**UNIT 23 MAJOR NUTRITION PROGRAMMES – I : NUTRIENT DEFICIENCY CONTROL PROGRAMMES**

**Structure**

23.1 Introduction
23.2 National Prophylaxis Programme for Prevention of Nutritional Blindness
23.3 National Nutritional Anaemia Control Programme
23.4 Iodine Prophylaxis Programme
23.5 Let Us Sum Up
23.6 Glossary
23.7 Answers to Check Your Progress Exercises

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**23.1 INTRODUCTION**

You know that one suffers from the symptoms of a particular vitamin or mineral deficiency disorder, if one does not consume diet adequate in that nutrient for quite sometime. One obvious way to prevent such disorder is to consume diet rich in vitamins and minerals. However, poor people cannot afford these foods as they are too expensive. It is not possible for the Government to make these foods available to poor and needy on regular basis.

As an alternative method, Government of India runs organized prophylaxis (preventive) programmes. Under this scheme, the commercially prepared vitamins and minerals are supplied to vulnerable sections of our population through organized programmes. These programmes are known as nutrient deficiency control programmes or prophylaxis programmes and are of nature of stop-gap arrangement. These are expected to be phased out as and when the purchasing power of people improves and they start consuming balanced diets.

In this particular unit, you will study about the three nutrient deficiency control programmes — the National Prophylaxis Programme for Prevention of Nutritional Blindness, the National Nutritional Anaemia Control Programme and the Iodine Prophylaxis Programme. You will find information regarding the objectives, target beneficiaries of the programmes and the distribution strategy.

**Objectives**

After going through this unit, you will be able to

- explain the basis of nutrient deficiency control programmes
- describe the objectives, target group and method of distribution of benefits of three nutrient deficiency control programmes i.e.
  - National Prophylaxis Programme for Prevention of Nutritional Blindness
  - National Nutritional Anaemia Control Programme
  - Iodine Prophylaxis Programme

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**23.2 NATIONAL PROPHYLAXIS PROGRAMME FOR PREVENTION OF NUTRITIONAL BLINDNESS**

Can you recall some of the symptoms which appear due to deficiency of vitamin A (Unit 17, Block 5)? Vitamin A deficiency leads to complaints of night blindness and other eye signs like conjunctival dryness (xerosis) and bitot spots. These signs are not dangerous because they can be cured by giving vitamin A. But the severe forms of vitamin A deficiency specially among children of preschool age (1 to 5 years) result in keratomalacia — a condition where the cornea (black portion of the eye) gets completely destroyed. This condition is irreversible (incurable) and when occurs,
makes the child blind. The socio-economic implications of blindness or blind children are tragic for the family as well as for the society. Therefore, a preventive programme of distribution of massive doses of vitamin A is being undertaken in the country. The basis of this programme is the fact that the human liver can store vitamin A consumed in excess of daily requirement. The stored vitamin A is released as and when the body needs it. In other words the liver acts as a 'saving bank', in which the body saves (stores) its surplus vitamin A and withdraws it when the intake falls short of the requirement. Making use of this knowledge, the National Institute of Nutrition, gave 2000 preschool children large doses of vitamin A, two times a year. The dose, called as the massive or mega (big) dose, was calculated to give the child adequate vitamin A every day for six months. An examination of these children at the end of a year showed most encouraging results. These were:

- None of the children were nightblind
- None developed conjunctival xerosis or bitot spots
- None developed nutritional blindness.

Thus the National Prophylaxis Programme for prevention of Nutritional Blindness was born.

Let us now study about the details of the programme. We shall discuss this programme as well as other nutrition programmes in the block under three main headings — objectives, target groups and distribution strategy. You should get familiar with these terms.

**Objectives:** Refer to the specific aims to be achieved through the programme.

**Target group:** Nutrition programmes cater to only vulnerable sections of the community. Each programme targets at some particular vulnerable sections of the community i.e. target group.

**Distribution Strategy:** Refer to the method of distribution of benefits of the programme.

Let us learn about the objectives, target group and the method of distribution benefits of National prophylaxis programme for prevention of nutritional blindness.

**Objectives:** The programme aims at preventing blindness due to vitamin A deficiency in children (between 6 months to 5 years) by supplying mega (high) dose of vitamin A.

**Target group:** All children of 6 months to 5 years are eligible (particularly those living in rural, tribal and urban slum areas).

**Dose and distribution strategy:** A liquid preparation of vitamin A in oil providing 200,000 IU (in 2 ml) is given to every child between the ages of 1 and 5 years. Vitamin A solution is kept away from direct sunlight and a bottle once opened is utilized within 6-8 weeks. A child must receive a total of 9 oral doses of vitamin A by fifth birthday. An infant between the age of 6-11 months is given a dose of 100,000 IU. The contact with an infant during administration of measles vaccine between the age of 9-12 months is considered practical time for administering the vitamin A supplement of 100,000 IU to infants.

The mother child immunization card is used to record and monitor the administration of vitamin A dose to children under two years. Similarly growth monitoring cards or registers used for monitoring growth of children under the ICDS Programme are used for recording and monitoring administration of vitamin A solution till the age of five years.

Distribution of vitamin A is carried out by the Auxiliary Nurse Midwife (ANM) — a functionary belonging to Health Department in Ministry of Health and Family Welfare. There is an ANM for a population of 3000-5000 people in a state. Her main task is family welfare. She also educates people about healthy living and helps in distributing the benefits of nutrition programmes. Actual feeding (administration) of the dose is conducted at the ‘door-step’ of the beneficiary, once in six months. It is recommended that the health worker, as soon as she receives the stock of vitamin A, should cover all the eligible children of her area within as short a period as possible (on cash basis) by home (domiciliary) visits (administration at the clinics or at one place is not recommended). Wherever Integrated Child Development Services (ICDS) is functioning, anganwadi workers should be involved in the distribution and administration of vitamin. You will learn more about anganwadi workers and Integrated Child Development Services in Unit 24.
Check Your Progress Exercise 1

1) Fill in the blanks
   a) Massive dose of vitamin A provided under national prophylaxis programme for prevention of nutritional blindness is ..................................... IU per child
   b) Children in the age ....................... to ....................... years are prone to vitamin A deficiency.
   c) The vitamin A dose is given to ....................... children living in rural and tribal areas or urban slums.
   d) The dose of vitamin A is given to children ....................... in six months.

2) What is the basis of National Prophylaxis Programme for Prevention of Nutritional Blindness?


23.3 THE NATIONAL ANAEMIA CONTROL PROGRAMME

Anaemia is another major nutritional problem affecting the health of the people in the country. It is particularly serious among the women of child bearing age (especially during pregnancy and lactation) and young children.

Surveys done by various research organizations including the World Health Organization (WHO) have shown that in our country, as many as 50-70% of preschool children of poor communities are anaemic. In case of women, particularly during pregnancy, as many as 70% or even more of them are likely to be anaemic (haemoglobin level less than 10 g per 100 ml). The anaemia among women tends to increase with increasing number of pregnancies. You know that anaemia has certain harmful consequences. It reduces the capacity for doing work and hence this effects the work output. Anaemic mothers often give birth to low birth weight babies (babies born with birth weight less than 2500 g or 2.5 kg). It can even lead to death of the mother.

In view of these serious consequences of nutritional anaemias, the Government initiated the National Nutritional Anaemia Control Programme.

Objectives: The programme aims at significantly decreasing the prevalence and incidence of anaemia in women in reproductive age group especially pregnant and lactating women and preschool children. The programme focuses on the following:

— Promotion of regular consumption of foods rich in iron.
— Provision of iron and folic acid supplements in the form of tablets to the “high risk” groups.
— Identification and treatment of severely anaemic cases.

Target group: The beneficiaries of the programme are:

a) Pregnant women
b) Lactating mothers
c) Family planning acceptors (women who accept family planning measures like intrauterine devices (IUD) and tubectomy)
d) Children of both sexes between ages 1 to 5 years.

Distribution Strategy: Supply of iron-folic acid tablets to the target population constitutes the main input. Two types of tablets being distributed are: (1) big tablets, each containing 60 mg of iron (ferrous sulphate) and 500 µg of folic acid (for women). One big tablet per day for 100 days should be given to pregnant woman after first trimester. The contact during the administration of tetanus toxoid should be utilized for distribution of tablets to pregnant woman after the first trimester of pregnancy. Similarly lactating woman and IUD acceptors should receive one tablet per day for
100 days. Mothers often accompany their infants on immunization sessions. They can be handed over tablets during this time (2) small tablets, each containing 20 mg of iron and 100 µg of folic acid (for children) daily for 100 days every year. Register used for growth monitoring of children can be used to record the intake of tablets also.

For young children who cannot swallow tablets, iron and folic acid (in the same dose, as in a small tablet) are given in 2 ml of syrupy liquid.

The health functionaries like Auxiliary Nurse Midwife (ANM) is responsible for distribution of tablets/liquid. Of late, the services of Anganwadi Worker (AWW) of Integrated Development Services (ICDS) are also being used to distribute the iron-folate tablets.

Check Your Progress Exercise 2

1) State whether the following statements are true or false. Correct the false statements.

   a) Women of child bearing age and children are the target beneficiaries of the National Anaemia Control Programmes.

   .................................................................................................................................

   b) Nutritional anaemia can be only due to iron and folic acid deficiency.

   .................................................................................................................................

   c) Anaemia can even lead to death of women during child birth.

   .................................................................................................................................

   d) Sixty milligram of iron is given to women during pregnancy as a prophylactic measure.

   .................................................................................................................................

   e) Dosage of iron and folic acid in National Nutritional Anaemia Control Programme is same for women and children.

   .................................................................................................................................

23.4 IODINE PROPHYLAXIS PROGRAMME

Goitre, as you know, is a condition in which the thyroid gland (located in front portion of the neck) is enlarged. This condition is caused due to the deficiency of iodine. In fact, iodine deficiency leads not only to goitre but also to a number of other disabilities like physical and mental retardation, hearing and speech defects (deaf-mutism) among children and spontaneous abortions and still birth among women (refer to Unit 18, Block 5).

As you have read in Unit 18, Block 5, the problem of iodine deficiency is endemic in certain areas of the country. The surveys conducted indicated that the problem of goitre is present in a broad sub-Himalayan belt of mountain slopes of our country. It stretches from Kashmir in the north-west to the Naga Hills in the East and includes parts of the states of Himachal Pradesh, Punjab, Haryana, Uttar Pradesh, Bihar, West Bengal, Sikkim, Assam, Mizoram, Meghalaya, Tripura, Manipur, Nagaland and Arunachal Pradesh. In addition, pockets of endemic goitre have been recently detected in the states of Gujarat, Maharashtra, Andhra Pradesh and including Kerala and Delhi.

It is estimated that a population of nearly 140 million, live in endemic areas and out of this, nearly 40 million are said to suffer from obvious manifestations of IDD (Iodine Deficiency Disorders).
Realizing the serious health and social implications of the problem of iodine deficiency disorders, Government of India launched a *National Goitre Control Programme (NGCP)* in 1962. This programme is now called the *Iodine Prophylaxis Programme*. The basis of the programme was a study conducted in the mid-fifties in the Kangra Valley, by the Scientists of All India Institute of Medical Sciences. The study showed that the prevalence of goitre comes down considerably when the common salt supply to the population is replaced by iodized salt. In keeping with the results of this study the control programme was initiated.

**Objectives**: The main objectives of the control programme are to

- identify goitre endemic regions
- supply iodized salt in place of ordinary common salt in goitre endemic areas
- assess the impact of the programme over a period of time.

The questions which may arise in your mind at this stage are why is salt fortified with iodine? Why can't some other foodstuff be fortified with iodine? The answers to these questions are provided in Highlight 1.

### Highlight : 1

**Common salt as a vehicle for supplying iodine**

The common salt is fortified with Potassium iodate (a *compound* of iodine). The suggested minimum level of fortification of common salt with potassium iodate is 25 parts per million. This will provide 150 micrograms of iodine in 10 g of iodized salt. Given below are the reasons for fortifying the salt with iodine in our country:

1) The salt constitutes an essential article of the diet and is consumed regularly by all the sections of society irrespective of socio-economic status.

2) Its daily consumption varies within a narrow range of 10-15 g per person as against the other foodstuffs which show wide changes in consumption.

3) The salt is produced in a few selected locations hence can be easily monitored for quality control.

4) Addition of iodine to salt does not change its appearance or taste.

5) The technology of adding iodine (iodation) to salt is more simple and less expensive than adding to other foodstuffs.

**Distribution Strategy**: The iodized salt is produced at some selected locations in the country. From production plants (which are located in Gujarat, Rajasthan and Tamil Nadu) the iodized salt is transported to endemic areas by Railways and/or roads on priority basis. In endemic areas the traders are prevented from selling non-iodized salt. The local administration while ensuring regular flow of iodized salt in the endemic area, is expected to see that non-iodized salt does not enter from the neighbouring non-endemic areas.

Difficult terrain, inadequate production of iodized salt, transport bottlenecks and difficulties in pursuing the local traders to cooperate with the administration (in the absence of adequate profit incentives) are some of the problems in the way of efficient implementation of this Programme.

The programme is in operation since past several decades yet there has been no remarkable improvement in the condition of goitre and other iodine deficiency disorders. This is attributed to the dual supply of salt i.e. iodized and non-iodized salt are available to public in endemic areas. To overcome this problem, the government, is now considering to iodize the total salt produced in the country so that iodized salt reaches all places.
b) Besides goitre other manifestations of iodine deficiency disorders include ...


c) National goitre control programme was launched in the year ... and is now known as ...

d) Ten grams of iodized salt provide ............... micrograms of iodine.

e) Common salt is fortified with ............... , a compound of iodine.

2) List the main objectives of the Iodine Prophylaxis Programme.

    ..............................................................................................................................


3) a) Why is salt chosen as the vehicle of supplying iodine in our country?

    ..............................................................................................................................


So far, you have read about the prophylactic dose of vitamin A, iron, and iodine being supplied to vulnerable sections of the community as part of nutrient deficiency control programmes. One important component which is essential for the success of these programme is nutrition education.

Highlight 2 focuses on importance of nutrition education as one of the essential component of these prophylaxis programmes.

**Highlight 2**

**Importance of Nutrition Education/awareness for success of Nutrition Programmes**

What do you think is necessary for the success of prophylaxis programmes? You would think if correct dosage reach at right time to the health worker and she is motivated enough to make it available at the doorstep of the beneficiary, it should be successful. However, you may be quite amazed to know, even then the programme can be a failure. The dose of the particular vitamin or mineral may not reach the mouth of the beneficiary. The missing link between the hand of the health worker and mouth of the beneficiary is health awareness and nutrition education. The following example illustrates the importance of these two aspects. In a study conducted in Yonharam and Doma Primary Health Centres of Ranga Reddy District in Andhra Pradesh, it was found that level of awareness regarding anaemia was very low among the beneficiaries. Some of them reported few signs and symptoms of anaemia such as tiredness, giddiness, sweating, poor appetite, numbness in feet etc. However, they didn't consider them serious enough symptoms to be motivated to take tablets. Few who took tablets reported discomfort after consuming them—pain in abdomen, vomiting, black stools or diarrhoea. Now here you can realize the importance of component of education in these prophylaxis programme.

People should know answer to the questions/facts like—What is anaemia? What are harmful consequences of anaemia? Which tablets are being supplied to them?
Are they similar to contraceptive pills being supplied at their health centre or different from that? What benefits will they get from these tablets? What are the side effects of these tablets? Should they discontinue the use of tablets if they experience these side effects. What is right time to give vitamin A dose to children? From where can they obtain iodized salt? What harm will they get if they continue using uniodized salt?

It is very important to educate people regarding these facts. How do you think such an information can be communicated to people living in rural and tribal areas? Who will help in the process?

Health workers working under various departments of ministry of health and social welfare, voluntary organizations and social workers can form a means for communicating health and nutrition messages to people. They can make effective use of audio-visual material like charts, models, flash cards, posters, puppets, radio and TV programmes, printed matter etc. You may not be familiar with some of the audio-visual material mentioned here, and their use in communicating messages. Appendix 1 provides a detailed discussion on ‘Nutrition Education’ and use of audio-visual material for communicating nutrition messages to people. It also tells about the skills and methods of making simple nutritional aids for the purpose.

In the particular study mentioned above few methods adapted for increasing awareness among the beneficiaries were — a magazine in different languages— Nutrition (English), Poshan (Hindi), Poshana (Telugu) (this magazine became popular among people. Arrangements were made to release programmes through the television network. All India Radio, Hyderabad, gave broadcast on nutrition and health topics. As a result, it was found that most of the beneficiaries expressed their willingness to accept tablets.

23.5 LET US SUM UP

Majority of people living in rural and urban slum areas are economically poor and socially deprived. Their poor purchasing capacity does not enable them to include enough of nutritious foods (i.e. foods rich in vitamins, minerals and good quality protein) in their diets. As a result, they suffer from a variety of nutritional deficiency disorders.

Hence, to control and prevent the harmful effects of deficiency disorders, the Government has started a few nutrient deficiency control programmes or prophylaxis programmes. In this unit you have read about three prophylactic programmes.

- National Prophylaxis Programme for Prevention of Nutritional Blindness supplies every preschool child (1-5 years) a large dose (200,000 IU) of vitamin A once in 6 months. The programme recommends that the distribution be done at the ‘door step’ of the beneficiary and proper records be maintained. This is important because the large dose is not expected to be repeated before 6 months.

- Under National Nutritional Anaemia Control Programme women who are either pregnant or lactating or adopting family planning methods are given iron-folic acid tablets. Each tablet contains 60 mg iron and 500 μg folic acid. Children between 1 to 5 years are also covered by this programme. They (young children) receive smaller tablets containing 20 mg iron and 100 μg folic acid. Very young children who cannot swallow the tablets are given liquid (syrup) preparation.

- Iodine prophylaxis Programme aims at controlling the problem of goitre through supply of iodized salt, in place of common table salt, to the people living in endemic areas. The suggested minimum level of fortification of common salt with potassium iodate is 25 parts per million. It is so calculated that a person consuming about 10 g of salt every day should be able to receive 150 microgram iodine. Production plants are mainly located in the States of Gujarat, Rajasthan and Tamil Nadu. The fortified salt is distributed through retail shops.
23.6 GLOSSARY

Abortion: Termination of pregnancy before birth
Ante-natal: (Ante-before; natal-birth) before birth means during pregnancy
Endemic: This term is used when a disease is fairly common, always present and affects large number of persons in a given area
Maternal: Pertaining to mother or pregnant women
Mega dose: A big dose
Prophylaxis Programme: Programme of prevention.
Post-natal: (Post-after; natal-birth) after birth
Tubectomy: Operation in which the tubes which carry the egg to the uterus are cut to prevent pregnancy

23.7 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress Exercise 1
1) a) 200,000 b) 1:5 c) all d) once.
2) The basis of the programme is the fact that human liver can store large amounts of vitamin A. If large doses of vitamin A are given to preschool children, they can be stored and used whenever needed.

Check Your Progress Exercise 2
1) a) True b) False; It can also be due to vitamin B₁₂ deficiency c) True; d) True; e) No, Children are given smaller doses.

Check Your Progress Exercise 3
1) a) thyroid; iodine; b) You can fill in any two of these—hypothyroidism, speech and hearing defects, muscular weakness, spasticity, still birth; c) 1962, Iodine prophylaxis programme, d) 150; e) potassium-iodate
2) The main objectives of National IDD Control Programme are
   — to identify goitre endemic regions
   — to supply iodized salt in endemic areas
   — to assess the impact of the programme over a period of time
3) The main reasons are given below:
   i) Salt is consumed by all communities of the country
   ii) There is only minor variation in the amount of salt consumed per person as compared to other foodstuffs (which show wide change in consumption).
   iii) It is produced at few selected locations and hence its quality can be easily monitored
   iv) Addition of iodine to salt does not change its appearance or taste
   v) The technology of adding iodine to salt is not complicated or expensive.