: Clean pulse then roast and grind to fine powder.

Group3: Clean nuts then roast and grind to fine powder.

Group4: G4 is to arrange utensils, water fuel and finally take lead for mixing of pusti gura.

Step 4: Now Facilitator will ask to group leader of 1, 2,3, 4 to share their group findings.

During sharing of group findings conversations between group leader and Facilitator are following: Facilitator will say “till now we all have completed preparatory tasks, let’s listen who does what?”

Group1:

Facilitator: What have you done?

Group leader: First we have washed our hands then we clean rice and roasted for preparation of pusti gura.

Facilitator: What are the benefits of eating rice?

Group leader: Rice provides energy.

Facilitator: What is the benefit of roasting food .

Group leader: Roasted food can preserve for longer time. This method also helps to increase nutritive value.

Group2:

Facilitator: What have you done?

Group leader: First we have washed our hands, then we cleaned pulse and roasted for preparation of pusti gura.

Facilitator: What are the benefits of eating pulse?

Group leader: Pulses are highly nutritious body building foods.

Group3:

Facilitator: What have you done?

Group leader: First we have washed our hands then we cleaned nuts and roasted for preparation of pusti gura.

Facilitator: What are the benefits of eating nuts?

Group leader: Nuts are highly nutritious body building foods.

Facilitator: Instead of nuts we can use sesame. Molasses and oil provide energy. Molasses also help to build blood. Fruits are highly nutritious body protecting foods.

Group 4: After completion of group works, group 4 will start for work for mixing ingredients for pusti gura . Other members of the groups will also watch the mixing step.

Step 5: Cooking

Group 4 cooks, members of other groups watch.

Cooking steps for Pusti gura:

	Instruction	Notes	Time of cooking
1	Heat a tawa and roast rice (4 part), pulses (1 part), nuts (1 part).	State: <i>“we roast ingredients in order to store. We can preserve for one month.”</i>	Cook for -3-5 minutes
2	Grind all the ingredients to fine powder.	State: <i>“ground powder can be fed to young children and it can also be used with other foods such as khichuri, vegetable curry, etc.”</i>	10 minutes for all ingredients
3	Add molasses and seasonal fruits to get the required thickness	Sate : <i>“Adding molasses gives energy to the body of the child. Fruits are highly nutritious body protecting foods.”</i> <i>“This powder could also be cooked into porridge with addition of water, sugar and seasonal fruits could be added to make it more palatable for children.”</i>	Cook for 2 minutes
4	Grind powder can pack into plastic bag	Roasted food can store for long time	

Step 6: Take feedback from the participants by asking below questions

- How is the food?
- How many food groups are in pusti gura?
- Which benefits we would get from this recipe?
- Is there any new thing /innovation in the cooking method?
- Will you practice this recipe at home?
- Will you get any problem to practice this recipe at home?

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Festoon for Nutrition Education



শক্তিদায়ক খাবার।





শরীর বৃদ্ধিকারক খাবার।




রোগ প্রতিরোধক খাবার।





যে খাদ্য রক্ত তৈরি করে।



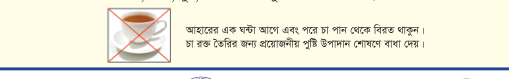
এই ধরনের শাক-সবজি গুলো উৎপাদন করুন এবং খান।



রক্ত তৈরিতে সহায়তা করে বলে টকজাতীয় ফল শাক-সবজির সাথে খেতে হবে।




সপ্তাহে ৩ দিন কিছু মাছ বা মাংস খাওয়ার চেষ্টা করুন।



গম, ডাল, বুট, বাদাম ও খেজুর রক্ত তৈরিতে সহায়তা করে।

আহারের এক ঘণ্টা আগে এবং পরে চা পান থেকে বিরত থাকুন।
যা রক্ত তৈরির জন্য হারোজিনীয় পুষ্টি উপাদান শোষণে বাধা দেয়।



শিশুর পূর্ণ ৬ মাস বয়স পর্যন্ত খাবার শুধুমাত্র মায়ের দুধ।



জন্মের ১ ঘণ্টার মধ্যে শিশুকে মায়ের দুধ খাওয়াতে হবে।



পূর্ণ ৬ মাস শুধুমাত্র বুকের দুধ খাওয়ান।



মায়ের পেটের সাথে যেন শিশুর পেট লেগে থাকে।



স্তনের কালো অংশের পুরোটাই শিশুর মুখে দিতে হবে।



এক পাশের বুকের দুধ শেষ না হওয়া পর্যন্ত শিশুকে অন্য পাশে নিবেন না।



কমপক্ষে দিনে ৮ বার এবং রাতে ৪ বার বুকের দুধ খাওয়ান।



শুধুমাত্র সঠিক নিয়মে হাত ধোয়ার অভ্যাস তৈরি করে প্রাত্যহিক জীবনে রোগ সংক্রমণের হার ও শিশুর অপুষ্টি কমিয়ে আনা সম্ভব।

কখন হাত ধুতে হয়




সঠিক ভাবে হাত ধোয়ার নিয়ম

রোগ থেকে রক্ষা ও ডায়রিয়া/আমশায়, অপুষ্টি, টাইফয়েড, কুমি, ত্বকের সংক্রমণ ও চোখ সংক্রান্ত রোগ।



শিশুর বাড়তি খাবার প্রস্তুত প্রণালী।

১. চাল ধান ধান, ১ ভাগ চানা, ১ ভাগ টিকোলসহ মিশ্র।
২. উপকরণ গাঢ় পুরু করে বেটে দিন। ধানকে খোলা ঘাড়িতে দিন।
৩. টিকোল গাঢ় গরম করুন।
৪. ভেঙে গাঢ় মিশিয়ে পরিষ্কার করুন। শুষ্ক করে রাখুন।
৫. ভেঙে গাঢ় মিশিয়ে পরিষ্কার করুন। শুষ্ক করে রাখুন।
৬. পরিমিত ভেঙে গাঢ়ে হাতে পাতিল বা বীজি ভেঙে সিদ্ধ করে অথবা পাশে মেশে/পাশে পাতিল বা পাতিল করে গরম করুন। শুষ্ক করে রাখুন।
৭. বিভিন্ন সবজি বেটে খনিজ তত্ত্ব করে উপযুক্ত মিশ্রণে লেগে যাবে।
৮. মাংস পরিষ্কার করে শুষ্ক করে রাখুন।
৯. পাতলা, সমান সময়ে তৈরি করে রাখুন। ৩ মিনিট।
১০. পাতলা কাশতে বিভিন্ন পাতিল করুন।
১১. চাল, ডাল, মসুর ভেঙে গাঢ়ে হাতে পাতিল বা বীজি ভেঙে সিদ্ধ করে অথবা পাশে মেশে/পাশে পাতিল করে গরম করুন। শুষ্ক করে রাখুন।
১২. পরিষ্কার করে শুষ্ক করে রাখুন।

কমপক্ষে ৩৩ মিনিট ঘুমাতে দেবেন। শুষ্ক করে রাখুন। শুষ্ক করে রাখুন। শুষ্ক করে রাখুন।

৬-২৩ মাস বয়সী শিশুর খাবার

শিশুর বয়স ৬ মাস পূর্ণ হলে মায়ের দুধের পাশাপাশি ঘরে তৈরি বিভিন্ন রকমের খাবার দিন।

- ৬-১২ মাস বয়সী শিশুকে প্রথমে মায়ের দুধ এবং পরে বাড়তি খাবার খাওয়াতে হবে।
- মিষ্টি করে পেশা বিভিন্ন সবজি, মাংস, মাছ, ডিম বা ডাল মিশিয়ে শিশুকে পরিবারিক খাবার দিতে হবে।
- ৬-২৪ মাস বয়সে প্রতিবার ১ থেকে ১.৫ কাপ বাড়তি খাবার দিতে হবে।
- প্রতিদিন বয়স অনুযায়ী কমপক্ষে ৩-৪ বার বাড়তি খাবার দিতে হবে।
- বাড়তি খাবারের পাশাপাশি কমপক্ষে দিনে ৫ বার এবং রাত্রে ৩ বার বুকের দুধ খাওয়াতে হবে।
- খাবার তৈরি ও খাওয়ানোর সময় ভাল ভাবে হাত ধুয়ে নিতে হবে।
- শিশুকে নিজে নিজে খাবার অভ্যাস করান।
- যেখনি সময়ে দিয়ে আদর-বাঁজা সহকারে শিশুকে খাওয়ান।

পুষ্টিমান সংরক্ষণ করে খাদ্য প্রস্তুতকরণ

- শাক-সবজি কাটার পূর্বে ধুয়ে নিতে হবে কেন্দ্রীয় কাটার পর হুঁসে গুটি ভগ্ন চলে যায়।
- সবজি কাটার সময় ঘুঁসে খোঁসে সবে তাহলে কাটতে হবে কেন্দ্রীয় কাটার পর হুঁসে গুটি ভগ্ন চলে যায়।
- শাক-সবজি বড় বড় ও মাঝারি এবং সমান সাইজ করে কাটতে হবে।
- ডাল, ডাল বেশি দ্রুত সেবা যাবে না তাহলে জিআমিন ও বনিদ্র লবন অপ্রায় হবে।
- দ্রুত সেবা যাবে না তাহলে জিআমিন ও বনিদ্র লবন অপ্রায় হবে।
- দ্রুত সেবা যাবে না তাহলে জিআমিন ও বনিদ্র লবন অপ্রায় হবে।
- দ্রুত সেবা যাবে না তাহলে জিআমিন ও বনিদ্র লবন অপ্রায় হবে।
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বসত বাড়িতে সমন্বিত খামার তৈরি করুন মা ও শিশুর পুষ্টি নিশ্চিত করুন।



Courtesy : Government of Bangladesh

উন্নত পুষ্টি সূক্ষ্ণ জাতি

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