

Let us have nutritious food for healthy living

In order to lead a healthy life, it is important that we consume nutritious food. These nutrients are needed for growth, repair of worn out tissues, protection from illnesses and to provide energy needed for different functions of the body. Nutritional problems arise when we don't get the proper dietary requirements. Therefore food intake plays a major role in leading a healthy life.

In the previous classes we learnt about the nutrients in the diet, preparing a well-balanced diet using the food pyramid, changes in food intake at different stages of life, food spoilage and preservation and different beliefs about food.

Being the future of the country, you can help to minimize the nutritional problems in the society. Improving our knowledge on nutrition, will help to develop good food habits, help to prepare menus to suit different needs. This lesson, will help us learn about common nutritional problems, their effects, and ways to minimize these problems.

The importance of nutritious food

A good physical, mental, social, and spiritual well-being results in a healthy person. If a person has a poor nutrition the following symptoms can occur.

1. Reduced energy
2. Mental unfitness
3. Poor immunity
4. Long term illnesses
5. Poor health

The working capacity of a person with a poor nutritional condition will be lower than a person with a good nutritional condition due to the above reasons. This has a negative effect on the personal life and in general the economy of the country. When children are affected by nutritional problems, it affects their education, capacity to think, growth and personality. It adversely affects the individual, the family and the nation as a whole.

Nutrients in Food

The nutrients in food are divided into two main components, macronutrients and micronutrients.

Macronutrients and micronutrients

Macronutrients

Nutrients in the diet that are required in large amounts are called macronutrients. Carbohydrate, protein and fat are considered as macronutrients.

Micronutrients

Nutrients in the diet that are required in small quantities are called micronutrients. Vitamins and minerals are micronutrients. They are needed to protect the body.

The nutritional problems in Sri Lanka

Malnutrition

Malnutrition occurs due to lack of proper nutrition as well as excessive consumption of nutrients.

There are two types of malnutrition:

1. Undernutrition
2. Overnutrition

1. Undernutrition

The common nutritional problem that developing countries face is undernutrition. Undernutrition results when the required amount of macronutrients are not taken in the diet. Any person of any age can develop undernutrition. However all over the world the main victims are children. The adverse effects of undernutrition, could have long term effects at different stages of life.

Different effects of undernutrition are given below:

1. Stunting (inadequate height for the age) - height being below -2 SD line in height for age chart
2. Wasting (inappropriate weight for the height) - BMI below -2 SD line in BMI for age chart

We have learned about these assessments in detail in chapter one.

The problem of undernutrition arises as a result of lack of required nutrients to the body. This could occur due to the lack of the essential nutrients during a short or over a long period of time e.g: Diseases such as diarrhoea or worm infestations can lead to temporary weight loss leading to wasting.

Harmful effects of undernutrition:

1. Inactivity and being less productive
2. Retarded physical growth
3. prone to diseases
4. Being poor concentration and memory power
5. Learning difficulties
6. Low life expectancy
7. Under nourished females give birth to low birth weight babies and there could be an increase in infant death rates.

2. Overnutrition

Over nutrition has become a major nutritional problem all over the world. Overnutrition results when excess amounts of macronutrients are consumed. Especially excess intake of sugar and fat in our diet is the main reason for overnutrition. The following are two examples of overnutrition.

1. Overweight - weight not proportionate to height. This has the risk of developing obesity (BMI between +1SD to +2SD line in BMI for age chart)
2. Obesity - inappropriately high levels of weight to the height. This is a disease state.(BMI above +2SD line in BMI for age chart)

The BMI is also used to assess an adult's nutritional status. In the first chapter we learnt how to assess the nutritional status of adults using the BMI.

Obesity can lead to the following problems:

1. Prone to non-communicable diseases such as heart disease, diabetes and stroke
2. Diseases related to joints and bones
3. Reduced efficiency at work
4. Social problems
5. Psychological issues



Activity

Make a list of food items that are suitable to be taken and items that should be limited by an overweight or obese person.

Micronutrient Deficiency

Lack of micronutrients in our daily food intake, over a long period results in micro nutritional deficiency. The most common micronutritional deficiencies are given below.

1. Iron deficiency
2. Iodine deficiency
3. Vitamin A deficiency
4. Calcium deficiency
5. Zinc deficiency

Reasons for micro-nutrient deficiencies, symptoms and preventive actions.

Iron deficiency

causes of iron deficiency

- Less intake of iron rich food
- Iron is not absorbed easily
- Incorrect food habits
- Bleeding into the intestines due to worm infestations
- Excessive bleeding during menstruation

Harmful effects of iron deficiency

- Anaemia
- Lethargy
- Low birth weight babies
- Fatigue
- Poor concentration
- Growth retardation

- **Preventive actions that can be taken to reduce iron deficiency**
- Include food rich in iron in the daily diet. Especially animal proteins (meat, eggs, red rice, beans, cashew nuts, peanuts)
- Pregnant mothers should take a well-balanced iron rich diet
- Items such as tea and coffee should not be taken 1-2 hours after the main meal
- Eat food that improves the absorption of iron (Lime with green leaves, fruits after a meal)
- Selecting iron fortified food
- Take the iron tablet given to children at school by the government

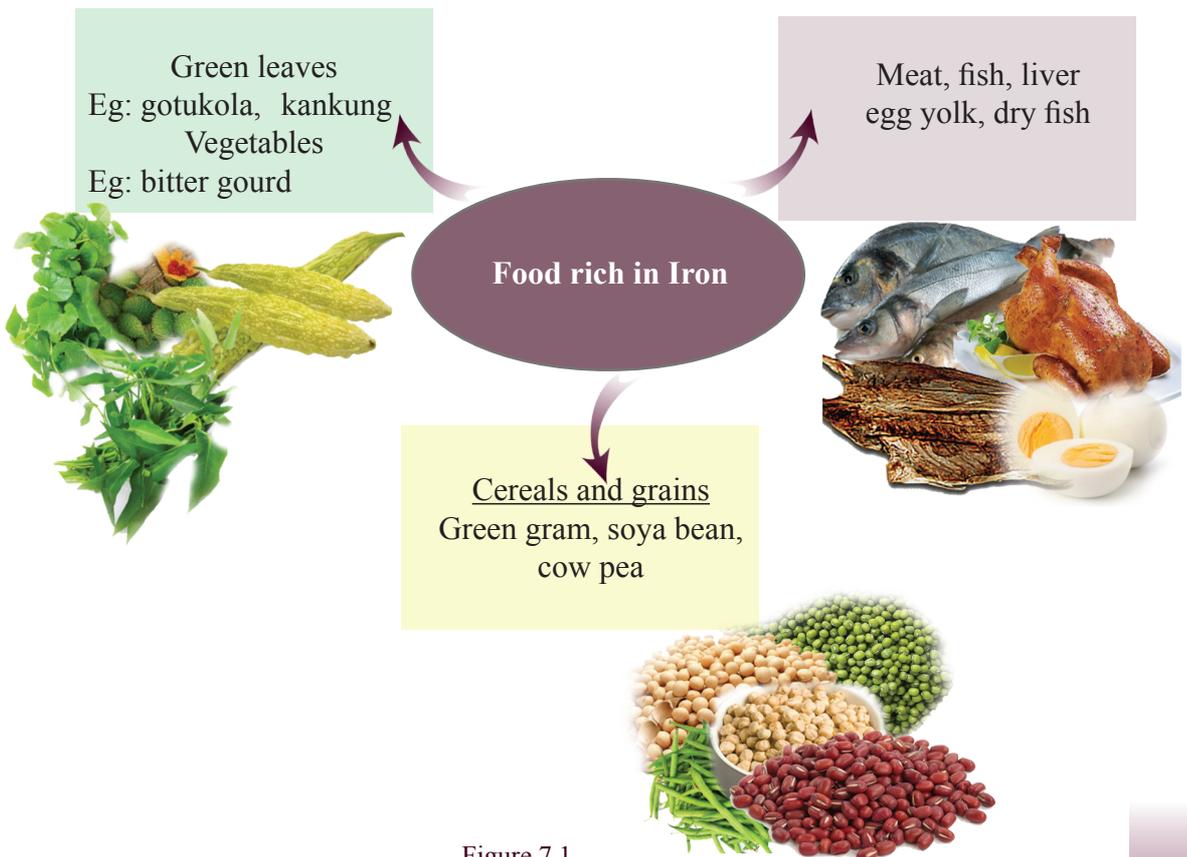


Figure 7.1

Vitamin A Deficiency

causes of Vitamin A deficiency

- Babies not being given breast milk for an adequate period
- Improper food storage
- Improper preparation of food
- Frequent worm infections
- Low intake of food rich in vitamin A

Effects of vitamin A deficiency

- Night blindness
- Bitot's spots in the eye
- Dryness in the eye
- Weakness in sight
- Diseases of the respiratory tract often contracted
- Diarrhoea easily developed

Preventive actions that can be taken to reduce Vitamin A deficiency

- Increase the daily intake of green and yellow coloured vegetables and fruits
- Taking the vitamin A drops orally, which is given through state institutions
- Continue breast feeding up to 2 years of age
- Take steps to provide colostrums in milk during first few days of life of a newborn as it is rich in vitamin A

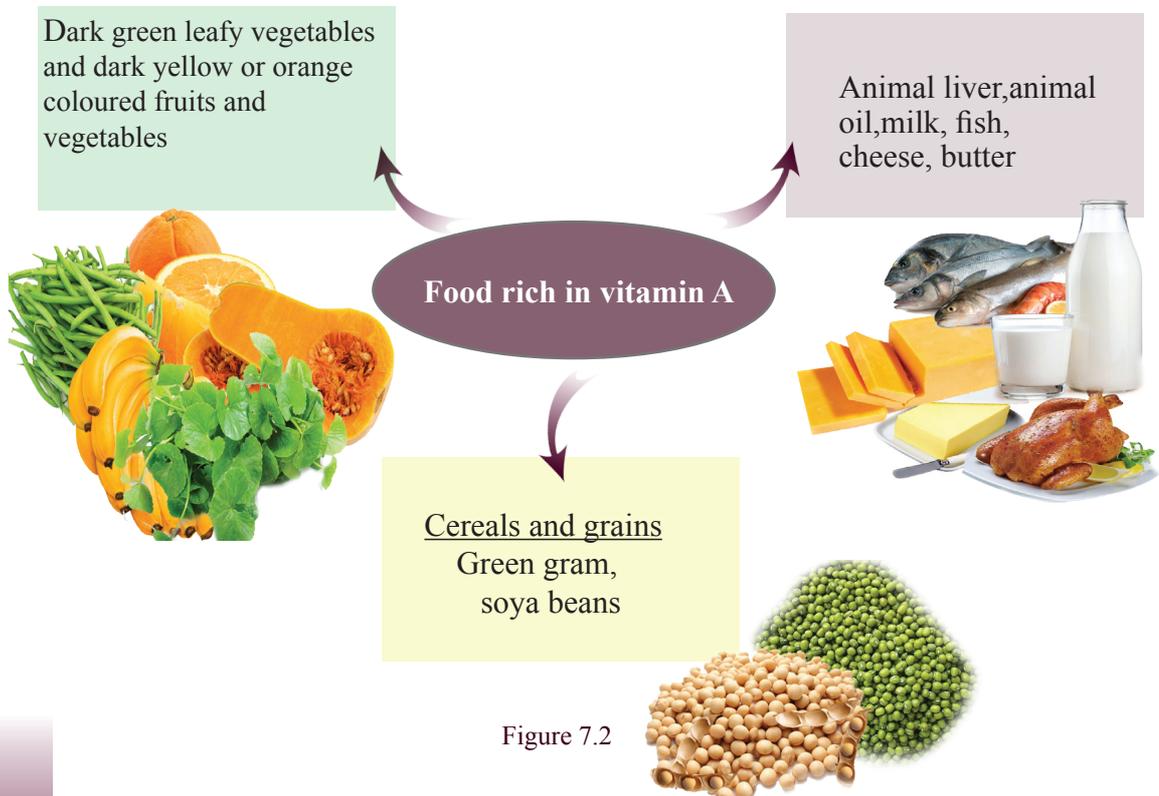


Figure 7.2

Iodine deficiency

Causes of iodine deficiency

- Lack of iodine in the diet
- Sea vegetables not being popular
- Loss of iodine in soil due to erosion in the hill country, vegetables grown there will be deficient in iodine
- Iodized salt kept in warm places and iodine being evaporated (stored near fire place)

Effects on iodine deficiency

- A decrease in thyroxin production
- Prone to develop goiter
- Slowing of mental development
- Poor concentration
- Poor school performance
- Retarded growth, especially height

Preventive actions that can be taken to reduce iodine deficiency

- Use of iodized salt when cooking
- Add fish and sea vegetables to the diet

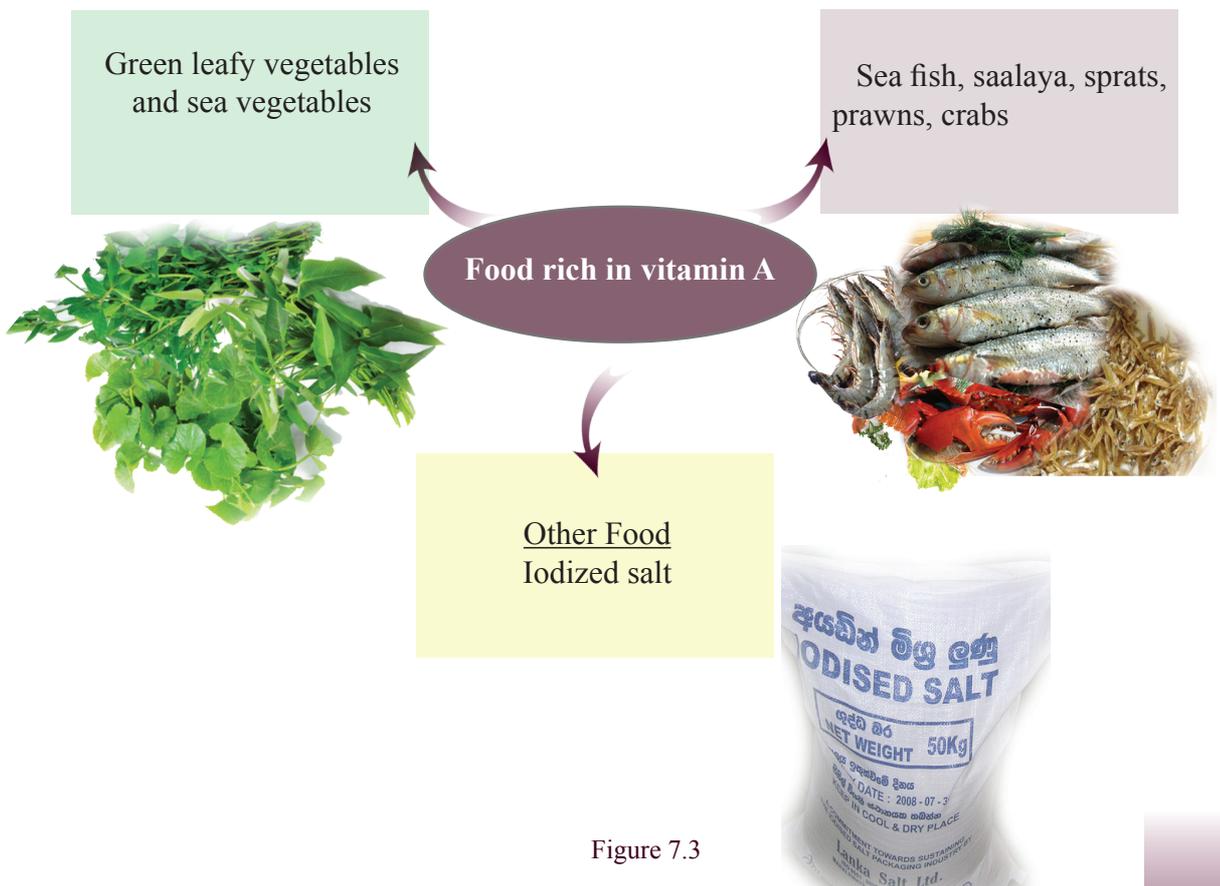


Figure 7.3

Calcium deficiency

Causes of calcium deficiency

- Lack of intake of food rich in calcium
- Consuming food that obstructs the absorption of calcium

Harmful effects of calcium deficiency

- Causes Osteoporosis
- Tooth decay
- Growth retardation

Preventive actions that can be taken to reduce calcium deficiency

- Increase the intake of food rich in calcium
- Increase the intake of food rich in vitamin D
- Consume food that helps to absorb calcium (lactose containing food)



Figure 7.4

Zinc deficiency

Zinc is an important mineral as it strengthens the immune system, helps carbohydrate breakdown and stimulates growth, division and reproduction of cells. Zinc deficiency can lead to frequent infections, delayed or stunted growth etc.

Zinc is found in protein-rich foods such as beans, red meat, peanuts and marine foods.

Steps to be taken to prevent nutritional problems.

1. Pregnant mothers to be made aware of the importance of breast feeding during the first few days, to ensure that the baby gets colostrum which is rich in vitamin A.
2. Exclusively breast feeding babies during the first 6 months as it provides all the necessary nutrients for physical and mental development.
3. Having a well-balanced healthy diet.
4. Having meals at regular times and not skipping breakfast.
5. Get used to the habit of taking natural food and reduce the intake of fat, sugar and instant food. Five portions of vegetable and fruits should be included in the daily diet.
6. Being mindful that food advertised does not contain the nutrients it is claimed to have.
7. Engage in daily physical exercise and spend the day actively.
8. Daily intake of water of a healthy person should be 1 ½ to 2 liters. Whenever you feel thirsty drink clean water.
9. Large portions of seasonal food to be consumed during the season (Mango, Rambutan).
10. Consume food to fulfill the daily requirement of calories.

The vicious cycle of nutritional deficiency

The vicious cycle of nutritional deficiency has become a great threat to any developing country. When the mother has undernutrition, naturally the baby born will be underweight. When that child enters teenage years he/she will have poor growth which results in stunting and wasting. As a result of this when a girl enters motherhood she will develop nutritional deficiencies and her baby too will suffer from nutritional deficiencies. This cycle is called the vicious cycle of nutritional deficiency. In order to create a healthy nation this vicious cycle should be broken at some point and the best stage to do this is during the adolescence.

Therefore improving the nutrition of a girl during childhood and adolescence will result in her being healthy during motherhood as well.

So, we can understand an infant's nutritional status has an impact when she becomes an adolescent and will affect the baby she will give birth to one day.

The reasons for poor weight gain during pregnancy

1. Maternal undernutrition
2. Inadequate nutrient intake during pregnancy
3. Illnesses developed during pregnancy (diabetes, anaemia, high blood pressure)
4. Not receiving proper nutrition during childhood and adolescence.

The reasons mentioned above will result in a baby with a low birth weight. If a baby's weight is below 2.5kg, it is considered as a low birth weight.

A baby with a low birth weight will have delays in physical, mental and social development. This situation can be overcome by giving proper care and nutritious food to the child. If this level of care is not provided to the child she will be prone to frequent infections, and will have retarded physical development during childhood and adolescence. The child could become stunted, wasted and her mental development will also be affected resulting in poor school performance. The vicious cycle of nutritional deficiency continues.

Similarly addressing these nutritional issues in the life course of a boy, will help to have a more productive and active healthy nation.

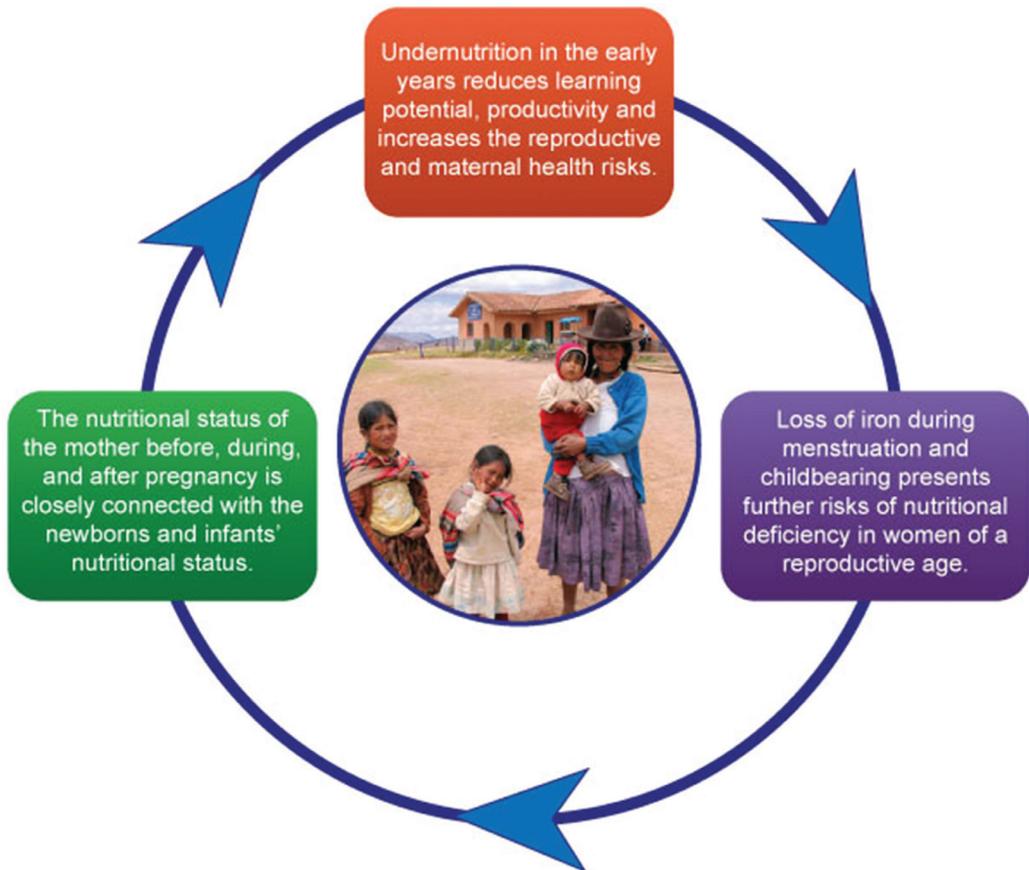


Figure 7.5 -The vicious cycle of nutritional deficiency



Activity

Make a chart showing the interventions that can be done to break the vicious cycle of nutritional deficiency.

Factors affecting nutritional deficiency

1. Food hygiene

“Food hygiene” refers to the cleanliness in the preparation and consumption of food in such manner as to prevent disease and that doesn't develop any harmful effects to the health of an individual.

There are three factors that affect the safety of the food:

- i. Biological factors - food contaminated with microorganisms
- ii. Chemical factors - food contaminated with other chemicals
- iii. Physical factors - common types of foreign matters - e.g: sand, stones etc.

Food spoilage is the loss of the quality of food due to different factors, such as:

- i. Flies, cockroaches, rats and birds feeding on the food
- ii. During preparation having unclean hands, unclean utensils and improper cooking methods.
- iii. Improper food usage
- iv. Adopting improper storing methods

By using proper methods, food spoilage can be prevented. The following points will help to minimize food spoilage:

- i. Washing hands before touching food
 - ii. Preparing food hygienically
 - iii. Using clean spoons and utensils to serve food
 - iv. Person preparing food to maintain a high level of personal hygiene
 - v. Avoiding food poisoning
- Avoid taking food contaminated by fungi - some fungi produce a poisonous chemical called Aflatoxin
 - Avoid taking potatoes with green coloured skin - when potatoes are exposed to the sun light a poison named solanine develops on it which is harmful to health.
 - Avoid using metal containers to store pickles –Acetic acid in vinegar reacts with the metal (aluminum or iron).

- Avoid reusing oil for deep frying - as it results in producing unfavourable chemicals.
- Do not use expired food, food with no labels or torn labels, food in cans with altered shapes (indented or puffed up tins.)
- Do not consume food with an altered taste or smell.

2. Age

Our nutritional needs change with the stages in life. The nutrition in the first 1000 days of a baby's life, is very important in determining the entire future health of the individual. Breast milk is a complete food for the infant, as it is very rich in nutrients and other factors important for the growth, brain development and protection from infections. Due to nutritional deficiencies a girl faces during adolescence, there will be a tendency for her to give birth to a low birth weight baby. As we grow older we do less physical activities, so our diet should contain lesser amount of energy providing food. As we grow old, the micronutrients such as vitamin B₁₂, vitamin C, riboflavin, folic acid, calcium and iron in our body become less. It is important to add more of these micronutrients in the daily diet. Engaging in exercise is very important as it helps to make our bones stronger. As we grow older increase the intake of food rich in fiber (fruits and vegetables) and decrease the intake of food rich in sugar and fat. Maintain a proper body weight in relation to the height (have a correct BMI value).

3. Health condition

Our food habits should be changed according to diseases we may get. For example an anaemic patient's diet should contain food rich in iron and food that potentiate the absorption of iron. When you are infested with worms in the intestine, although a nutritious diet is taken, most of it would not be available for absorption by the person as worms use it. This causes nutritional deficiencies. In order to maintain a high level of nutrition the diseases should be controlled.

It is very important that all three main meals are taken every day. Skipping breakfast (specially school going children) leads to undernutrition. Breakfast is very important because other wise you have to be on an empty stomach for a long time. Skipping breakfast leads to poor concentration in education.

Fresh fruits and vegetables will help to increase the immunity in the body.

Trans fatty acids are rich in deep fried food, and could be harmful to the body.

The amount of food we take should vary according to the amount of physical activity or work that we engage in.

4. Environment

A person's food habits change according to the environment they live in. The quantity of food changes according to the climate they live in. People who live in cold countries need more food in order to produce heat to keep the body warm.

5. Misconceptions about food and nutritional problems

There are many wrong beliefs among individual people as well as communities about selection and preparation of food. Lack of knowledge about nutrition and being gullible to food advertisements directly contribute to many nutritional problems seen in the community today.

Some misbeliefs related to nutrition are given below:

- i. 'Cool' and 'heaty' food is bad for the health.
- ii. Expensive food items carry more nutritional values.
- iii. Soft drinks quench the thirst faster than water.
- iv. Milk is considered as a complete food.
- v. Believing that digestion is affected during illness therefore reducing the intake of food.

Some of the other factors that contribute to nutritional deficiencies are financial situation of individuals, scarcity of food, market forces and lack of knowledge about the nutritional value of different foods.

Students' contribution to minimize nutritional problems.

Students can minimize their nutritional problems by knowing their nutritional status, taking steps to improve the nutritional status, having proper food habits, not getting misled by advertisements and choosing the correct food. Given below are some ways that can help directly to improve their nutrition:

1. Development of knowledge related to nutrition

2. Getting used to indigenous food

Developing the competencies relevant to nutrition

1. Varied food habits can be seen in different communities and areas in Sri Lanka. People have different beliefs on food preparation, consumption, and usage. Advertisements misguide the public to purchase certain food making them believe that they are of high nutritional value. Therefore, as students it is your duty to interpret these advertisements wisely and also possess a knowledge about the nutritional value of food and to select a well-balanced diet. Students should pay attention to the amount of food that need to be consumed (not less or more) and thereby maintaining an appropriate BMI
2. It is very important to take a balanced, healthy diet and to take three main meals a day. Paying attention to the food pyramid when selecting the amount of food from each group as necessary per day is important (this was studied in the previous classes). The knowledge on “Food plate” that you studied in earlier classes can also be used when selecting different food types for a meal.
3. Children should be aware of the school policies related to nutrition. The food available at the school canteen should be good for health and students should select the most suitable and healthy food. Canteen owners must be made aware of healthy food.
4. Encourage the selection of healthy food for school functions.

Preparing the home garden relative to consumption of food



Figure 7.6

In the past home cultivation of fruits and vegetables was popular in Sri Lanka. Vegetables, fruits, spices, medicinal and flowering plants were a common sight in every house. At present due to the nonavailability of sufficient space, the habit of using artificial food, and lack of time, the concept of home cultivation is slowly but steadily fading away from us. However, there are many advantages of growing vegetables and fruits in your own garden. Some benefits are:

1. Fruits and vegetables would be free of poisonous chemicals and be rich in nutrients.
2. Can prepare a well-balanced diet easily.
3. Get used to the habit of recycling organic waste material.
4. Adds beauty to your surrounding.
5. Spend leisure time productively.
6. Gardening provides the opportunity for physical activity and happiness.
7. Economic benefits (saves money).

Although inadequate space is an obstruction to home cultivation, the Agriculture Department of Sri Lanka has introduced many alternative methods for home gardening. Considering the individuals, nutritional needs, availability of space and time, different methods have been introduced.

1. Growing crops
 - Leafy vegetables in pots and drains
 - Crops like chillies and tomatoes in pots
 - Timber wood trees for the boundary
2. Organic manure
 - Compost bins in urban areas and compost pits in other areas
3. Implementing a bio gas unit
4. Collecting rain water and using for gardening.
5. Animal farming



growing crops



bio gas unit



rain water tank



animal farming



compost bit

Figure 7.7



Activity

Draw a sketch of your home garden, showing how you could effectively use it for cultivation.

Getting used to indigenous food

Consuming natural food takes a special place in local food habits. Since local food items can be obtained freshly, their nutrient values would also be high.

Home gardening helps to add local food to your diet and also to go organic. Harmful chemicals will not get mixed in your food. It is economical too. One way to cut down your risk of ingesting unwanted chemicals from food is to have your food from your own garden which would be fresh food.

Garlic, pandan leaves (rampe), karapincha, tamarind, coriander, vinegar are a few natural flavours that we could add to our daily cooking rather than getting used to artificial flavours. Natural flavours add taste to the food, gives a nice appearance and improve the appetite. Spices have medicinal values and a profound effect on general health.

Some natural colours that can be used when preparing food.

Eg; Red	-	beet root
Blue	-	blue katarolu
Green	-	melon skin, “kehipiththan”
Yellow	-	mango and orange
White	-	cucumber



Figure 7.8

Milk and dairy products are available locally. Milk is considered as a high energy yielding local product. The five products of the cow (“pasgorasa”) is made of cow’s milk, and it is a combination of five items such as milk, ghee, butter (wendaru), whey (moru) and curd. These products are nutritious and good for the health.



Figure 7.9



Activity

Prepare a report on whether the school canteen functions according to the rules giving effect to the school canteen policy.

Food related culture of Sri Lanka

From ancient times, the staple food in Sri Lanka has been rice. There are different kinds of rice such as ‘Suwandel’, ‘Elsahal’, ‘Heeneti’ etc. Apart from rice, grains and grain based products are taking a major place in our diet. Kurakkan and meneri are a few of these. Grains carry a high nutritional value.

Our main meals should be balanced and wholesome. For example we can include hathmaluwa (curry made with seven vegetables), mung kiribath, mixed green leaves etc. To have a well-balanced diet many vegetables and green leaves are added.

Steps could be taken to avoid food wastage. There are many ways to preserve food in Sri Lanka such as making dry fish, jadi, drying jack seeds etc.



Figure 7.10

Sri Lanka has always been a home to a multi ethnic and multi cultural society. There are certain foods popular among certain communities. Pittu, thosai, wade are traditional food items of the Tamil community while watalppan and biriyani traditional foods of the Muslims.



Figure 7.11

During different festive seasons of different communities their traditional foods become popular. During the Sinhala and Tamil new year period the traditional milk rice and sweet meats are prepared. During the Thai Pongal festival the Hindus cook their customary pongal rice.



Figure 7.12

There are certain types of food prepared on special occasions. Milk rice is a traditional food item of Sri Lanka made to celebrate special occasions such as wedding ceremonies, birthdays etc. At different stages of life we come across situations that are important in our life and on each such occasion the food that is prepared and served has a special significance. For example the meal which is partaken by the kith and kin of the dead, is known as “mala batha”, which is a simple meal of rice served with curries cooked with dry fish and pumpkin. This type of food traditionally comes from generation to generation, with or without the knowledge of nutritional value.

Preparations of food according to the needs of different individuals.

Children

Babies are exclusively breastfed for the first 6 months of life. During this period it is strictly advised not to give formula milk and if needed to do so, to be done only on medical advice. Once the baby completes six months, complementary food is started. While the child is being given complementary food, breast feeding is continued till two years of age. Complementary food at the beginning is given in the form of semi solid food as the baby has not developed teeth. Gradually with teething the food can be made more solid and by one year the baby can be introduced to family food.

As children grow up fast and their physical activities also increase, their need for

energy becomes high. So their diet should be rich in carbohydrates and proteins. They take only a small quantity of food at a time so it should be sufficiently nutritional. To increase their appetite it is good to make different types of dishes (include various types of food to have variety).

Adolescent

During adolescence a rapid change in growth occurs. They need increased amounts of energy and proteins. Foods with plenty of calcium and iron are particularly important at this age to support bone and muscle growth. At this age if the necessary nutritional needs are met, bones and organs grow well and one can reach the maximum height which can be achieved due to genes. By paying special attention to their diet at this age, one can avoid future ailments such as osteoporosis.

But unfortunately many do not consider the importance of nutrition at this age. They consume excess amounts of fatty food, fizzy-drinks, sweets and junk food, which have become a norm in their diets. Instead they should consume more fresh fruits and vegetables in their daily diets. It is important to make different types of dishes to improve the palatability.

In the modern society we can see girls controlling their diet, to prevent excess weight gain. As a result they become very thin and this is not favourable. The growth a girl receives at this stage of her life is very important for her in the future. During this age if girls are not provided with proper nutrition, it will affect the health of the next generation as well. A girl who with a proper growth during adolescence will be able to produce a healthy baby with a good birth weight.

Pregnant Mothers

During pregnancy, a female needs more nutrients for the growing baby as well as to develop various tissues of her body. Therefore a higher level of carbohydrate, fat and protein are essential for the body. A sufficient amount of micronutrients (iron, iodine, vitamin A) and minerals (calcium, phosphorous) are essential to the body as it helps in the growth of the body and brain. Taking folic acid from the beginning is very vital. Taking proper medical advice is important before using any drugs. Some pregnant mothers experience a loss of appetite, specially during the early months of pregnancy. They should take extra precautions to add nutritious food to their diet. As a solution to this, a pregnant mother has to take food in small quantities at regular intervals.

Lactating Mothers

All the nutritional needs of the first six months of a baby are provided by breast milk. Therefore a lactating (breast feeding) mother needs more calories daily. Lactating mothers should take an extra meal other than the normal diet. Iron and calcium intake should be high during this period. More sprats, milk, fruits and vegetables should be added. Lactating mothers should take extra fluids too.

Patients

Patients need a diet rich in nutrients as it is essential for the repair of damaged tissues as well as for the immunity system to fight against infections. It is important to take a normal diet even when you are sick, as it does not affect digestion of food. It is suitable to get advice from a doctor or a nutritionist about the dietary requirements of certain persons. Patients who have problems related to food digestion, are always advised to start a diet with liquid, gradually move on to semisolids and solids.

Vegetarians

A well planned vegetarian diet should meet all nutritional requirements in order to avoid nutritional deficiencies. It is important to make sure that your body is getting enough protein. Grains and vegetables that are rich in proteins should be consumed more. Green gram, dhal and soya beans are some food that can be included. Red-rice, mushrooms should also be included with cereals. Since iron and calcium are poor in vegetables, it is highly recommended to increase the intake of green leaves (nivithi, mukunuwenna) green gram and food rich in vitamin C which will increase the absorption of those nutrients.

Animal proteins are high in quality and help children to have the high quantities required due to the rapid growth of their body. It is important to add meat in your diet until quantisation 18 years of age as the body is growing. Due to some reason if you are a vegetarian it is important to pay attention to include mixture of grains and cereals in your diet to improve the composition of essential amino acids.

Vitamin B₁₂, is provided only through animal food. Therefore it is advisable for vegetarians to take such nutrients as vitamin supplements based on medical advice.

Sportsmen

An athlete's diet varies depending on age, sex, metabolic level and the type of sport they engage in. A suitable diet should be taken before they start their sport event, in between and at the end. Although plenty of food stuffs are available in the market today, it is always better to take medical advice on the diet. It is recommended to increase the intake of food during the sports season and at the same time to reduce intake during off season.

Taking a complete diet alone does not improve a physical competencies. The necessary training is also very important.



Activity

Prescribe suitable diet for a lactating mother and a diabetic patient.

Summary.

Malnutrition related to macronutrients and micronutrients are common in Sri Lanka. These nutritional deficiencies affect an individual's well being as well as the economy of a country. Malnutrition and its related complications can be prevented by identifying the factors that cause nutritional deficiencies and implementing awareness programmes. The attitude and the knowledge of students towards and about this aspect is very important when considering their contribution towards solving this problem. Getting fresh fruits and vegetables from your own garden and getting used to the habit of eating will help to minimize many nutritional problems. Preparing the family menu according to the needs of the family members and ignoring food related myths and beliefs will help build a healthy nutritional status.



Exercises;

1. Name two common micronutrient deficiencies that can be seen in Sri Lanka.
2. Name four factors that contribute towards nutritional deficiencies.
3. Write three unfavourable effects of undernutrition.
4. Write four steps that can be taken to minimize iron deficiency.
5. Write three things you can do at home to preserve food.