
UNIT 2 HEALTH AND NUTRITION OF RURAL CHILDREN

Contents

- 3.0 Aims and Objectives**
- 3.1 Introduction**
- 3.2 Nutritional Needs of Children**
- 3.3 Nutritional Status and Common Nutritional deficiencies**
- 3.4 Infant and Child Mortality**
- 3.5 Health Problems among Children**
- 3.6 Correlates of Early Childhood Mortality**
- 3.7 Policies and Programmes**
- 3.8 Let Us Sum Up**
- 3.9 Key Words**
- 3.10 Suggested Readings**

3.0 AIMS AND OBJECTIVES

Children represent a vital resource of a country. Thus, it is necessary to ensure adequate health and nutritional status of children. After reading this unit, you will be able to:

- describe the nutritional needs of children;
- common nutritional deficiencies;
- describe the correlates of early childhood mortality;
- describe health and nutritional status of rural children in India;
- give suggestive measures / guidelines for major nutritional and health problems;
- describe some of the policies and programmes geared towards health and nutrition of children.

3.1 INTRODUCTION

The health of children is the wealth of a country. Both health and nutrition strongly affect the quality of life of an individual. The social costs of malnutrition and ill-health among children show up not only as high death rates, but as long term deficits in those children who survive.

Throughout history, the leading cause of death, disease and retarded growth and development has been the synergism between nutritional deficiencies and common childhood infections. It is now well established that common infections precipitate malnutrition, which in turn, reduces resistance to disease; this facilitates further infections, which lead to increased nutritional deficits. A rapid sequence results in mortality. When the sequence proceeds at a slower pace, the combination of malnutrition and infection is the major cause of chronic growth deficit, physical and mental, that affects millions of deprived children. This state of affairs, unfortunately, predominates in rural India.

3.2 NUTRITIONAL NEEDS OF CHILDREN

To keep a child healthy, food in right quantity is required. Everything that we normally eat and drink can be called 'Food'. Food is the chief source of essential materials, which the body needs for its well being. These essential materials are called 'Nutrients'. Good food is indispensable for health at all stages of life and for satisfactory growth during infancy, childhood and adolescence.

Functions of Food:

Food provides us essential nutrients which are required for energy, body building, repair of tissues, formation of enzymes and hormones, etc. The nutrients present in food can be placed in one of the following categories :

1. Body Building Foods (Proteins)

2. Energy giving Foods (Carbohydrates)
3. Extra Energy giving Foods (Fats)
4. Protective Foods (Vitamins and Minerals)
5. Water

Body Building Foods (Proteins)

These foods are very important, as they build the body. They build muscles, brain and many parts of the body. A growing child needs more proteins as her body is growing. The foods also repair the body. After illness, the harm done to the body is repaired by body building food, therefore it is very important for sick children to eat more of body building foods. Soyabean and groundnuts are the best source. Grams, lentils, beans and peas are also good. Common foods like rice, wheat, maize and millets are also body building foods, but contain lesser amounts compared to lentils, etc. Animal products like milk, meat, fish and eggs are very good, but generally are expensive compared to lentils .

Energy giving Foods (Carbohydrates)

Energy foods give us strength to work hard. The harder the person works, the more energy she/he needs. Children need more energy giving foods, as their bodies are growing fast and need more energy. Cereals, like wheat, rice, bajara, jowar, ragi, potatoes, banana, etc. give us energy.

Extra Energy giving Foods (Fats)

Small amounts of sugar, jaggery, oil and ghee give more energy than rice, wheat, etc. In small children, who need more energy but can't eat food in big quantity, addition of these foods helps in getting adequate energy.

Protective Foods (Vitamins & Minerals)

Vitamins and minerals are protective foods, as they help the body to work well and fight against diseases. Green leafy vegetables, dark yellow vegetables and fruits, milk, meat, fish provide vitamins. Minerals, such as calcium are required for healthy bones and teeth, and iron is required for making blood. Ragi and Bajra are very good sources of

calcium whereas dark green leafy vegetables and jaggery are rich in iron. Use of iodized salt (cooking salt) gives enough iodine in the food.

Water

It is very important to drink plenty of water, especially in summer season, as the body loses water through sweating.

The *non-availability of nutrients* in adequate quantities can be harmful for our health, which can be due to various reasons, such as non-availability of food, poor purchasing power, ignorance, lack of personal hygiene, poor environmental sanitation, faulty food habits, etc. Intake of inadequate food leads to reduced physical actions. In children, such conditions not only impair physical development, but also mental development.

Balanced Diet

There is, however, no single food stuff in which all the nutrients are present in quantities sufficient to meet the daily needs of the body. This is why a combination of different kinds of foodstuff is essential in diet. A diet in which various foodstuffs are mixed in suitable proportions to carry out adequately the functions described above is known as balanced diet.

Food Groups

On the basis of the predominant nutrients contained in food stuffs, food items are classified into following food groups.

Five Food Group System

	Food Groups	Main Nutrients
1.	<u>Cereals, Grains and other Products</u> Rice, Wheat, Ragi, Bajra, Maize, Jowar, Barley, Riceflakes, Wheatflour	Energy, Protein, Invisible Fat, Vitamin B, B2, Folic Acid, Iron, Fibre
2.	<u>Pulses and Legumes</u> Bengalgram, Blackgram, Greengram, Redgram, Lentil (whole), Rajmah, Soyabean, Beans, etc.	Energy, Protein, invisible fat, Vitamin B, B2, Folic Acid, Calcium, Iron, Fibre.
3.	<u>Milk and Milk Products</u> Milk, Curd, Skimmed Milk, Cheese Chicken, Liver, Fish, Egg, Meat.	Protein, Fat, Vitamin B, Calcium. Protein, Fats, Vitamin B2.
4.	<u>Fruits and Vegetables</u> Fruits: Mango, Guava, Ripe Tomato, Papaya, Mango, Orange, Sweetlime, Watermelon. <u>Vegetables (Green Leafy)</u> Amaranth, Spinach, Drumstick Leaves, Corriander Leaves, Mustard Leaves, Fenugreek. <u>Other Vegetables</u> Carrots, Brinjals, Ladies fingers, Capsicum, Beans, Onion, Drumstick, Cauliflower.	Cerotenoids (Vit. A). Vitamin C and Fibre. Invisibles fats, Carotenoids, Vitamin B2, Folic Acid, Calcium, Iron, Fibre. Carotenoids, Folic Acid, Calcium, Fibre.
5.	<u>Fats and Sugar</u> Butter, Ghee, Hydrogenated Oils, Cooking oil like Ground nut, Mustard, Coconut.	Energy, Fat, Essential, Fatty Acids.

	Sugar, Jaggery	Energy
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Food Requirements

The food requirements vary according to age, sex and activity of an individual. Special demands are made during stress periods, such as pregnancy, lactation, infancy and childhood since the individual needs increased amounts of body building and protective nutrients.

Requirements During Infancy

The human infants, unlike the young ones of other species, is wholly dependent for his food and care on others. He is expected to grow into a physically and psychologically healthy adult with nourishing food and tender love and care in early years.

On the basis of unit body weight, the infant as well as the young child has need for greater amounts of nourishing foods than an adult. The active and healthy child needs food for energy and repair of wear and tear of tissues. In addition, extra nourishment is required to provide for the continuous increase in the size of every part of his body.

Requirements of energy and proteins of infants (Table 3.2(i)) is based on the breast milk intake. These allowances would form guidelines in feeding children who do not get breast milk.

Table 3.2 (i) : Protein and Energy Allowances

		Body Weight (Kg.)	Energy (K cal / day)	Protein (g / day)
Infants	0 – 6 months	5.4	108/kg	2.05/kg
	6 – 12 months	8.6	98/kg	1.5/kg

The allowances for first 6 months are met by milk proteins. Later, the child has to be supplemented with other sources of proteins.

Requirements during Childhood

Adequate nutritional intake ensures proper growth and development of children. They need enough energy to carry out their activities.

Realizing the importance of adequate nutrition in childhood, the Indian Council of Medical Research (ICMR 1990) has given recommended nutrient intake for various age groups which are listed in the following table.

Table 3.2 (ii) : Daily Recommended Allowances of Various Nutrients for Children

Age (Years)	Energy (k cal)	Protein (gms)	Calcium (mg)	Iron (mg)	Vitamin A Retinal (ug)	B-carotene	Vitamin C (mg)
1 – 3	1240	22	400	12	400	1600	40
4 – 6	1690	30	400	18	400	1600	40
7 – 9	1950	41	400	26	600	2400	40
<u>10 – 12</u>							
Boys	2190	54	600	34	600	2400	40
Girls	1970	57	600	19	600	2400	40

Thus, for growing children, it is very important that these demands of energy, proteins and other nutrients are adequately met. We must provide them energy rich foods along with adequate amounts of milk, which gives them not only good quality protein, but also sufficient amounts of other nutrients like calcium, vitamin A and B, etc.

It may be noted that a three year old child may not eat much more than a baby of 18 months since the rate of growth between 2 – 4 years is comparatively slower than that of a child between 1 –2 years.

While planning diets for children of various age groups, some important points should be kept in mind:

- The diet of a child should contain energy, protein, calcium, iron and vitamin A rich foods.
- Variety in preparing nutritious food should be given due consideration.
- As far as possible, the following food stuffs should be avoided for children below five years of age.
 - spicy food
 - excessively fried foods
 - too much sweets
 - tea, coffee etc.
- Food should be served in attractive form in terms of appearance, colour, texture, shape and flavour.
- For school going children, packed lunches should be given due consideration as they generally do not take breakfast.

Check Your Progress – I

Note: a) Write your answers in the space provided.

b) Check your answers, with the answers given at the end of this unit.

1) What is food?

2) What are the main functions of food?

(Hint: Refer Section 3.2)

3.3 NUTRITIONAL STATUS AND COMMON NUTRITIONAL PROBLEMS/DEFICIENCIES

India has some of the highest levels of malnutrition among women and children in the world. Inadequate nutrition takes a heavy toll on families. Malnutrition can be a factor in maternity-related complications and infant deaths. It can also affect a child's physical and mental development. Addressing nutritional needs is especially important since malnutrition has an intergenerational nature: Undernourished mothers are more likely to have undernourished children.

The major *nutritional problem* in India is *PCM or protein calorie malnutrition*, especially among most vulnerable groups like children, pregnant women, lower income groups and population living in rural and tribal tracts.

The term PCM implies that the problem of malnutrition is one of primarily calorie or energy intake deficiency, the protein deficiency being secondary, since in Indian conditions, the dietary sources of proteins and calories are the same, an adequate quota of calories will expectedly take care of adequate protein in the diet

The other major nutritional deficiency diseases are *Vitamin A deficiency*, *goiter* and *iron deficiency anaemia*. In certain parts of India, *fluorosis* is also a problem due to the presence of excessive amounts of fluoride in drinking water. *Pellagra*, caused due to niacin or nicotinic acid deficiency, is prevalent in population whose staple diet is maize.

Anaemia is widespread among women and children.

- Overall, 52 percent of ever-married women, aged 15-49 and 74 percent of young children are anaemic. These findings were obtained through the use of blood tests that measured haemoglobin levels.
- Anaemia is a serious concern for women because it can be an underlying cause of maternal and infant death. It can also increase the risk of premature delivery and low birth weight. Early detection of anaemia can help prevent maternity-related complications as well as child-development problems.
- The highest anaemia levels among children are in Haryana, Rajasthan, Bihar, and Punjab, where at least 80 percent are anaemic.
- The only States where less than half of children are anaemic are Manipur, Kerala, and Nagaland.
- In young children, anaemia can impair cognitive performance, behavioral and motor development, scholastic achievement, as well as increase susceptibility to infectious diseases.

Nearly half of children are undernourished.

- Almost half of children under three years of age are underweight, a measure of short- and long-term undernutrition. A similar percentage of children are undernourished to the extent that their growth has been stunted (46 percent).
- Undernutrition is most serious among children aged 12 to 35 months.

Undernutrition among children is common in most States.

- Even in the best-performing States, 20-30 percent of children are undernourished.
- The level of undernutrition among children ranges from 21 per cent in Sikkim to 55 per cent in Madhya Pradesh.

- Undernutrition in children may be a reflection of poor feeding practices, lack of sufficient food, or recent episodes of illness.

Recommended breastfeeding practices not widely followed.

- To help prevent undernutrition, infants should be given breast milk exclusively until six months of age. On, average, fewer than 60 percent of infants under six months are exclusively breastfed.
- The percentage exclusively breastfed varies widely from less than 20 percent in Himachal Pradesh, Sikkim, Meghalaya, and Delhi to 75 percent in Andhra Pradesh.
- Breastfeeding immediately after birth has important benefits for both mother and child. Few children, however, are put to the breast immediately after birth. Additionally, only 37 percent give the first breast milk (colostrum) to the child, a recommended practice because it provides the child with natural immunity.

Many infants are not given solid/mushy food early enough.

- Starting at six to nine months of age, infants need solid or mushy foods in addition to breast milk. Only one-third of infants of these ages receive solid or mushy foods as well as breast milk.
- The worst performing states are Bihar, Uttar Pradesh and Rajasthan, where less than 20 percent of children receive timely complementary feeding.
- The best performing states are Sikkim, Manipur, Nagaland and Meghalaya. In these states, more than three-quarters of children receive timely complementary foods.

Many are vulnerable to iodine deficiency.

- Only one-half of households use salt that is adequately fortified with iodine. To prevent iodine deficiency, the minimum iodine content of salt should be 15 parts per million.
- About **four out of ten households in rural areas** use adequately iodized salt. Only 35 percent of poor households use adequately iodized salt.
- Iodine deficiency is the single most important and preventable cause of mental retardation worldwide. Iodine deficiency can lead to miscarriages, brain disorders, cretinism, and retarded psychomotor development.
- Researchers estimate that about one-fifth of pregnant women in India are at risk of giving birth to children who will not reach their physical and mental potential because of maternal iodine deficiency (Vir, 1995).

Dietary Guidelines for the Poor

The Indian Council for Medical Research (ICMR) makes periodic recommendations on desirable diets for Indian population. Considering the fact that at least one-third of the households in India are not able to afford even the minimum nutritional requirements (these households spend 80% of their income on food), the ICMR felt that its Recommended Diet Intake (RDI) should also have practical suggestions as to how the recommended nutrient allowance could be procured from low-cost diets. The model least cost diets per day that are ‘balanced’ are shown in **Tables 3.3(i)**. In recommending diets for poor Indian Groups, the ICMR has been guided by the following considerations:

Diets recommended should be least expensive and confirm to traditional and cultural practices as closely as possible.

Energy derived from cereals need not exceed 75% of the total energy requirement. Pulse (legum) intake should be such that the ratio of cereal protein to pulse protein does not exceed 5:1. This would imply that pulse intake should be atleast around 10% of the cereal intake. The diet should provide for a minimal milk intake of 150 ml. These

recommendations regarding intake of pulses and milk were designed to improve the protein quality of the predominantly cereal-based diet, usually devoid of animal protein to minimal acceptable levels.

About 150g of vegetables (leafy and other vegetables) should be provided. These were considered as levels, which will not unduly increase the bulk of the cooked food--a major consideration in all diets that are heavily cereal-based. Energy derived from fat and oil need not exceed 15% of total calories. This takes into consideration the fact that cereal diets already provide invisible fats at levels of about 10% of total energy. Energy derived from refined carbohydrates (sugar or jaggery) need not exceed 5% of total calories.

Table 3.3(i): ‘Balanced Diet Recommended by ICMR on the Basis of RDI

	Children		Boys	Girls
Food Items	1-3 years	4-6 years	10-12 years	10-12 years
Cereals	175	270	420	380
Pulses	35	35	45	45
Leafy Vegetables	40	50	50	50
Other Vegetables	20	30	50	50
Roots and tubers	10	20	30	30
Milk	300	250	250	250
Oil and fat	15	25	40	35
Sugar or Jaggery	30	40	45	45

Additional messages that need to be got across with respect to children are:

- Breastfeed as long as possible.
- Introduce semi-solids from 6 months.
- Feed young children 3 to 6 times a day.

- Do not reduce food in illness.
- Use available health services, immunise your child.
- Keep the family and surroundings clean.
- Drink clean water.
- Do not ignore mother's health and food needs during pregnancy and lactation.
- Most mothers in rural India being anaemic require appropriate iron-folic acid supplements.

Guidelines for other Major Nutritional Problems

Iron-deficiency anaemia: Usually responds well to iron salts like ferrous sulphate tablets. These are very low cost, much cheaper than iron tonics and vitamin preparations. Iron is found in green leafy vegetables (Palak, amaranth, drum stick leaves, coriander, etc.) ragi and dried fruits. The average Indian diet provides as high as 30 gm iron daily. However, the simultaneous presence of phytate and tannins inhibit iron absorption. There is also low level of calcium and ascorbic acid (vitamin C) – a factor that could augment net bioavailability of iron. Mass strategies that have been suggested are prophylactic administration of iron and folic acid to women and children in poor communities as part of routine PHC services through MCH centres and schools.

Vitamin A Deficiency : Vitamin A as retinol is mostly derived from beta-carotene. Absorption of beta-carotene from carrots and papayas has been shown to be good when diets have low fat content. Intake of green leafy vegetables are recommended by ICMR in its model least-cost balanced diets for preschool children, which would provide 300 mg daily (about 40 gms of green leafy vegetables). Usually many of the foods rich in iron are also rich in retinol. Thus, intake of greens will help in both vitamin A and iron deficiency. It is an irony that green leafy vegetables, since comparatively inexpensive, as people go up the social scale, are not considered 'prestige food'. The **colostrum**, usually not given to the child by many mothers on accounts of certain beliefs, is rich in vitamin A. Other strategies for combating vitamin A deficiency, especially in cases of repeated infections and despite recommended intake of green leafy vegetables (and at present low levels of knowledge about bioavailability of retinol from various varieties of greens), is

prophylactic administration of massive doses of vitamin A (two lacs IC once in six months) for children under three years.

Goiter/Iodine Deficiency : Studies need to be made as to how new goiter-endemic areas emerge. It has been suggested that the Green Revolution type technology could have induced iodine deficiency in soils and foods that are grown in such soils. But for the present, strategies to combat goiter seem to be universal iodisation of common salt and banning of unfortified salt. There are, of course, many logistical problems about universal iodisation of salt.

Fluorosis: Simple technologies for defluoridation of drinking water with the upper limit for fluoride set at 1 PPM. Strategies for lowering fluoride content, found to the extent of 10 mg/kg in staple food items like rice, corn, wheat, cabbage, potatoes, etc., are yet to be clearly thought about.

3.4 Infant and Child Mortality

Let us start with some basic mortality indicators. The early years of the child are of crucial significance from the point of view of their survival and health. Mortality rate among children in the crucial age group 0-4 years is unacceptably high from any angle of vision and reflects the prevailing state of malnutrition, infection, poor socio-economic environment and social service system in rural India. In the past decade, the pace of improvement in key health status indicators appears to have slowed down. The rate of decline in infant mortality has been slow in the 1990s; in fact, prenatal and neonatal mortality has not fallen and their share in the total infant mortality has increased. Reviewing the working of the Ninth Five Year Plan, the Planning Commission has expressed concern at the decline in routine immunization of children against the major vaccine-preventable diseases. This fact is also borne out by the data from the first and second rounds of the National Family Health Survey (NFHS) conducted in 1992-93 and

1998-99. The NFHS also showed that maternal mortality has remained unchanged at an unacceptably high level.

Table 3.4(i): Mortality indicators

	UP	Karnataka	AP	India
MMR (Maternal mortality rate)	707	195	154	408
IMR (Infant mortality rate)	86.7	51.5	65.8	73
CDR (Crude death rate)	10.2	7.9	10.7	9.7
NMR (Neonatal mortality rate)	53.6	37.1	43.8	47.7
Post Neonatal	33.1	14.4	22.1	25.3
Child Mortality	39.2	19.3	21	30.6
Under five mortality	122.5	69.8	85.5	101.4

Source : NFHS II (1998-99)

Table 3.4(i) shows that the early neonatal mortality rate, which is the number of infant deaths during less than seven days of life per thousand live births, forms an important component of infant mortality rate and more specifically of the neo-natal mortality rate. Neo-natal (less than 29 days) mortality rate in rural areas is higher than that for urban areas in all bigger states except Kerala where urban (14) neo natal mortality is more than rural (10).

Table 3.4(ii) : Estimated Age Specific Mortality Rates by Gender, 1999

Age group (yrs.)	Rural			Urban		
	M	F	T	M	F	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4	21.9	23.9	22.9	12.2	11.2	11.7
5-14	1.5	1.9	1.7	0.8	0.8	0.8

Source : Sample Registration System, 1999, Office of the Registrar General, India, New Delhi.

As revealed by the data (**Table 3.4(ii)**) at the National level, child death rate (0-4 years) was estimated at 20.4 and varied from 22.9 in rural areas to 11.7 in urban areas. The death rate in the age group of 5-14 years is 1.7 in rural areas. The death rate among children in the vulnerable 0 – 4 years age group is far higher than that among children in

the age group 5 –14 years. The rural death rate in 0–4 age group is almost twice the urban rate. Rural – Urban differentials exist with the urban areas registering, in general, significantly lower death rates as compared to that in rural areas with the exception of Punjab.

Table 3.4(iii): Infant Mortality Rates and Residence in Major States, 2001

India / States	Rural	Urban	Combined
India	72	42	66
Andhra Pradesh	74	40	66
Assam	77	34	74
Bihar	63	52	62
Gujarat	68	42	60
Haryana	68	55	66
Karnataka	69	26	58
Kerala	12	9	11
Madhya Pradesh	92	53	86
Maharashtra	55	28	45
Orissa	94	61	91
Punjab	55	37	52
Rajasthan	84	57	80
Tamil Nadu	55	35	49
Uttar Pradesh	86	62	83
West Bengal	54	37	51

Sources: Sample Registration System, SRS Bulletin, April 2003, Office of the Registrar General, India, New Delhi.

Among the States, the lowest rural IMR prevails in Kerala (11), while the highest rate has been recorded for Madhya Pradesh (86). Once again, you must have noticed that the

rural infant mortality rates are considerably higher than the urban rates with respect to all the States (**Table 3.4 (iii)**).

Table 3.4 (iv) : Mortality Indicators, India, 1999

Mortality Indicators	Rural	Urban	Total
(1)	(2)	(3)	(4)
IMR	75	44	70
Early Neonatal Mortality	37	22	34
Neonatal	49	28	45
Still Birth	11	8	10

Source : *Sample Registration System, 1999, Office of the Registrar General, India, New Delhi.*

Table 3.4 (v) : Percentage of deaths in the age group 0-4 years to total deaths by residence, India and Selected states, 1999

India and bigger states	Rural	Urban	Total
(1)	(2)	(3)	(4)
India	29.7	18.7	27.2
Andhra Pradesh	21.2	14.6	20.1
Assam	30.6	16.1	29.6
Bihar	33.4	26.3	32.7
Gujarat	27.7	20.4	26.0
Haryana	31.8	27.1	31.0
Himachal Pradesh	19.2	12.5	18.9
Karnataka	22.5	10.7	20.0

Kerala	4.7	6.4	5.1
Madhya Pradesh	39.9	20.3	37.0
Maharashtra	17.9	14.0	16.8
Orissa	28.8	25.9	28.6
Punjab	19.5	14.7	18.5
Rajasthan	41.6	27.9	39.7
Tamil Nadu	15.6	12.7	14.8
Uttar Pradesh	37.7	31.1	36.8
West Bengal	22.8	11.5	20.0

3.5 HEALTH PROBLEMS AMONG CHILDREN

In the preceding section, we discussed the mortality indicators. What about the children who do survive? What are their major health problems? Let us review this briefly.

During infancy and childhood, the major health problems identified on the basis of mortality include the following:

i) Childhood Diseases : Diphtheria, whooping cough, tetanus, measles, tuberculosis and polio are the six killer diseases affecting children. Fortunately, these are all preventable and the Government of India implements the Universal Immunisation Programme to this effect.

ii) Diarrhoea: Insanitary environmental conditions, lack of safe water supply and sanitation contribute to the incidence of diarrhoea. It is common during childhood and frequently results in mortality due to dehydration. It is the largest single killer where deaths occur due to dehydration and malnutrition. Effective management of diarrhoea is possible at home by administering oral rehydration salts (ORS), or more simply by a sugar-salt solution.

iii) Respiratory Infections : Acute respiratory infections, generally pneumonia, result in one fifth of mortality under the age of five years. The community health worker can be trained to recognize the symptoms of pneumonia and administer anti-microbial in appropriate doses to prevent death.

- Nearly one-fifth of children had symptoms of acute respiratory infection (ARI) in the two weeks before the survey. A similar proportion had diarrhoea during this period. ARI, primarily pneumonia, is a leading cause of childhood deaths throughout the world.

More than 60 percent of children, who had ARI and diarrhea, were taken to a health facility or provider for treatment. Results show that :

- Mothers are more likely to follow recommended diarrhoea care practices now than in the early 1990s: 22 per cent gave their child more fluids during a recent bout of diarrhoea, compared with 10 percent in 1992-93.
- On the other hand, the percentage of mothers who administered fewer fluids has also risen. This is a potentially dangerous practice that could endanger a child's life.
- Globally, diarrhoea is considered the second most important killer of children under age five. Deaths from diarrhoea are most often due to dehydration. Nearly all dehydration-related deaths can be prevented by prompt administration of rehydration solutions.
- Despite some improvement in diarrhoea care, the findings indicate that mothers and families need more education in the proper management of diarrhoea.

One in three rural Indian children are severely stunted, and nearly two in five have not had all of the recommended vaccinations by age five, according to an analysis of data from the 1992-1993 National Family Health Survey. The data reflected outcomes among children of ever-married women aged 13-49 living in rural areas of India. The analyst examined **severe stunting**, an indication of nutritional deficit, and immunization

(i.e., whether children had received the full complement of tuberculosis, polio, measles and diphtheria-pertussis-tetanus vaccinations recommended by the World Health Organization) on a large scale.

One-third of all children were severely stunted. Only three in 10 were fully immunized (Panda, 2003).

Factors Contributing to Ill Health and Malnutrition

Since the states of health and nutrition affect each other, there are common contributing factors to ill-health and malnutrition. Let us take up the main factors.

- (i) Poor socio-economic conditions, including low income, poor environmental sanitation and poor housing.
- (ii) Parental ignorance and illiteracy especially that of the mother, resulting in inadequate food being given to children, and prejudice against certain foods.

Check Your Progress – II

Note: a) Write your answers in the space provided

b) Check your answers, with the answers given at the end of this unit.

1) What are the major health problems of children?

(Hint: The six killer diseases)

2) List out the factor contributing to ill-health and malnutrition of rural children.

3.6 CORRELATES OF EARLY CHILDHOOD MORTALITY

No discussion of the health and nutritional status of children can ignore the important factor of maternal health and nutrition, which influences the intra-uterine development of the foetus, the birth weight of the infant, the lactation performance of the mother and the growth and development of the infant. Nearly a third of the infants in the country are of low birth weight, largely attributable to poor maternal health and nutrition. Such low birth weight infants tend to have substandard development and end up as stunted adults.

- (i) The poor health and nutritional status of rural women also contributes to high maternal mortality rate. You can now easily understand how difficult it is for them to give a good head start to their children. They inevitably and inadvertently provide a poor base for their development and subsequent adaptive functioning. This situation needs to be corrected on a priority basis.
- (ii) State with the lowest female literacy rates also have the highest rural IMR.
- (iii) Repeated infections, such as diarrhoea, respiratory infections and other infections, such as measles, whooping cough and tuberculosis contribute to almost half the cases of malnutrition. These illnesses depress appetite, cause loss of body weight and lead to malnutrition.
- (iv) Large families – Undernutrition is lesser in the first three children in the family than in children from birth order four and above.
- (v) Maternal age: Births before the mother has attained 18 years or after she is 35 years old are considered harmful for the health of the mother and child.
- (vi) Closely spaced births – The spacing of three years or more between one child and the next is considered ideal for the health of the mother and the child. When a child is born too soon after another, she/he is likely to be undernourished as the mother's own health is affected and her nutritional reserves are depleted.
- (vii) Inadequate knowledge of health and nutrition.

Health care facilities

In the Governmental rural health set up, the ANM is the health functionary closest to the community. ANM is found at sub-center along with multipurpose health worker (MPHW) who deals mainly with malaria, sanitation and, to a small extent, family welfare. Health Policy aimed at improving health should certainly include efforts to provide ANM in each and every village or some trained male and female volunteers from villages. It is these factors, which are often overlooked in the planning, funding and services to rural areas. Rural health programs must change from being dependent on demand to being based on active offer of preventive measures. The active offer must be sustained by non-standardized communication procedures with the aim of providing empowerment of involved people. Primary health centers are the cornerstone of the rural health care system. The main problems affecting the success of primary health centers are the predominance of clinical and curative concerns over the intended emphasis on preventive work and the reluctance of staff to work in rural areas. In addition, the integration of health services with family planning programs often causes the local population to perceive the primary health centers as hostile to their traditional preference for large families. Therefore, primary health centers often play an adverse role in local efforts to implement national health policies.

Infant survival prospects improve (National Family Health Survey - 2 Data):

- Infants are more likely to survive past their first birthday today than in the early 1990s. Childhood mortality rates are used for monitoring and evaluating population and health programs and policies. Also, these rates are an important element of the quality of life.
- The mortality declines in urban and rural areas are similar. Efforts to improve child survival in both urban and rural areas have met with some success.
- Although mortality is declining, one in 15 children still die before age one. Child survival programs need to be intensified to achieve further reductions in mortality.

Nearly all states have achieved infant mortality declines.

- Infant mortality rates vary dramatically among major states, ranging from 16 in Kerala to 86 or more in Uttar Pradesh and Madhya Pradesh.
- Other states with above average infant mortality rates include Orissa, Rajasthan (not shown), Bihar, and Assam.
- A number of states with high infant mortality levels have achieved notable declines since the NFHS-1, including Orissa, Assam, Bihar, and Uttar Pradesh. In Orissa, for example, the infant mortality rate was 112 in the NFHS-1 (1992-93) compared with 81 in the NFHS-2 (1998-99).

Poorer survival prospects for closely spaced births and for children of younger or older mothers.

- Spacing births by at least two years could save many infant lives. Also, avoiding early or late births could improve child survival.
- The infant mortality rate is 101 for closely spaced births, compared with 41 for those births spaced at least four years apart. One in ten children born after an interval of less than two years dies before reaching the age of one.
- The children of mothers under age 20 and over age 40 have relatively poor survival prospects.
- The lowest infant mortality rates are for children of mothers aged 20 to 29 years.

Child mortality levels are higher among girls.

- Child mortality is considerably higher among girls than boys, especially in rural areas. Child mortality is a measure of deaths among those aged one to four per 1,000 children who survive to age one.

- The severity of female disadvantage in child mortality is striking when compared to most other countries in the world.
- In India, it is believed that girls face poorer survival prospects in part because their health needs are neglected relative to those of boys. For example, boys are more likely than girls to receive medical care when they are sick.

More children are protected from vaccine-preventable disease.

- 42 per cent of children have received all recommended vaccines, compared with 36 percent in 1992-93. Children are also more likely to have received any of six major vaccines now than in the early 1990s.
- Vaccination against six serious but preventable diseases - tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, and measles - has been a cornerstone of the child health care system in India.
- The public sector is the primary provider of vaccinations: 82 percent of immunized children received vaccinations from a government source, compared with 13 percent from a private sector medical source.

Check Your Progress - III

Note : a) Write your answers in the space provided.

b) Check your answers with the answers given at the end of this unit.

- 1) How does LBW and short birth interval affect the child's survival?

- 2) How IMR and morbidity affect female literacy rate ?

3.7 POLICIES AND PROGRAMMES

The Indian government has initiated several measures to ensure that the problems of deprivation and discrimination faced by the poor women and children in India are overcome. These programmes of action aim at dealing with issues like health, education, rural development and better working conditions.

Health and Nutrition

In the field of **health, nutrition and family welfare, child survival, safe motherhood and nutritional anaemia** have been receiving the highest priority. Apart from the extensive network of **primary health care infrastructure**, India has also the world's largest **Integrated Child Development Services (ICDS)** programme, which offers a package of supplementary nutrition, immunization, health care, growth monitoring, pre-school education and health and nutrition education. Along with special initiatives like the **Universal Immunization Programs (UIP)**, these interventions have helped India substantially reduce the infant mortality rate and also bring malnourishment under control.

The National Health Policy – 2002 has been launched with the objective of achieving an acceptable standard of good health amongst the general population of the country. This covers all aspects of health care and contains policy prescriptions.

Some of the other Health program are:-

- National Antimalaria programmes (NAMP)
- National Leprosy Eradication Programme (NCEP)
- Kala – Azar Control Programme
- National Filarial Control Programme (NFCP)

- National T.B Control Programme
- National Iodine Deficiency Disorders Control Programme
- National Mental Health programme

Rural Development

Keeping in view the vulnerable status of women and children in rural society, particularly owing to their economic dependence on others, special provisions have been made to ensure that 40 percent of all allocation for the Integrated Rural Development Program (IRDP) and other mass employment programs are reserved for women. In order to help poor women working in the informal sector, a National Credit Fund has been started, so that loans may be obtained by them at reasonable rates without the formal procedures of usual institutionalized banking. In addition, under programs like Development of Women and Children in Rural Areas (DWCRA), efforts are being made to give rural women technical and management skills to build their own co-operative enterprises.

Non-Governmental Organisations

The role of non governmental organizations and voluntary agencies in India has been very important. In situations of widespread poverty and deprivation, exploitation and discrimination, the State has not been in a position to ameliorate everything. The Non Governmental Organizations (NGOs) have stepped in to provide basic health and child care services, running home for the destitute and distressed and providing education and training opportunities. At the same time, these NGOs have also been working towards building a more humane society free from exploitation and want. The partnership between NGOs and the government has been of mutual benefit.

Some Major NGOs are : Self Employed Women's Association (SEWA), Ahmedabad, Gujarat; Society for Participatory Research in Asia (PRIA), New Delhi; Church's Auxiliary for Social Action (CASA), New Delhi; SAHELI, New Delhi; NIRANTAR, New Delhi; Voluntary Action Network, India (VANI), New Delhi; ANKUR, New Delhi; People's Rural Education Movement (PREM), Mandiapally, Orissa; LOK SHAKTI, Balasore, Orissa; UNNATI, Ahmedabad, Gujarat; Society for Promotion of Area

Resources Centre (SPARC), Bombay; PREPARE, Madras; ASMITA (Resource Centre for Women), Hyderabad; Child In Need Institute (CINI), Calcutta.

Few major Child Schemes are listed below:

- Integrated Child Development Scheme (ICDS)
- Development of Women and Children in Rural Areas (DWCRA)
- National Creche Fund
- Shishu Greh Scheme
- Balika Samriddhi Yojana
- Mid Day Meals Scheme
- Assistance to NGOs
- Reproductive & Child Health Programme (RCH)

3.8 LET US SUM UP

Optimum health and nutrition status of children is essential, as they represent a vital resource of our country.

India has very high infant and child mortality rates. While the IMR has declined over the years, even now it is as high as 72 in rural areas. There is rural-urban and male-female and statewise differentials with the rural female being the worst off. Mortality is highest among children in the vulnerable 0-4 years age group. Nearly 50 per cent of the deaths in rural areas are from this age group.

Kerala with its high literacy rate, particularly female literacy rate, has the lowest IMR, 12 per 1000 live births (rural). At the other extreme is Orissa with a staggering rate of 94 (rural). Most of the infant deaths are due to premature and respiratory infections.

The children who do survive are beset by infection, diarrhoea and malnutrition. The most common reasons for their low levels of health and nutrition are parental ignorance and illiteracy, poor socio-economic conditions and repeated infections.

3.9 KEY WORDS

Early Neo-natal mortality rate :- The number of infant deaths during less than seven days of life per thousands live births.

Neo-Natal mortality rate :- Neo-natal (between 7 – 28 days) mortality rate in rural areas is higher than that of urban areas in all bigger states except Kerala where urban (14) neo-natal mortality is more than rural (10).

Six Killer diseases :- Diphtheria, Whooping Cough, Tetanus, Measles, Tuberculosis and Polio.

3.10 SUGGESTED READINGS / REFERENCES

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Note:

The **National Family Health Survey (NFHS-2)** provides a comprehensive portrait of population and health conditions in India. The NFHS-2 surveyed more than 90,000 women in 1998 and 1999. The first NFHS was conducted in 1992-93 and proved to be a major landmark in the development of a comprehensive demographic and health database for India. The second National Family Health Survey further expands the database, providing information on trends overtime and meeting emerging needs in new areas of population and health.

The **International Institute for Population Sciences (IIPS, Mumbai)** served as the nodal agency for both the NFHS-1 and NFHS-2. Project funding was provided by the United States Agency for International Development, with additional funds for nutrition data collection in the NFHS-2 from UNICEF. Technical guidance was provided by ORC Macro and the East-West Center. Thirteen organizations were responsible for data collection, including five Population Research Centres and eight research companies.