

NUTRITIONAL STATUS AND HEALTH

22.1 Introduction

You know that we need food to grow. The food that you eat is digested and absorbed in your body. The diet provides nutrients which are required in varying amounts in different parts of the body. These nutrients are utilised in the body for performing specific functions. This means that good nutrition is the basic component of good health. You have read about balanced diet. Do you remember that it is of utmost importance in achieving normal growth and development and for maintaining good health throughout life? When your diet provides the nutrients in incorrect amounts, either very less or in excess of what is required, it results in an imbalance of nutrients in your body. This condition is responsible for various infections, slow or no growth of body and it can even lead to death.

You know that young children, pregnant women and lactating mothers commonly suffer from health problems arising due to inadequate nutrition. There are several nutritional programmes prevailing in our country in order to solve this problem.

In this lesson, you will learn about the meaning of nutritional status and the ways of assessing it. You will also learn about the various nutritional diseases and different on-going nutrition programmes aimed to prevent and control these problems in our country.

22.2 Objectives

After reading this lesson, you will be able to :

- define "nutritional status";
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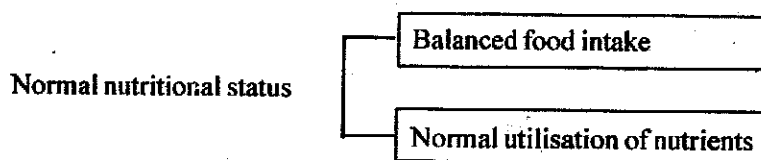
- describe malnutrition and explain its causes;
- discuss simple ways to assess nutritional status;
- recognise the signs and symptoms of common nutritional deficiency diseases;
- explain the importance of national nutrition programmes and enlist some of them;
- state salient features of these programmes.

22.3 Nutritional Status

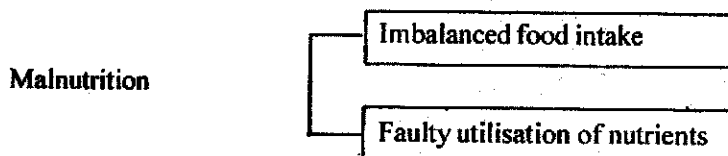
You know that we need a nutritious diet for our well-being and good health. However, when the nutrients provided in the diet are inadequate or not utilised properly, then it results in a state of imbalance in the body. If this continues for sometime it may develop into a severe problem which may even prove fatal.

The condition of health of a person that is influenced by the intake and utilisation of nutrients is called nutritional status.

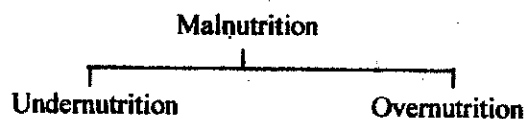
When our body receives all the nutrients in appropriate amounts so as to meet the needs of the body, then we are in the state of good nutrition. We have a normal nutritional status.



When there is a lack or excess intake of one or more nutrients and/or faulty utilisation of nutrients in our body, it leads to the state of imbalance in the body. This condition is known as *malnutrition*.



There are two types of malnutrition. The condition of health of a person that results due to the lack of one or more nutrients is called *undernutrition*. However, when there is an excess intake of nutrients, it results in *overnutrition*.



Thus the condition of malnutrition covers both the states of undernutrition and overnutrition. You must have seen people who eat energy giving foods in amounts more than what is required by their bodies, they become fat/obese. This is the result of overnutrition. This state of being obese is harmful as it may lead to serious health problems. But undernutrition is more common around us. In fact malnutrition has become a synonym of 'undernutrition'.

In-text Questions 22.1

1. What is 'nutritional status'?
2. Fill in the blanks in each of the following statements by choosing the appropriate word given below in the brackets :
(lack, overnutrition, obese, abnormal undernutrition, normal)
 - (i) Malnutrition refers to both _____ and _____
 - (ii) Undernutrition results due to _____ of one or more nutrients.
 - (iii) If you eat too much of energy rich foods, you may become _____
 - (iv) Eating balanced food and having normal utilisation of nutrients, leads to _____ nutritional status.

22.4 Causes of Malnutrition (Undernutrition)

Do you know why malnutrition occurs? Let us look into some of the important factors responsible for causing it.

Causes	Influences	Consequences
1. Decreased availability of food due to i. Increase in population (many mouths to feed) ii. Low production iii. Exhaustion of stocks	Lowered food intake	<ul style="list-style-type: none"> ● Decreased resistance to infections ● Illness ● Poor work capacity ● Poor physical and mental growth ● Handicaps ● Death
2. Ignorance	Inability to make correct choice of food items	
3. Poverty	Lowered capacity to purchase food items	
4. Stress conditions	Inability to meet the increased nutrient needs during periods of rapid physical growth, e.g. in young children, adolescents, pregnant women and lactating mothers. Nutrient demands also increase during illnesses.	
5. Poor personal hygiene and environmental sanitation	Increased susceptibility to infections and thereby illnesses.	

Can you think of the consequences of malnutrition? Yes, indeed malnutrition has serious ill-effects. The people affected by malnutrition suffer from deficiencies of different nutrients and have infections. They also have poor physical as well as mental growth and development which cause various handicaps. Malnutrition can also lead to deaths of many people.

If we do not control the factors responsible for causing malnutrition, then malnutrition results.

Intext Questions 22.2

1. Enlist the most important causes of malnutrition (undernutrition).

2. Malnutrition may even lead to _____ of many people.
3. The consequences of malnutrition are mainly _____

22.5 Assessment of Nutritional Status

There are a few simple ways by which you can know the nutritional status of yourself as well as of different people around you. Then you can say, whether or not a person is suffering from any nutritional problem. These procedures are

- by measuring physical growth;
- by determining dietary intake;
- by recognising nutritional deficiency diseases.

1. Physical Growth

You know that growth is most rapid during early childhood. Therefore, children below 5 years of age are most susceptible to malnutrition. Growth can be determined by measuring the body weight and height. A child at a particular age must have a specific height and weight. In other words the body weight and height of the children can become the indicator of her nutritional status.

How do you know whether a child has normal weight and height? There are standard weights and heights which the child is expected to attain at a particular age. These are called references and are shown in Tables 22.1 and 22.2. In case, the weight and/or height of the child is below the reference, then the growth is considered to be retarded and we can say that the child may be suffering from malnutrition.

For example, Sita is 4 years old. Her weight is 12 kg and her height is 99 cm. Look at the Tables 22.1 and 22.2 and comment on her nutritional status.

When you compare her weight and height against that of an other girl of 4 years of age from the reference, you will see that, ideally, she should weight 16 kg and should be 101.6 cm tall at her age. In other words she is lighter as well as shorter for her age or her nutritional status is poor and she may be considered as malnourished.

ACTIVITY

Take weights and heights of children around you. Compare them with the reference tables. What do you observe ?

You should remember that recording regular weights, say once a month is important. Excessive weight gain or loss is harmful and should be attended immediately.

2. Dietary Intake

The second method of assessing nutritional status is through dietary intake. You have already learnt about the concept of balanced diet in the previous lesson. You will remember that balanced diet contains all the important nutrients in appropriate amounts and proportions. This helps us to grow and be healthy. Thus, balanced diet influences the normal nutritional status of a person. What does this mean ?

Yes, it means that the nutritional status can also be assessed through the dietary intake. Do you know how? Can you recall that the various food items which you eat can be categorised into different food groups? In case you wish to determine your nutritional status, then

- (i) Note down whatever food items you eat on one particular day along with the amounts of raw food items in grams.
- (ii) Now group the food items into different food groups and find out the respective total amounts.
- (iii) Lastly, compare the differences in amounts of each food group with the recommended dietary intakes for your age and sex.

If your dietary intakes are similar to the recommended dietary intakes, it will mean that you should be healthy and have a normal nutritional status.

You can assess the nutritional status of other people by determining their dietary intakes in a similar way and compare their intakes with those recommended for their age and sex.

ACTIVITY

Note down all that you ate on any one day and compare the amounts with the recommended dietary intakes (RDI). What do you observe?

Food group	RDI	Actual (yours)	Difference(+/-)
Cereals			
Pulses			
—			
—			
—			
—			
—			

3. Nutritional Deficiency Diseases

You can also assess the nutritional status of a person by observing the signs and symptoms of various nutritional deficiency diseases. The presence of one or more deficiencies will mean poor nutritional status and their absence is certainly an indication of normal nutritional status of the person.

You have already read that when the nutrients provided in the diet are either consumed below the required levels or are not properly utilised by the body, it results in the state of nutritional imbalance. This condition, also called malnutrition, occurs due to the lack of one or more nutrients and leads to the condition of "nutritional deficiency" in the body.

For example, vitamin A is important for normal vision in dim light. If your diet does not provide sufficient vitamin A, it will lead to vitamin A deficiency in your body. This deficiency will affect the normal functioning of your eyes. Like, you will not be able to see in the dark (night blindness), your eyes will lose clarity and may become cloudy/muddy in contrast to the eyes of your friend who is eating enough vitamin A in her diet and has bright and clear eyes.

Similarly, you will see that the child suffering from energy and protein malnutrition is shorter and thinner as compared to the other children of same age eating sufficient energy and proteins in their diets. Such changes in the appearance in the body parts are the signs and symptoms of a nutritional deficiency diseases. These are usually specific for a particular nutritional deficiency and are, therefore, helpful in recognising different deficiency diseases in and around you.

22.6 Recognising Nutritional Deficiency Diseases

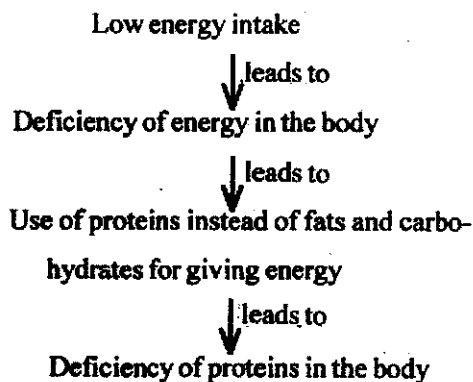
How will you recognise a nutritional deficiency disease and its consequences? Read the following descriptions:

1. Energy-Protein Malnutrition (EPM)

EPM is one of the major nutritional problems in our country. It can occur at any age, but it mainly affects the young children. It results due to :

- * lack of energy and proteins
- or
- * lack of proteins alone in the diet.

You may ask why does one have energy and protein deficiencies? It is because the energy deficiency can cause protein deficiency. See how this happens :



The body gets energy from carbohydrates and fats. When these are not present in adequate amounts in the diet, the body cannot meet its energy needs. It then uses proteins for supply of energy. As you know, proteins can give energy but this is not their main function. Their main functions are tissue building and repair. Hence, when proteins are used for energy purposes they cannot carry out their main function, thereby resulting in deficiency of proteins in the body.

Energy-Protein malnutrition is of two types :

1. Marasmus
2. Kwashiorkor

These are the extreme forms of EPM. They can even lead to death. The milder forms of EPM are much more common and are associated with infections and other nutrient deficiencies.

TABLE 22.3

Differences between Marasmus and Kwashiorkor

Marasmus	Kwashiorkor
Causes Deficiency of both - energy and proteins	Deficiency of proteins alone
Age group Before 12 months of age	Young children between 1-3 years of age
Signs and symptoms Loose and wrinkled skin due to loss of fat beneath the skin	Oedema/swelling due to water accumulation in the body especially on face, arms and legs
Shrunk abdomen	Pot belly
Hunger	Loss of appetite
Diarrhoea (often)	Skin rash which tends to peel off
	Light coloured hair which are easy to pull out
	Liver enlargement

Growth retardation and decrease in amount of muscle are seen in both marasmus as well as kwashiorkor.

2. Vitamin A Deficiency

The lack of vitamin A in the diet leads to vitamin A deficiency.

Signs and symptoms

- (i) Eye changes begin with night blindness, that is, inability to see when it is dark. If it is not treated it leads to complete blindness.

Night blindness → drying of the white portion of the eye → complete blindness

- (ii) Increased rate of infections especially of the respiratory system.

3. Anaemia

Anaemia means low level of haemoglobin in the blood. Haemoglobin is the red pigment in the blood and it helps in carrying oxygen to different parts of the body for performing important activities. Haemoglobin level decreases when iron is deficient in the diet. In other

words anaemia is caused due to deficiency of iron. Anaemia can also be caused when there is lack of folic acid and vitamin B₁₂ in the diet.

Signs and symptoms

- (i) General body weakness. The person complains of tiredness and breathlessness.
- (ii) Loss of appetite
- (iii) Paleness of tongue, white portion of eye and nail beds
- (iv) Feeling of being pricked with pins and needles on the fingers and toes.
- (v) Brittle and spoon shaped nails
- (vi) The capacity of a person to work decreases considerably.

4. Iodine Deficiency

Iodine deficiency is most commonly seen as goitre in adults and cretinism in young children. However, you must remember that these are not the only problems of iodine deficiency disorders (IDD)

Signs and symptoms

- (A) In adults
 - (i) The neck becomes swollen. This is called *goitre*.
 - (ii) The person may become fat.
 - (iii) The person feels tired and is unable to work properly.
 - (v) Skin changes may also occur.
- (B) In young children
 - (i) Growth is retarded
 - (ii) Mental retardation
 - (iii) Speech and hearing defects
 - (iv) Disorders of nerves and muscles causing inability to control movements of limbs.

ACTIVITY

Make a visit in your area :

- (i) Look for the signs and symptoms you have studied about in the people around you.
 - (ii) Identify the nutritional deficiency diseases they are suffering from.
-

Intext Questions 22.3

1. Fill in the blanks:

- i) The simple ways to assess nutritional status are _____, _____ and _____.
- ii) Physical growth can be determined by measuring _____ and _____.
- iii) Dietary intake below the recommended dietary intake indicates _____ of a person.
- iv) Nutritional deficiency diseases cause changes in appearance in body parts and can be observed by the presence of _____.
- v) IDD is seen in the form of _____ in young children.

22.7 National Nutrition Programmes

The prevalence of the nutritional deficiency diseases is widespread in our country. You know that these diseases have serious ill-effects on the health and survival of the people. In order to control this situation, several National Nutrition Programmes have been launched in our country. These programmes provide nutritional benefits to the groups susceptible to these problems. Do you know who are most susceptible to problems of deficiencies? Yes, young children, adolescents, pregnant women and lactating mothers.

Let us now read about some of the important national nutrition programmes. Knowing the services provided, you can benefit yourself as well as others from these nutrition programmes.

- Integrated Child Development Services
- Mid Day Meal Programme
- National Prophylaxis Programme for prevention of Nutritional Blindness due to Vitamin A deficiency.
- National Nutritional Anaemia Control Programme
- National Iodine Deficiency Disorders Control Programme.

1. Integrated Child Development Services (ICDS)

You know that children of today are future of tomorrow. If we take proper care of them, they will grow into healthy adults. The children need adequate nutrition, health care and education for their proper physical, mental and social growth and development.

Imagine, if a child does not get enough to eat then she will not be healthy. An unhealthy child will not be interested in studying. Similarly, if a child is suffering from diarrhoea, supplementary feeding will not be beneficial and it will not lead to improvement in the nutritional status of the child. Therefore, it is important to provide nutrition, health care and education together as a package of services. It is for this reason that ICDS

programme was launched in our country. It has been successful because all the components essential for growth and development of children are included in it.

ICDS provides

Health

- Immunisation
- Health check-up
- Referral services
- Treatment of minor illnesses

Immunisation, health check-up and referral services are provided to prevent the occurrence of diseases and to make available treatment for medical problems from qualified medical staff.

Nutrition

- Supplementary feeding
- Growth monitoring
- Nutrition and health education

Health and nutrition education is given to educate adults about nutrition and health care. Supplementary feeding is given to help supplement and prevent undernutrition.

Early childhood care and pre-school education

- Non-formal education to children in the age group of 3-6 years.
- Non-formal pre-school education is given to young children.

Convergence

- There is a convergence of other supportive services, such as safe drinking water, environmental sanitation, women's empowerment programmes, non-formal education and adult literacy.

The services under the ICDS are provided at centres called **Anganwadis**. The health services are provided at the **Child Health Centres (CHC)**. Have you ever visited a CHC (formerly called Primary Health Centre or PHC) in your area? If you have, you must have seen that besides providing health services like immunization, health check-up, treatment of minor illness, the CHCs also provide referral services. Referral services mean that if a person is suffering from a serious health problem, he/she is referred to a bigger hospital for medical treatment.

Beneficiaries

- Children below 6 years of age
- Adolescent girls between 11 and 18 years
- Pregnant women and lactating mothers
- All women between 15 and 45 years

Table 22.2 shows the services and beneficiaries of ICDS scheme.

TABLE 22.2
SERVICES AND BENEFICIARIES OF ICDS

Services year	children		Adolescent girls 11-18 yrs	Pregnant women	Lactating mothers	All women 15-45 years
	1-3 year	3-6 year				
● Health check-up	✓	✓	✓	✓	✓	✓
● Immunisation	✓	✓	✓		✓	
● Growth promotion & supplementary feeding	✓	✓	✓	✓	✓	
● Referral services				✓	✓	✓
● Early childhood care & pre-school education	✓	✓	✓			
● Nutritional health education			✓	✓	✓	✓

2. Mid day Meal Programme (MDMP)

The main aim of MDM programme is to provide supplementary meal to primary school children between 6 and 11 years of age. This in turn ensures school attendance.

3. National Prophylaxis Programme for prevention of Nutritional Blindness Due to Vitamin A deficiency

This programme aims at preventing blindness due to vitamin A deficiency.

The services provided under this programme include :

- (i) Promotion of consumption of vitamin A rich foods
- (ii) Providing massive doses of vitamin A orally to children 6 months to 5 years of age.

Beneficiaries

- Children 6 months to 5 years of age
- Pregnant women and lactating mothers
- All women between 15 and 45 years

4. National Nutritional Anaemia Control Programme

This programme aims at significantly decreasing the prevalence and incidence of anaemia in young children and women.

The services provided through this programme are :

- (i) Promotion of regular consumption of foods rich in iron
- (ii) Provisions of iron and folic acid supplements
- (iii) Treatment of severe anaemic cases.

Beneficiaries

- Children 6 months to 5 years of age
- Pregnant women and lactating mothers
- All women between 15 and 45 years

5. National Iodine Deficiency Disorders Control Programme

The aim of this programme is to decrease the prevalence of IDD in our country by providing iodine in the common salt (iodized salt).

The services provided are :

- (i) To assess the extent of the problem
- (ii) To arrange for production/supply of iodized salt.
- (iii) To take quality control measures in order to ensure standard quality of iodized salt to the consumer.

The government is ensuring that all the salt that is produced in our country is iodized before it reaches the consumer. Steps are also taken to make the people aware about the consumption of iodized salt.

ACTIVITY

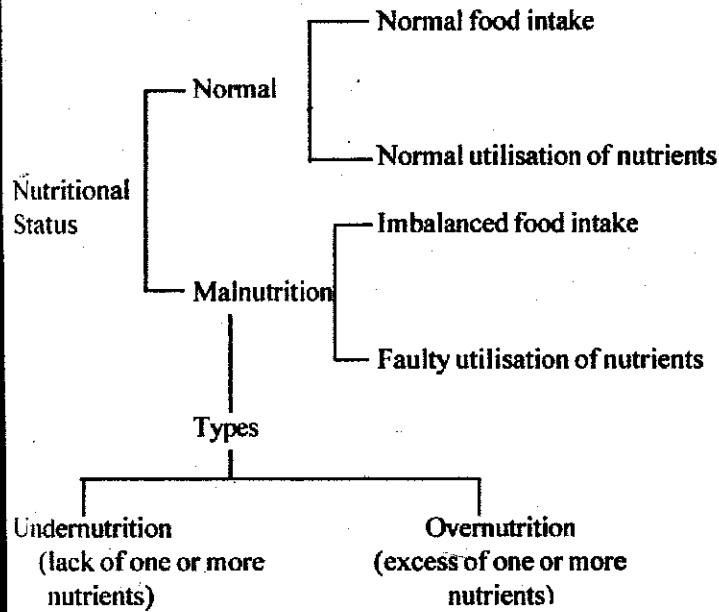
Find out from your health centre about the nutritional programmes operating in your area and what you can do to help yourself and other people to benefit from them.

Nutrition programme	Services	Beneficiaries	How can you help

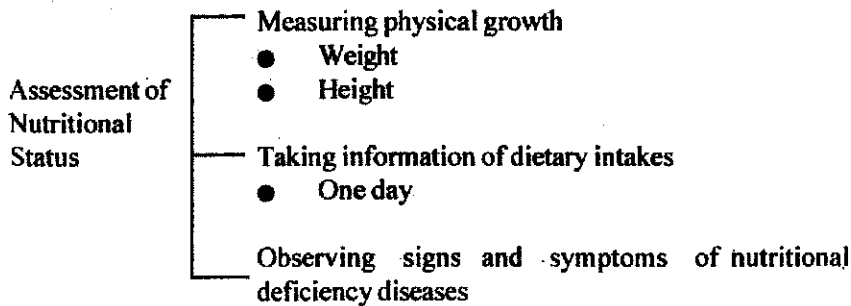
INTEXT QUESTIONS 22.4

1. State whether the following statements are true or false.
 - (i) ICDS scheme provides services to children only.
 - (ii) National IDD control programme aims to decrease the prevalence of night blindness in our country.
 - (iii) Massive doses of vitamin A are given to children below 6 months of age .
 - (iv) Iron and folic acid supplements are given to prevent anaemia.
2. Enlist some of the important on-going national nutrition programmes in our country.

22.8 What You Have Learnt



- Decreased availability of food
- Increasing population
- Ignorance
- Poverty
- Poor personal hygiene and environmental sanitation
- Stress conditions



22.9 Terminal Questions

1. What do you mean by nutritional status? Discuss.
2. Describe the various methods of assessing nutritional status of a person.
3. Enlist some the common nutritional deficiency diseases. State signs and symptoms of each.
4. Explain the importance of national nutrition programmes. Give the services and beneficiaries of five important national nutrition programmes in our country.

Name of the programme	Services	Beneficiaries

22.10 Answers to Intext Questions

- 22.1**
1. Refer text
 2. (i) undernutrition, overnutrition
(ii) lack
(iii) obese
(iv) normal
- 22.2**
1. Refer text
 2. death
 3. Refer text
- 22.3**
1. (i) physical growth, dietary intake, nutritional deficiency diseases
(ii) weight, height
(iii) poor nutritional status
(iv) signs and symptoms
(v) Cretinism
- 22.4**
1. (i) F (ii) F (iii) F (iv) T
 2. Refer text